



**UNIVERSITY OF PIRAEUS**

**DEPARTMENT OF BANKING AND FINANCIAL MANAGEMENT  
M. Sc in FINANCIAL ANALYSIS FOR EXECUTIVES**

**‘How do news announcements affect the spread between  
Greek and German bond prices?’**

**MASTER DISSERTATION BY:**

**KAVVETA KONSTANTINA: MXAN1114**

**SUPERVISOR:**

**SKIADOPOULOS GEORGE**

**EXAMINATION COMMITTEE:**

**PITTIS NIKITAS**

**ENGLEZOS NIKOLAOS**

**PIRAEUS, FEBRUARY 2013**

## TABLE OF CONTENTS

ABSTRACT: .....	3
SECTION 1 INTRODUCTION .....	4
SECTION 2 LITERATURE.....	5
SECTION 3. THE DATASET .....	16
SECTION 4 .METHOD OF QUANTIFYING NEWS ANNOUNCEMENTS:SCHEDULED AND UNSCHEDULED RELEASES .....	28
SECTION 5 REGRESSIONS .....	29
1. Which of the U.S. and European surprise variables affect the yield to maturity of Greek bonds, the yield to maturity of German bonds and the spreads between Greek and German bond prices?.....	29
2. Do the unscheduled news announcements affect the yield to maturity of Greek bond, of German bonds and the spreads between Greek and German bonds? .....	30
3. Do the scheduled and the unscheduled news announcements affect the yield to maturity of Greek bond, of German bonds and the spreads between Greek and German bonds?.....	30
4. The effect of news releases on the yield to maturities.....	31
SECTION 6 RESULTS:.....	33
SECTION 7 CONCLUSION: .....	36
APPENDIX .....	37
REFERENCES:.....	70

**ABSTRACT:**

I examine the effect of U.S. and European news announcements on the spread between Greek and German bonds as well as to the yield to maturity of Greek and to the yield to maturity of German bonds. I calculate the spreads as the difference between these two yield to maturities. It is important to focus on the fact that the announcements are divided in scheduled in which the timing is known from the beginning but not the content and in the unscheduled in which neither the timing nor the content is known.

Key –words : spreads; scheduled news announcements; unscheduled news announcements; yield to maturity of Greek bonds; yield to maturity of German bonds

## **SECTION 1 INTRODUCTION**

We examine the effect of news announcements on the spread between Greek and German bond prices.

The spread became known in our country since 2007 when the financial crisis of Greece and in other countries of Europe started. Spreads are the difference between the yield to maturity of 10-year Greek sovereign bond and the yield to maturity of 10-year German sovereign bond. We use the German 10-year sovereign bond because is the most secure sovereign bond in the European zone in which Greece is part of it since German is the biggest European economical power. When the price of the spread is high we can understand that the investors are less willing to provide funding to sovereign borrowers. In contrast we have the different results if the spread is low. Using data of spreads at a daily frequency (closing prices), we can find if there are important results between U.S. and European markets, as long as among European markets. Also, I study if there is any effect of these news announcements at the two different yield to maturities that create the spread between Greek and German bond.

In particular, we distinguish the news announcements in scheduled and unscheduled to find the different effect of them in each case since the scheduled announcements are ex ante known regarding their timing and their content in contrast with unscheduled in which neither of them is known a priori.

I use daily (closing prices) yield to maturities to calculate the spreads, however, in several papers have used intra - day data to find if there is any effect of these macroeconomic (scheduled) announcements on assets which are associated for example with yields to maturities, bonds and spreads.

This rest of the dissertation is organized as follows: In Section 2, I describe the previous studies and papers on which I have relied on. In Section 3, I analyze the data I have used in my analysis. In Section 4, I describe the method with which I create the scheduled and unscheduled announcements. In Section 5, I describe the regressions and their corresponding null hypothesis. In Section 6, I describe the results. The final section concludes.

## **SECTION 2 LITERATURE**

A number of studies helped me to investigate the effect of scheduled and unscheduled news announcements on spreads between Greek and German bond prices. Several of them are associated with yields to maturities, bonds and spreads and others with other assets such as stock prices.

In some of the studies concerning the bonds, yield to maturities and spreads the researchers used either dummy variables or surprise variables to explain the macroeconomic announcements and find the effect of them on their assets.

To begin with, **Attinasi, Checherita and Nickel (2009)** explain the determinants of widening sovereign bond yield spreads between selected euro area countries and Germany during the period 31 July 2007 to 25 March 2009, when the financial and economic crisis was into a full-blown.

So, this paper is based on the below factors that affect the widening of bond spreads which are the country's creditworthiness as reflected by its fiscal and macroeconomic position, the liquidity risk which show us the size and depth of the government's bond market, the degree of international risk aversion which is the investor sentiment towards this asset class for each country, and the effect of announcements, for example, macroeconomic news/surprises or fiscal policy events. Also, what affected investor's perceptions of euro area countries credit risk is the country dummy variable on the announcements of bank rescue packages. This variable takes the value 0 before the date of announcement and 1 as of that date.

To be more specific, the dependent variable in our analysis is the daily and monthly 10-year government bond yield spreads relative to Germany for the following ten euro-area countries: Austria, Belgium, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. Since the onset of the financial crisis, these countries had low spreads but after the September of 2008 when the financial turmoil was intensified these spreads were widened especially for Greece and Ireland. Their findings are robust to the use of different time frequencies, various estimation techniques in panel data and to the inclusion of additional control variables.

To conclude, all the above factors affect the daily government bond yields in different proportions each one. Therefore, we can understand from these results, that countries should consolidate during different good economic times in order to build a “fiscal cushion” when there is an economic downturn.

**Culha, Ozatay and Sahinbeyoglu (2006)** investigated the determinants of sovereign bond spreads for 21 emerging countries by using daily data from the end of December 1997 to the end of December 2004. They found results of both country-specific and panel regressions. They also showed in this paper results of models with monthly frequency for comparison purposes. They made a distinction between long and short run determinants.

The long run estimation results for each country by using daily and monthly results showed us that the risk appetite of foreign investors (generally the spread between the yield on U.S. corporate bonds rated BBB+ with a maturity of 10 years and a 10-year U.S. treasury bond) had the most important effect on them. Among the domestic default indicators that they used the sovereign ratings are found to have the most important impact on spreads. These results were reinforced by panel estimations (daily and monthly).

Both for individual countries and panel regressions the results from the short run show that with the exception of the Fed target rate (does not play an important role) the short run deriving forces of spreads are similar to the long-run drivers.

Since the various important indicators of the current stance of macroeconomic policy that used to explain sovereign spreads, they do not reveal much information for the futures policies and intentions of policymakers, political news and the announcements of international organizations can provide extra information regarding whether the current stance of fiscal policy is going to change and the direction of such a change. They classified news into three categories: 1/political news 2/announcements made by the IMF 3/structural reform process towards the EU accession. Then, they classified them in the follow categories as “good” or “bad”. The news releases selection, classification is done by the dummy variables methodology. It is shown that both positive and negative news releases strongly affected Turkish spreads in the period analyzed.

**Fleming and Remolona (1999)** studied how the prices are formed but also the behavior of trading volume (liquidity) and bid-ask spreads when there is the arrival of public information in the U.S. Treasury market. They focused on information contained scheduled macroeconomic announcements. The analysis relied on consumer price index, employment and producer price index announcements. The sample period is August 23, 1993 to August 19, 1994. The full set of announcements consists of announcements days that occur at the same time, 08:30am eastern time (ET) and the non-announcements days which do not occur this time. They uncovered a two-stage adjustment to the public information. So, from this we can understand that they pool together the three different announcements by distinguishing them in these two categories of announcement and non-announcement days.

Firstly, at the first stage, the release of a new announcement induces a sharp and nearly instantaneous price change and with a reduction in trading volume (as theory predicts). At the same time bid-ask spreads widens dramatically in response to the inventory risks of sharp price changes. So, they examine this market behavior for every one-minute interval from 08:25 to 08:37.

At the second stage, they found that the initial sharp price change is followed by a surge in trading volume and wide bid-ask spreads. To analyze this situation, they examine market behavior at five-minute intervals from 08:15 to 08:45a.m. and every five-minute interval from 09:00 to 10:20 a.m..

Moreover, the published paper of **Fleming and Remolona (1997)** tried to explain and identify information that may be responsible for the sharpest price changes and the most active trading episodes that refer to five-year U.S. Treasury note, one of the most actively U.S. Treasury securities for the period examined August 23, 1993, to August 19, 1994. To be explanatory for these changes, they examine how closely these events correlate with the release times of macroeconomic announcements. They, also, collected data on the dates and release times of twenty one different macroeconomic announcements. Nineteen of them come from government agencies and two come from the private sector (consumer confidence and the National Association of Purchasing Management Report on Business).

They relied on previous studies that they used of high frequency intraday price data that increased the power of researcher's efforts to estimate announcement effects. So,

they found results about the largest price changes and the greatest surges in trading activity which coincide with the release time of announcements.

Secondly, they run dummy-variable regressions of price volatility and trading activity to measure the extent to which the market differentiates among the different types of announcements to reflect the inherent differences in the information released.

Thirdly, they investigate how much the unexpected information affect by regressing the five-year US Treasury note price changes and trading activity on the surprise components of the announcements. The surprise variable is defined as the difference between the actual number released in announcement and the corresponding forecast number. We get the value 0 on days where there is not an announcement.

Lastly, they analyze the possible effects of market conditions on the impact of a given announcement surprise and find the differences of the use of either dummy variables or the use of surprise variables.

Another published study from **Goldberg and Leonard (2003)** examine how the U.S., German, and euro-area economic news (including different macroeconomic indexes) affects hourly changes in sovereign debt yields for the United States and Germany. Their analysis include thirty months of hourly yield data, excluding weekends, for the two-and ten-year notes from January 3,2000,to June 28,2002.

They construct the surprise variables of these economic data as the difference between the actual prices announced in the releases and the prices expected by the markets that is divided by the standard deviation of each one. This happens because each index is released in different frequencies during each year and due to their different units. With this way, they became comparable.

Important role, in this paper is the timing of news effects. For example, announcements that occur exactly on the hour or within the hour, are matched against yield changes over the next hour.

The most visible observations are the sizable number of U.S. announcements that effect both the two-and ten-year note U.S. yields over the period, the most German economic news did not have a large influence on them and only the flash-estimate of euro-area CPI effect the ten-year U.S. yield. In contrast, German two-and ten-year



yields were more responsive to U.S. economic news than they were to euro-area or German news.

An important result is that surprise changes in the federal funds rate were associated with statistically significant movements in the opposite direction in ten year Treasury yields.

To my investigation, another paper that helped me is this of **P. Robitaille and J. Roush (2006)** that has the aim to examine how surprises (the difference between the actual macroeconomic announcement and the forecast price, survey median) associated with U.S. macro data and FOMC announcements move the yield spread on a benchmark Brazilian government dollar-denominated bond and the Brazilian broad stock price index, the IBOVESPA. The prices for the survey median are from Money Market Services (MMS), a San-Fransisco based corporation, which has conducted telephone surveys since late 1977. Because MMS has gone out of business, values after May 2004 come from Bloomberg survey data. Their sample consists only of macro announcements with non-zero surprises. This study covers the period February 1999 to April 2005.

Also, there were used intra-daily data for the yield price of the bonds (1-hour interval, on the hour) and for the stock prices (5-minute interval) since they have the advantage of better isolating the effects of the announcements on the asset price. So, with this way the sample covers several episodes of financial turbulence in Latin America, particularly the Brazilian financial crises of 1999 and 2002 and financial turmoil in Argentina.

As for the results, an unexpected rise in U.S. interest rates in response to news about U.S. monetary policy was associated with a rise in the Brazilian spread and a decline in the Brazilian stock market. So, FOMC surprises explain a very small portion of the variation in Brazilian asset prices. Several U.S. macro data releases have significant effects on them. Further, it is difficult to draw conclusions about how long the effects on asset prices persist, as they mention in their study, since the statistical confidence diminishes as the time horizon increases and other news hits the market.

I will continue my reference to previous studies, referred to **Balduzzi, Elton and Green (2001)** who investigate the effects of scheduled macroeconomic

announcements on trade prices, trading volume for Treasury securities (three-month bill, two year note, 10-year note, and 30-year bond) and bid-ask spreads. The data set covers the period July 1, 1991, to September 29, 1995 and includes data over all 24 hours.

For these announcements we use data and consensus forecasts to calculate the surprise variable for each announcement. The surprise variable is the difference between the actual price and the corresponding median of the MMS forecast survey. Due to the difference of units for all macroeconomic announcements, they divide the surprises by their standard deviation across all observations to succeed the standardization that allow them to make comparisons regarding the size of regression coefficients of the different announcements.

These collected all the announcements and reported the time of release as well as the number of times each economic announcement is released concurrently with the others economic announcements. After, they analyze the effect of economic news by regressing price changes on the surprise of the economic variables being studied and including the surprises in variables announced simultaneously. So they found that for most announcements, the size of the effect generally increases with the maturity of the instrument.

An interesting issue that they investigate is how quickly bond prices, concentrating on the 10-year note, react to economic news announcements for a different time of horizon each time.

Finally they studied the effects of economic announcements on trading volume, bid-ask spreads, and price volatility (by using the ratio of the average of each one, that I have just mentioned, over different intervals preceding and following announcements to the corresponding average over the same interval on days when no announcement take place). They focused on three month bill and to the ten-year note whose price behavior is representative of short term and long term instruments, respectively.

**Andersen, Bollerslev, Diebold and Vega (2007)** by using a high-frequency futures dataset, they can find the response of U.S., German and British stock, bond and foreign exchange markets to real-time U.S. macroeconomic news (by constructing surprise variables as **Balduzzi, Elton and Green (2001)**). The future contracts that are

used for their investigation are the S&P500,\$/Pound,\$/Yen,\$/euro, FTSE 100,British Long Gilt,30-Year U.S. Treasury bonds, DJ Euro Stoxx 50 and the German Euro Bobl. The sample is from January 2, 1992 through December 31, 2002.

All results reported below are based on five-minute local currency continuously compounded returns,  $\log(p_t/p_{t-1})$  where  $p_t$  denotes the last price of the last trade in the  $t$ 'th five minute interval. If no trade occurs in a given five-minute interval, we use the price from the previous interval, as long as the previous price was quoted within the last half-hour. So, the news announcements regressions are based on the period ranging from ten minutes before to one-and-a half hours after an announcement.

Also they created two new periods, the expansion period from July 1998 through February 2001 and the contraction period from March 2001 through December 2002.

As in other papers, for instance in **Andersen, Bollerslev, Diebold and Vega (2007)** ,**Golberg and Leonard (2003)** and in **Balduzzi, Elton and Green (2001)** they make with the same way the “standardized news”. They, even presented graphically the point estimates for the news response coefficients at the time of news releases and fifteen minutes thereafter.

**Dwyer and Hafer (1989)** investigated if the daily interest rates on three-month Treasury bills and 30-year Treasury bonds are affected by the announcements of different economic indexes. To estimate the unexpected part of these announcements they used the initial announced values of these series minus the median response from the survey conducted. The sample period runs from February 1980 through December 1987.

They run regressions for these separately for the full period and for each year. To abstract from the effects of intervening announcements, they include in their regression changes in interest rates only for those days on which these announcements occur.

At the end, they compare the magnitude of the estimated coefficients of each year and they found that only the unexpected changes in the money stock have a systematic effect on interest rates.

**Ederington and Lee (1993)** examined the impact of scheduled macroeconomic news announcements on the Treasury bond (T-bond), Eurodollar, and the deutsche mark future markets. They used prices that are available on a tick-by tick basis since they could examine the effect of these announcements every five minute interval on day  $t$ , and how rapidly the markets adjust to this new information by finding the response to major announcements in the two aspects of this adjustment: the volatility and the speed of this impact. Also, because they found out that any trading profits disappeared well within the first five minutes interval then they switched to a one minute framework for the rest of their analysis.

They used a procedure that is somewhat different from the above since they defined a series of dummy variables  $D_{kt}$  where  $D_{kt}=1$  if announcement  $k$  is made on day  $t$  and  $D_{kt}=0$  otherwise. The sample period is from November 7, 1988 through November 29, 1991.

**Hardouvelis (1988)** examined the response of exchange rates of seven foreign currencies (German mark, Japanese yen, Swiss franc, British pound, French franc Canadian dollar, and Italian lira) and of the interest rates for the federal funds rate, the three-month Treasury bill rate and the twenty-year Treasury bond to the new information contained in the first announcement of fifteen U.S. macroeconomic series. The results for the exchange rates are for the whole period (October 1979 to August 1984) and the results for the interest rates (yield to maturity expressed in percentages) are for the whole period as well as for two subperiods, one from October 1979 to October 1982, and the other from October 1982 to August 1984. By isolating the exact time during a business day when news arrives, you can possibly examine the simultaneous reaction of prices in other asset markets and from the direction of the various reactions, gain a better understanding of how markets interpret the information they receive.

The announcements consist of four monetary series, two inflation series, the trade deficit, and eight other monthly macroeconomic series which provide information about the state of business cycle. In the business days where there is no announcement the series of each announcement takes the value zero. These independent variables in the regressions were constructed using survey forecasts. The sample period runs from October 11, 1979 through August 16, 1984.

**Arru, Iacovoni, Monteforte and Pericoli,(2012)**, investigated the link between the macroeconomic news and sovereign spreads in the euro area at weekly frequency. They concluded to the fact that the better the news the lower the spreads as well as the worse the news the higher the volatility. To be more specific, they analyzed sovereign spreads (difference between national interest rates paid on 10-year bonds and the corresponding interest rate paid for 10-years bonds issued by the Federal Republic of Germany) in the period 2005-2011 for Belgium, Greece, Ireland, Italy, Portugal and Spain. After the last quarter of 2008, the collapse of Lehman Brothers led to significant widening of spreads for the set of countries that are included in this analysis.

To measure the news they followed the same process with, **Andersen, Bollerslev, Diebold and Vega(2007)**, **Golbergand Leonard (2003)** and **Balduzzi, Elton and Green (2001)** to make the “standardized” surprises. They used a set of indicators for macro-areas (United States, Euro area, Japan and World) which they believed being the most influential in driving the mood of investors on financial markets. Then they discriminated these news in positive and negative to find any asymmetric market reaction from these. Lastly, these “standardized” daily indicators have been converted to a weekly frequency by summing the standardized news registered in a given week.

They run regressions by using the following determinants: the Germany 10-year interest rate paid on bond, a dummy for the financial crisis(dummy=1 after the collapse of Lehman Brothers, dummy=0 otherwise),a proxy for global risk aversion, the financial and non financial iTraxx indices(is a credit default swap index measuring the price required to hedge against the average risk implied by investment in a set of European stocks) ,the VIX index of options volatility, national public debts and the indicators of macroeconomic surprises.

**Brenner, Pasquariello and Subrahmanyam (2009)** examined the response of seven time series of asset returns including U.S. stock, Treasury, and corporate bond market to the first release of surprise U.S. macroeconomic information (total CPI, the unemployment rate, the nonfarm payroll employment ,and the target federal funds). The sample period is from January 3, 1986 to February 14, 2002. Specifically, they do not only focus on the impact of these announcements on the level, but also on their volatility and covariation of those asset’s returns. Their data are daily since higher-

frequency data are unavailable for two of the asset classes (i.e. corporate and government bonds) over the entire sample period. Generally they inferred that the arrival of surprise macroeconomic news has an impact on the U.S. financial markets, but also that this impact varies greatly across asset classes.

Also, other researchers made studies about how news announcements affect other assets such as stock prices. To be more comprehensible I will give some examples of these studies.

**Pearce, D.K., Roley, V.V., (1984)**, examined the daily percentage change of daily stock prices (closing prices) of the S&P500 about the money stock, the Consumer Confidence Index, the Producer Price Index, the unemployment rate, the industrial production, and the Federal Reserve's discount rate. To explain the unanticipated part of each of the announcements, they used the difference of the actual price of each of the announcements with the corresponding with the expected value that was provided to them by the Money Market Services. Also it was important for them the time of these announced indexes. To be more specific, it was important for them if these indexes are announced before, after, or during the stock market was open. From this investigation they concluded to interesting results about the effect of each one of them (either positively or negatively) on stock prices about the sample period that spans from September 1977 to October 1979.

My study is based on the paper of **Jiang, Konstandinidi and Skiadopoulos(2012)** who examined the effect of U.S. and European news announcements on the spillover of volatility across U.S. and European stock markets. To be more specific, they used daily data for the U.S. VIX (intra-day) and five major European implied volatility indices (closing prices). This was made to be synchronicity as regards the information that are contained between the hours that these markets are open. The sample spans the period July 1, 2003-December 31, 2010. Also, they used eleven U.S., eight European scheduled news announcements (surprise variables) and 170 unscheduled news announcements (dummy variables). As the **Balduzzi, Elton and Green (2001)** they constructed the surprise variables that takes into account the timing and the content of the respective release. These used the aggregate U.S. and European absolute surprises component of the announcements for all of the economic variables that occur between  $t-1$  and  $t$ . Among the other results, they concluded that there tends

to be a drop in implied volatility on days with scheduled news announcements but a rise in implied volatility on days with unscheduled news events.

All the above studies differ for several reasons. To be more specific, in the choice of news, the choice of the market (bonds, stocks, or currencies), the moments of the return distribution they examine and the statistical methodology they employ. However, they were useful to me for organizing my study.

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ

### **SECTION 3. THE DATASET**

The data consist of the daily prices (closing prices) of spreads between Greek 10-year sovereign bond and German 10-year sovereign bond, a set of macroeconomic news announcements, and a set of unscheduled news announcements.

As for the spreads that I computed them by finding the difference between the yield to maturity of Greek and German bonds. The rate of interest, that one could earn on his investment if he bought the bond and hold it to maturity, is called yield to maturity (ytm) and it is the interest rate generally discussed by investors when they talk about rates of return. The yield to maturity is usually the same as the market rate of interest. Also, the yield to maturity can be viewed as the bond's promised rate of return, which is the return that investors will receive if all promised payments are made. However, the yield to maturity equals the expected rate of return only if the probability of default is zero and the bond cannot be called. If there is some default risk or if the bond may be called, then there is some probability that the promised payments to maturity will not be received, in which case the calculated yield to maturity will differ from the expected return. (Michael C. Ehrhart and Eugene F. Brigham (2010), Financial Management practice and theory, South Western, United States of America)

Moreover, as for the difference between the two categories of announcements is that for scheduled announcements the time is known a priori but not the content. On contrary for the unscheduled announcements neither the time nor the content is known a priori.

The sample spans the period August 1, 2003-September 28, 2012. The market bond is open 02:00am-12:00pm Eastern Time. To achieve synchronicity in my data I observe from the table 1 that all the macroeconomic news announcements are released between the hours that the market bond is open except the FOMC rate announcement that is announced at 14:15 am ET. So, I use the data for this index not the date that are released but the next day. Only two days is released at 07:00am ET and at 08:00am ET.

The Table 1 shows the summary statistics of the Greek 10-year sovereign bond, German 10-year sovereign bond and of the differential between these two bonds



which is the spread.(in levels and first differences).The first order autocorrelation  $p_1$ , Jarque-Bera and the Augmented Dickey Fuller (ADF) test values are also reported. We can see that none of them is normally distributed either in levels or first differences. In addition, the values of  $p_1$  show us that there is autocorrelation in levels and not in the first differences. Finally, the values of the ADF test show us that both the yields and the spreads are non-stationary in the levels and stationary in first differences. As for the skewness, it measures the extent to which the distribution is not symmetric. If it is positive then the right tail is the longer and if it is negative this means that the left tail is longer. Last, the kurtosis of the distribution is useful to us since it measures the “peakedness” or the “thickness of the tails”. Except for the yield to maturity of German (in levels) all have thick tails since their prices are bigger than three. On the contrary the results for the skewness of the variables are either positive or negative depending the case.

My analysis includes eleven U.S. and eight European scheduled news announcements. In the below table is provided all the information (units of indexes, source, release time , frequency, and the total number (N) of the news announcements in our sample are reported).The exact time of release interests me since the announcements must be between 02:00am-12:00pm Eastern Time that is the time that the bond market is open. I obtain the release times as the actual prices and the corresponding survey forecast prices (median forecast) from the Bloomberg.

The U.S. macroeconomic announcements are the Non-Farm Payroll (NFP), Consumer Confidence Index (CCI), Consumer Price Index (CPI) , Producer Price Index (PPI) ,Durable Goods of Orders (DGO), FOMC rate announcement (FOMC), Gross Domestic Product (GDP), Initial Jobless Claims (IJC), Leading Indicators (LI), New Home Sales (NHS), Retail Sales(RS).The European announcements are the ECB-rate announcement (ECB),Euro-zone Consumer Confidence(EU-CCI),Euro-zone Consumer Price Index (EU-CPI), Euro-zone Producer Price Index (EU-PPI), Euro zone Gross Domestic Product (EU-GDP), Euro-zone Retail Sales (EU-RS), IFO Business Climate (IFO), ZEW survey (ZEW).

The majority of the announcements as I can see from the below table are in the morning except for the FOMC announcements that the release time is 14:15 am ET that is not included in these times so I exclude it from my analysis. In addition for the

most of them I have monthly data except for the initial jobless claims which is released every week, as well as ECB and FOMC interest rate announcements that is announced eleven times and eight times per annum respectively.

Below I will make a description for each one for the indexes.

To begin with, **Non-Farm Payroll** provides information on total number of US employees on the payroll of businesses over the last month. These information are collected each month from a sample of nonagricultural establishments by the U.S. Bureau of Labor Statistics. The sample includes about 140,000 businesses and government agencies representing approximately 440,000 worksites and is drawn from a sampling frame of roughly 9 million unemployment insurance tax accounts. The active sample includes approximately one-third of all nonfarm payroll employees. Nonfarm payrolls are reviewed by market analysts to gauge the state of the economy. A relatively small increase or an outright decline in nonfarm payrolls is typically seen as an indicator of economic weakness. On the other hand, a sharp increase of nonfarm payrolls is a signal of a strong or booming economy.

The **Consumer Confidence Index** show us the degree of the optimism that consumers feel about the overall state of the economy and their personal financial institution. It is calculated as an average of responses to the following five questions: 1. Respondents appraisal of current business conditions. 2. Respondents expectations regarding business conditions in six months 3. Respondents appraisal of the current employment conditions 4. Respondents expectations regarding employment conditions in six months 5. Respondents expectations regarding their total family income in six months. For each of the 5 questions, there are three response options: Positive, Negative and Neutral. The response proportions to each question are seasonally adjusted. For each of the five question (above), the POSITIVE figure is divided by the sum of the POSITIVE and NEGATIVE to yield a proportion, which we call the 'RELATIVE' value. For each question, the average RELATIVE for the calendar year 1985 is then used as a benchmark to yield the value for that question.

The **Consumer Price Index** measures the level of prices. The Bureau of Labor Statistics, which is part of U.S. Department of Labor, has the job of computing the

CPI. It begins by collecting the prices of thousands of goods and services. Just as other indexes, for example GDP which is analysed below, which it turns the quantities of many goods and services into a single number measuring the value of production, the CPI turns the prices of many goods and services into a single index measuring the overall level of prices. Also, the Bureau of Labor Statistics weights different items by computing the price of a basket of goods and services purchased by a typical consumer. The CPI is the price of this basket of goods and services relative to the price of the same basket in some base year. For example, suppose that the typical consumer buys 5 apples and 2 oranges every month. Then, the basket of goods consists of 5 apples and 2 oranges, and the CPI is

$$\text{CPI} = \frac{(5 * \text{Current Price of Apples}) + (2 * \text{Current Price of Oranges})}{(5 * \text{2006 Price of Apples}) + (2 * \text{2006 Price of Oranges})}$$

In this CPI, 2006 is the base year. The index tells us how much it costs now to buy 5 apples and 2 oranges relative to how much it cost to buy the same basket of fruit in 2006.

The Consumer Price Index is the most closely watched index of prices, but it is not the only such index.

Another is the **Producer Price Index**, which measures the price of a typical basket of goods bought by firms rather than consumers. To be more specific, Producer Price Indices, measure average changes in prices received by domestic producers of commodities in all stages of processing. When an establishment is selected to participate in the PPI survey, it is visited by a field economist who solicits the firm's voluntary cooperation and informs the firm of the strict confidentiality rules that will safeguard the information being requested. Once cooperation is obtained, the field economist uses the disaggregation technique to select the goods for which prices will be reported. From this point forward, the establishment reports prices for the selected products, usually on a monthly basis. Most information used in calculating the indices is obtained through the systematic sampling of nearly every industry in the manufacturing and mining sectors of the economy. The PPI program also includes

some information from other sectors - agriculture, fishing, forestry, services, and gas & electric. Producer Price Indices are designed to measure only the change in prices received for the output of domestic industries, therefore imports are not included.

Two of the most important **central banks**, an institution designed to regulate the quantity of money made available in the economy, called money supply, are US central bank –the Federal Reserve-and the European Central Bank.

The US Federal Reserve was created in 1914. The Fed is run by its Board of Governors, which has seven members appointed by the US president. Six of the governors have 14-year terms to give them independence from short-term political pressures when they formulate monetary policy, although the chairman has a four year term. The Federal Reserve System is made up of the the Federal Reserve Board in Washington, and 12 regional Federal Reserve Banks located in major cities around the USA. At the Federal Reserve, monetary policy is made by the **Federal Open Market Committee (FOMC)**. The FOMC meets about every six weeks in Washington, to discuss the condition of the economy and consider changes in monetary policy, including the setting of its key interest rate, its discount rate. The FOMC is made up of the seven members of the Board of Governors and five of the 12 regional bank presidents. All 12 regional presidents attend each FOMC meeting, but only five get to vote. The five with voting rights rotate among the 12 regional presidents over time. The President of the New York always gets a vote, however, because New York is the traditional financial centre of the US economy and because all Fed open-market operations are conducted at the New York Fed's trading desk.

Also, the **European Central Bank (ECB)** is located in Frankfurt, Germany, was officially created on 1 June 1998 as a number of European countries had decided that they wished to enter European Monetary Union (EMU) and have the same currency – the euro – circulating among them. We just note that if a group of countries has the same currency, then it makes sense for the countries in the group to have a same monetary policy, and the ECB was set up for precisely this purpose. The primary objective of the ECB is to promote price stability throughout the euro area and to design and implement monetary policy that is consistent with this objective. The ECB operates with the assistance of the national central banks in each of the euro area countries, such as the Banque de France, the Banca d'Italia, the Bank of Greece and

the German Bundesbank. The network made of the ECB together with the 12 euro area national central banks is termed the Ecosystem. The implementation of monetary policy by the ECB is under the control of the Executive Board, which comprises the President and Vice-President of the ECB and four other people of high standing in the banking profession. While the Executive Board -as the name suggests -is responsible for executing monetary policy, the monetary policy of the ECB is actually designed by the Governing Council which comprises the whole of the executive Board plus the governors of the the national central banks in the ecosystem-at present a total of 18 members. The Governing Council, which meets every two weeks in Frankfurt, is the most important decision-making body of the ECB and decides ,for example on the level of the ECB's key interest rate. (N. Gregory Mankiw and Mark P. Taylor (2006), Economics, Thomson Learning, London, pp. 594-602)

**GDP** equals the total income of everyone in the economy or the total expenditure on the economy's goods and services. GDP includes only the value of final goods and services because the value of intermediate goods is already included in the prices of the final goods. Also it includes both tangible goods (food, clothing, cars) and intangible services (haircuts, housecleaning, doctor visits). Moreover, it measures the value of production that takes place within a specific interval of time (usually a quarter), within the geographic confines of a country and includes these goods and services that are currently produced, not these that were produced in the past. To obtain a measure of the amount produced that is not affected by changes in prices, we use real GDP, which is the production of goods and services valued at constant prices. We calculate the real GDP by first choosing one year as a base year and then we use this year to compute the value of goods and services in all of the years. In other words, the prices in the base year provide the basis for comparing quantities in different years.

As I have mentioned GDP measures both the economy's total income and the economy's total expenditure on goods and services. Thus, the GDP per person tells us the income and expenditure of the average person in the economy. Because most people would prefer to receive higher income and enjoy higher expenditure, GDP per person seems a natural measure of the economic well being of the average individual which have several drawbacks that I mention below.

For example the GDP does not measure the health of people, but nations with larger GDP can afford better health care for their children. With similar way, we can understand that GDP does not measure the quality of their education, but nations with larger GDP can afford better educational systems. GDP does not take account of our intelligence, integrity, courage or wisdom, but all of these laudable attributes are easier to foster when people are less concerned about being able to afford the material necessities of life. In short, GDP does not directly measure those things that make life worthwhile, but it does measure our ability to obtain the inputs into a worthwhile life.

GDP is not, however, a perfect measure of well being. Some things that contribute to a good life are left out of GDP. One is leisure. Suppose, for instance, that everyone in the economy suddenly started working every day of the week, rather than enjoying leisure on weekends. More goods and services would be produced, GDP would rise but despite this increase we should not conclude that everyone would be better off. The loss from reduced leisure would offset the gain from producing and consuming a greater quantity of goods and services.

Because GDP uses market prices to value goods and services, it excludes the value of almost all activity that takes place outside of markets. In particular, GDP omits the value of goods and services produced at home.

Another thing that GDP excludes is the quality of environment. So, the deterioration in the quality of the air and the water would more than offset the gains from a greater production.

GDP, also says nothing about the distribution of the income. To be more specific, GDP per person tells us what happens to the average person, but behind the average lies a large variety of personal experiences.

In the end we can conclude that GDP is a good measure of economic well-being for most-but not all-purposes. It is important to keep in mind what it includes and what leaves out.

We use the real GDP that answers to the follow question: what would be the value of goods and services produced this year if we valued these goods and services at the prices prevailed in some specific year in the past? So, real GDP shows us how the economy's overall production of goods and services changes over time. The base year

changes continuously over time. For example, 1995 prices measure real growth from 1995-1996. The figures are then linked to form a 'chain' that can compare goods and services in any two years. Chain weighted figures never let prices get too far out of date. (N. Gregory Mankiw and Mark P. Taylor (2006), Economics, Thomson Learning, London, pp. 468,471-473)

As for, the weekly **Initial Jobless Claims** is the actual number of people who have filed for unemployment benefits for the first time. Following five (5) eligibility criteria must be met in order to file for unemployment benefits: 1. Meet the requirements of time worked during a 1 year period (full time or not). 2. Become unemployed through no fault of your own (cannot be fired). 3. Must be able to work; no physical or mental holdbacks. 4. Must be available for work. 5. Must be actively seeking work.

Many economists, particularly those working in business and governments, are engaged in the task of forecasting short-run fluctuations in the economy. Business economists are interested in forecasting to help their companies plan for changes in the economic environment. Government economists are interested in forecasting for two reasons. First, the economic environment affects the government; for example, the state of economy influences how much tax revenue the government collect. Second, the government can affect the economy through its choice of monetary policy and fiscal policy. Economic forecasts are, therefore, an input into policy planning.

One way that economists arrive at their forecasts is by looking at **leading indicators**, which are variables that tend to fluctuate in advance of the overall economy. Forecasts can differ in part because economists hold varying opinions about which leading indicators are most reliable.

Each month the Conference Board, a private economics research group, announces the index of leading indicators. The index includes ten data series that are often used to forecast changes in economic activity about six to nine months into the future. The list of series is the following:

- *Average workweek of production workers in manufacturing.* Because business often adjust the work hours of existing employees before making

new hires or laying off workers, average weekly hours is a leading indicator of employment changes. A longer workweek indicates that firms are asking their employees to work long hours because they are experiencing strong demand for their products; it thus indicates that firms are likely to increase hiring and production in the future. A shorter workweek indicates weak demand, suggesting that firms are more likely to lay off workers and cut back production.

- *Average initial weekly claims for unemployment insurance.* The number of people making new claims on the unemployment insurance system is one of the most quickly available indicators of conditions in the labor market. This series is inverted in computing the index of leading indicators, so that an increase in the series lowers the index. An increase in the number of people making new claims for unemployment insurance indicates that firms are laying off workers and cutting back production, which will soon show up in data on employment and production.
- *News orders of consumer goods and materials, adjusted for inflation.* This is a very direct measure of the demand that firms are experiencing. Because an increase in orders depletes a firm's inventories, it typically predicts subsequent increases in production and employment.
- *News orders, nondefense capital goods.* This is the counterpart to the above series, but for investment goods rather than consumer goods.
- *Vendor performance.* This is a measure of the number of companies receiving slower deliveries from suppliers. Vendor performance is a leading indicator because deliveries slow down when companies are experiencing increased demand for their products. Slower deliveries therefore indicate a future increase in economic activity.
- *New building permits issued.* Construction of new buildings is part of investment—a particularly volatile component of GDP. An increase in building permits means that builders are planning to increase construction, which indicates a rise in overall economic activity.
- *Index of stock prices.* The stock market reflects expectations about future economic conditions because stock market investors bid up prices when they expect companies to be profitable. An increase in stock prices indicates that



investors expect the economy to grow rapidly, and a decrease in stock prices indicates that investors expect an economic slowdown.

- *Money supply, adjusted for inflation.* Because the money supply is related to total spending, more money predicts increased spending, which in turn means higher production and employment.
- *Interest rate spread:* the yield spread between 10-year Treasury notes and 3-month Treasury bills. This spread sometimes called the slope of the yield curve, reflects the market's expectation about future interest rates, which in turn reflect the condition of the economy. A large spread means that the interest rates expected to rise, when typically occurs when economic activity increases.
- *Index of consumer expectations.* This is a direct measure of expectations, based on a survey conducted by the University of Michigan's Survey Research Center. Increased optimism about future economic conditions among consumers suggests increased consumer demand for goods and services, which in turn will encourage business to expand production and employment to meet the demand.

The index of leading indicator is far from a precise predictor of the future, but it is one input into planning by both businesses and the government. (N. Gregory Mankiw (2007), *Macroeconomics*, Worth Publishers, 6-th edition, New York)

**New Home Sales** is an index that concerns the size of the newly built homes that must be sold during each month from their completion of their construction. Its importance is very big since it is connected with the consumer's economic earnings. So, a reduction in this index affect the economy of the United States and of Europe respectively and predict the future of each one of these economies. Also, in this index does not be included houses that have been built for other reasons except for selling. These sellings must be accompanied by the signature of the consumer in the contract of sale. In the circumstance that a sale will not take place, then it does not be reduced the number of sales that have been recorded and it will not be noted another sale when the cancelled sale spend on a new customer.

**IFO Business Climate** is an index that shows us the expectations of German firms as regards the economic situation in the next six months. The investigation takes place in German businesses. Their answers will be positive, negative or neutral.

The institute in which this research takes place is the Ifo institute for economic Research which is established in Germany. The objectives of this institute is to:

- Provide financial information to the public through seminars or presentations that are organized by their analysts or other economists.
- Present data and results from its researches.
- Provide counselling services to state institutions.
- Develop models of simulation of effects of the market in the economy
- Cooperate with Universities to make new researches.

Also, this institution does not have speculative nature and its only target is to make researches of economic and social character. The 2/3 of its funding comes from public funding. It consists of 150 people from whom the half of them are the researchers.

Finally the **ZEW survey**, that is arising out of the ZEW Financial Market Survey is the net percentage of positive and negative responses of the respondents on the question of future economic growth in the next six months. It represents the difference between positive and negative responses in a survey of about 350 institutional investors and analysts. For example: If 30 percent of respondents believe the economic situation will improve and 40 percent believe it will get worse, the result is a balance for economic expectations of -10. The proportion of those who do not expect a change in the economy, plays no role for the balance. Specifically, the questions are relevant to the below parts of economy, such as the inflation, the interest rates, the exchange rates, as well as the course of stock.

**Retail Sales**, are considered an important index that shows to us the monthly activity of the market as well as the consumer's habits and the spending power of them anytime. In other words is a business cycle indicator which shows the monthly activity of the retail sector in value and volume. It is a short-term indicator for final domestic demand. It is computed as the total number of receipts in retail sales under a sample of shops. Also, it shows to us the consumer's degree of confidence in the situation of the economy and in their consuming power. This seems from the fact that

the consumer when they are reluctant to consume then the index of retail sales becomes bigger otherwise it is decreased. Moreover, retail sales do not include the motor vehicles and motorcycles because of their big cost since if they are included these, then the retail sales will not be representative since they will be the one quarter of this. It should be noted that the volume of sales is different from the volume of (retail) trade services. The latter takes account of changes in the quality of the trade service supplied. As such the volume of sales is conceptually different from the index of production which takes account of quality changes. Lastly, it is known that retail sales are volatile anytime because of a number of factors such as the seasonality and the political and social circumstances that affect the psychology of consumers and can create uncertainty.

I also collect a set of 240 unscheduled news announcements, Table 17 provides the complete list of them. This list includes news that are divided in the following three categories: i/financial news that may move financial markets substantially, ii/news that are related to the political situations as well as iii/news releases that are related to physical disasters and threats for the human health. I select those by using the news that Jiang, Konstandinidi and Skiadopoulos (2012) used in their paper and the rest of them is collected by the Bloomberg.

#### SECTION 4 .METHOD OF QUANTIFYING NEWS ANNOUNCEMENTS:SCHEDULED AND UNSCHEDULED RELEASES

To find the effect of news announcements on spreads between Greece and German bond prices, I construct a surprise variable for the scheduled releases an announcement dummy for the unscheduled ones.

In the case of scheduled announcements I use the absolute value of the standardized surprise  $S_{i,t}$  for all the above indices that I mentioned. This measure has been used by others in their papers, as I mentioned before,(see e.g **Andersen, Bollerslev, Diebold and Vega (2007)**, **Golbergand Leonard (2003)** , **Balduzzi, Elton and Green (2001)** and **Jiang, Konstandinidi and Skiadopoulos (2012)** ) it is defined as

$$S_{i,t} = \frac{A_{i,t} - F_{i,t}}{\sigma_i} \quad (1)$$

$A_{i,t}$  ( $F_{i,t}$ ) is the announced value(Bloomberg forecast) for the i-th index between time t-1 and t, and the  $\sigma_i$  is the standard deviation for the  $A_{i,t}-F_{i,t}$  of the announcements for the i-th economic variable for the whole sample period. In the case when there is no announcement, this variable takes a zero value. The standardization helps us to be comparable the announcements since all of these differ in the units of measurement. Lastly, I used the absolute value of equation (1) that helps me to avoid the differences of sign between the indexes and in each one of them.

For the unscheduled news announcements, I construct the announcement dummy  $D_t$  which takes the value 1 when an unscheduled news announcement occurs at day t, otherwise it takes the value 0.

## SECTION 5 REGRESSIONS

### 1. Which of the U.S. and European surprise variables affect the yield to maturity of Greek bonds, the yield to maturity of German bonds and the spreads between Greek and German bond prices?

To analyze the effect of the economic news announcements, I run the following regressions having as dependent variables the yield to maturity of Greece, the yield to maturity of German, as well as their differential, which is the spread between Greek and German bonds for the whole sample. In addition, I run regressions for the period before (04/08/2003-29/12/2006) and after (1/01/2007-28/09/2012) the crisis as well as separately for the surprise variables of U.S., of the Europe, and together for both of them. So, the regression equation is the

$$Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j \quad (2)$$

where the superscript  $j$  indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and  $K$  equals the number of surprise variables for the 19 scheduled news announcements if I use both of U.S. and Europe announcements, 11 scheduled announcements when I run the regressions for the U.S. announcements and 9 scheduled announcements if I run regressions for the Europe announcements. The  $a^j$  is the intercept or constant term and the coefficient  $a_k^j$  measures the impact of each of the 19 different announcements  $k$  depending the regression. The  $S_k$  is the surprise variable for each of the 19 different announcements. The  $e_t^j$  is the residuals of the regression.

From each regression, I use the least squares method from which I can find if each surprise of the each announcement affect the three different dependent variables. So, the null hypothesis is  $H_0 : a_k^j = 0$ . If the null hypothesis is rejected then the surprise variables are statistically significant. Also, I check each regression for autocorrelation with the Correlogram Q-statistics in Eviews where the null hypothesis is  $H_0$  : I do not have autocorrelation and for heteroskedasticity with Correlogram Squared residuals where the null hypothesis is  $H_0$  : I have homoskedasticity. In the regressions on which I have only the heterodasticity I use the White test to correct it.

## 2. Do the unscheduled news announcements affect the yield to maturity of Greek bond, of German bonds and the spreads between Greek and German bonds?

To analyze the effect of the unscheduled news announcements in the three dependent variables, for which I used the dummy variables as I referred above, I run the following regression:

$$Y_t^j = a^j + a_k^j D + e_t^j \quad (3)$$

where the superscript  $j$  indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German. The variable  $D$  indicates the dummy variable that takes the value 1 if the announcement occurs at day  $t$ , otherwise it takes the value 0. The  $e_t^j$  is the residuals of the regression. The null hypothesis for this regression is  $H_0 : a^j = 0$ . If the null hypothesis is rejected then the dummy variables that is to say the unscheduled news announcements are statistically significant. Also, I check each regression for autocorrelation with the Correlogram Q-statistics in Eviews where the null hypothesis is  $H_0$  :I do not have autocorrelation and for heteroskedasticity with Correlogram Squared residuals where the null hypothesis is  $H_0$  :I have homoskedasticity. In the regressions on which I have only the heteroskedasticity I use the White test to correct it.

## 3. Do the scheduled and the unscheduled news announcements affect the yield to maturity of Greek bond, of German bonds and the spreads between Greek and German bonds?

To analyze the effect of the scheduled and unscheduled news announcements in the three dependent variables, for which I used the surprise and the dummy variables as I referred above, I run the following regression:

$$Y_t^j = a^j + \sum_{k=1}^K a_k^j S_{k+} + b_k^j D + e_t^j \quad (4)$$

where the superscript  $j$  indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German. The variable  $D$  indicates the dummy variable that takes the value 1 if the announcement occurs at day  $t$ , otherwise it takes the value 0. The  $e_t^j$  is the residuals of the regression. The null hypothesis for this regression is  $H_0 : a^j = 0$  or  $H_0 : b_k^j = 0$ . If the null hypothesis is rejected then the dummy variables that is to say the unscheduled news announcements are statistically significant or the surprise variables, to be more specific the scheduled announcements are statistically significant. Also, I check each regression for autocorrelation with the Correlogram Q-statistics in Eviews where the null hypothesis is  $H_0$  : I do not have autocorrelation and for heteroskedasticity with Correlogram Squared residuals where the null hypothesis is  $H_0$  : I have homoskedasticity. In the regressions on which I have only the heteroskedasticity I use the White test to correct it.

#### 4. The effect of news releases on the yield to maturities

In this part, I analyze the effect between the yield to maturity of Greek bonds and the yield to maturity of German bonds and the impact of scheduled and unscheduled news announcements on the yield to maturities. The null hypothesis ( $H_0$ ) is the one yield to maturity does not affect the other, once we account for the surprise effect of scheduled releases and the announcement effect of unscheduled releases. I run the regression by considering a VAR (2) model .

$$YTMgr_t = c_1 + \sum_{i=1}^p \delta_{1,i} YTMgr_{t-i} + \sum_{j=1}^p \gamma_{1,j} YTMger_{t-j} + \sum_{k=1}^{19} \beta_k S_k + AD_t + u_{1,t} \quad (5)$$

$$YTMger_t = c_2 + \sum_{i=1}^p \delta_{2,i} YTMgr_{t-i} + \sum_{j=1}^p \gamma_{2,j} YTMger_{t-j} + \sum_{k=1}^{19} c_k S_k + BD_t + u_{2,t} \quad (6)$$

where  $YTMgr_t$ : yield to maturity of Greek bonds

$YTMger_t$ : yield to maturity of German bond

The results give us a vector (2x2) for the changes in the yield to maturity of Greek bonds and between day  $t-i$  to day  $t$ , and a vector (2x2) for the changes in the yield to

maturity of German bonds,  $c_1$  and  $c_2$  give us a vector of constants (2x1). Also,  $\beta_k$  and  $c_k$  are the coefficients for the surprise variables for the yield to maturity of Greece and corresponding the yield to maturity of German. A and B are the coefficients of the dummy variables and  $u_{1,t}$  and  $u_{2,t}$  give us a vector (2x1) for the residuals.

A vector autoregression model (VAR(p)) describes the dynamic evolution of a number of variables from their own history. To take a var model there must be endogeneity which is usually caused by the simultaneity. To be more specific, simultaneity there is when one variable might be influenced contemporaneous by the dependent variable which is a common feature in economics and finance as well as in this situation since for example spreads can be influenced simultaneous by the news announcements. In this situation there is endogeneity between yield to maturity of Greece and yield to maturity of Germany and the other variables, to be more specific the surprise variables and the dummy variables are exogenous. Before we decide if we must take var or vec model we must take a test for cointegration for the non-stationary series yield to maturity of German and yield to maturity of Greece. I do this test to check if from the series that are under examination are integrated of the same order  $I(k)$  and there is a linear combination of these series that produce a stationary series  $I(0)$ , then the series are said to be cointegrated. To check this, I made the Johansen method to find out if there is any cointegration test. In this situation there is no cointegration, so I take my two stationary time series yield to maturity of German and yield to maturity of Greece and I run the equation (4) and (5) for the var model to find out if the one yield affect the other. The drawback of this model is the over parameterization. So to avoid this we must decide before we run this regression, its lags (p). To decide the number we use the Akaike criterion in Eviews that help us to decide the actual number of lags that in this regression is two(2).

On contrary, if we had cointegration test then we run vec model. To do this we add in the above equation the number of explanatory variables known as error mechanisms to correct the model.



## **SECTION 6 RESULTS:**

Firstly, I used the white test to correct the Heteroskedasticity not in all the regressions. When I run the regression having as dependent variable the yield to maturity of Germany and as independent variables the surprises either of Europe or of U.S. or both of them for the whole sample and for the sample after the crisis.

Secondly, from the results of the following tables I can see that for the whole sample only one of the dependent variables, this of yield to maturity of German bonds, is affected by the following announcements. From table 3 I can see that is affected only by Initial Jobless Claims. From Table 4 I can see that is affected from European Consumer Confidence Index, ECB rate announcement, European GDP, and European Consumer Price Index. And from table 5 where I run the regression for both the European and U.S., announcements the yield to maturity of German bonds is affected by the Initial Jobless Claims, ECB rate announcement, European GDP, and European Consumer Price Index. The spreads are not affected by none of the announcements.

So, i infer that the spreads between Greek and German bonds are not affected by any of the scheduled announcements as the following tables in the appendix shows us. As I have read from the previous literature this happens due to the fact that my data are daily (closing prices) and not intra-day to can see their affect any minute during the market of bonds is open. Balduzzi, Elton, Green, (2001) and Andersen, Bollerslev, Diebold, Vega(2007) who have used higher frequency data over shorter sample periods have found a significant intraday reaction by some of these markets to macroeconomic news, often within minutes of their release. As well as Ederington and Lee (1993) studied the effects on announcements every one and five minute interval in each circumstance.

Following the process from general to specific I cannot conclude to any result for the whole sample having as dependent variable the spreads of Greek and German bond prices. By this I mean that I drop out each time the variable that have the biggest probability until I manage to find a result that show to us the most significant of them that have an effect on each of the dependent variables.

Secondly, regarding the period of time before crisis I can see that the yield to maturity of Greek bonds react to the Initial Jobless Claims and Nonfarm Payrolls and the yield

to maturity of German react to the Initial Jobless and the U.S. Producer Price Index when I run the regression with the U.S. announcements. Also, when I run the regression having as independent variables the European announcements the yield to maturity of Greek and of the German bonds is affected by Producer Price Index of Europe, ZEW Survey, and IFO Business Climate. In addition, when I run the regressions for both the European and U.S. announcements the yield to maturity of Greek bond is affected by Initial Jobless Claims and Nonfarm Payrolls, Consumer Confidence Index of U.S. and of Europe, the Producer Price Index of Europe, the ZEW Survey, and IFO Business Climate. As for the yield to maturity of German bonds is affected by the same with this of Greek bonds except for European Consumer Confidence Index. Again none of the surprise variables affect the spreads.

In the period before the crisis I do not include in my study the FOMC rate announcement and the ECB rate announcement since there is a linear relationship between ECB with each of the yield to maturity of Greek bonds, yield to maturity of German bonds, and the spreads between Greek and German bonds. So, I had the problem of multicollinearity since the covariance is zero (since for the period before crisis all actual prices are equal to forecast prices) during this period for the aforementioned. This drive me to the conclusion that the correlation of the FOMC and of ECB with each one of them does not exist. This happens since the  $\text{var}(ecb)=0$  and  $\text{var}(fomc) = 0$  that is in the denominator of the following equation (7).

$$\text{corr}(x, \text{spread}) = \frac{\text{cov}(ecb, \text{spread})}{\sqrt{\text{var}(x)} * \sqrt{\text{var}(\text{spread})}} \quad (7)$$

where  $x = \text{fomc}$  or  $ecb$

Moreover, I run the same regressions for the period after the crisis and I infer that only the ECB rate announcement, the GDP and the Consumer Price Index of Europe affect the yield to maturity of German when I run the regressions having as independent variables only the announcements of U.S. and in the case having both of European and U.S. announcements.

Another characteristic that it is different from my investigation is that, in some studies, they do not investigate the effect of each of the announcements by using surprise variables but they relied on dummy variables that measured the average impact of each of them without taking into account the particular numbers of them.

For example, Fleming and Remolona (1997), used dummy variables for announcement days to isolate the announcement's effects. Similarly, Culha, Ozatay and Sahinbeyoglu (2006) used dummy variables by distinguishing the announcements in good and bad news to study the effect of them on Turkish spreads. As well as Ederington and Lee (1993) used the dummy variables to find the impact of the announcements. Even, Fleming and Remolona (1999) pooled together CPI, PPI, and unemployment rate without being able with this way to separate the influence of each one of them by distinguishing them in these two categories of announcement and non-announcement days.

On the contrary, in several studies, as that of Goldberg and Leonard (2003) who used surprise variables to examine how the news that are contained in these economic announcements are able to influence sovereign bond markets. Also, Balduzzi, Elton and Green (2001) and Andersen, T.G, Bollerslev, Diebold and Vega(2007), used surprise variables to examine how these affect the announcements since they contain the actual and forecast numbers of them and are comparable since they are divided by the corresponding standard deviation. Finally, Jiang, Konstandinidi and Skiadopoulos (2012) constructed the surprise variables that takes into account the timing and the content of the respective release as the others. So, all of them were my basic predecessor to my analysis since I wanted to examine and find the results by using the actual content and timing of these news announcements and with this way I will be able to distinguish the different components of the announcements.

Thirdly, the  $R^2$  shows us how near to reality is the results. In all the the regressions I have already analysed this variable has small prices which are not near to the price one(1) to make us understand if the surprise variables explain all the dependent variables.

Fourth, it is important to note that I have been able to separate the effects of variables that happen at the same time such as the Nonfarm Payroll and the Producer Price Index that are announced at 08:30am ET. By using the surprise variables that I have calculated with the forecast prices that I have found from Bloomberg I can be able by knowing the surprise components of these two announcements to separate their influence. So, from the table 3 I can see that the Initial Jobless Claims is more important than the Producer Price Index of U.S. I can see that Initial Jobless Claims

affect the yield to maturity of German bonds in contrast with Producer Price Index of U.S.

Fifth, for the regressions having as independent variables the unscheduled announcements (dummy variables) for the three different periods (whole period, before and after crisis) only the yield to maturity of Greek and German bonds is affected by them for the period before the crisis. Also, I used the White test because of the existence of heteroskedasticity for the yield to maturity of German bonds for the regressions for the whole sample and for the sample after the crisis.

Finally, from the results of the VAR (2) model, I can infer that only the yield to maturity of German can affect the yield to maturity of Greece as it is obvious from the table 19.

As from the figure (1) which show to us the evolution of spread in time is obvious that between the years 2011-2012 its values spans between 743 basis points to 3190 basis points. From the table 17 with the unscheduled announcements I can see that in this period Greece passes difficult political and economical moments since there is an intense fear of all the Europe that this country will not be able to overcome its problems.

#### **SECTION 7 CONCLUSION:**

In this dissertation, I investigated the effect of news announcements on yield to maturity of Greek and German bonds and on spreads between Greek and German bonds. I was looking for any significance for the whole sample as well as for two subperiods before and after crisis. I used a comprehensive list of scheduled and unscheduled U.S. and European events. I concluded that my daily data (closing prices) do not help me to find any important result for the spreads between Greek and German bonds. Only separately these two yield to maturities were affected by the surprise variables of these news announcements. But, in my opinion the most important fact is that I used the surprise variables that give us the opportunity to use all the information of these announcements (timing and content and the latter includes the actual and the forecast price of each announcement) in the regressions.

## APPENDIX

### US ANNOUNCEMENTS:

	Units	Source of report	Time of Release	Frequency	N
Non-Farm Payroll(NFP)	Thousands	Bureau of Labor Statistics	08:30amET	Monthly	109
Consumer Confidence Index(CCI)	Percent	Conference Board	10:00amET	Monthly	109
Consumer Price Index(CPI)	%(change)	Bureau of Labor Statistics	08:30amET	Monthly	109
Producer Price Index(PPI)	Percent	Bureau of Labor Statistics	08:30amET	Monthly	109
Durable Goods of Orders(DGO)	%(change)	U.S. Census Bureau	08:30amET	Monthly	109
FOMC rate announcement(FOMC)	Percent	Federal Reserve	14:15amET	FED meets 8 times per year	74
Gross Domestic Product(GDP)	Percent	Bureau Of Economic Analysis	08:30amET	Quarterly	38
Initial Jobless Claims(IJC)	Thousands	Department of Labor	08:30amET	Weekly	478
Leading Indicators(LI)	%(change)	Conference Board	10:00amET	Monthly	110
New Home Sales(NHS)	Thousands	U.S. Census Bureau	10:00amET	Monthly	108
Retail Sales(RS)	Percent	U.S. Census Bureau	08:30amET	Monthly	109

**Table 1:** The above and the following table describe the 19 different news announcements in U.S. and in Europe. It consists of their name, the units that each one is calculated, the time of their release (in Eastern time), the frequency of their release each year, and the number of the data for each one that I used in my dissertation.

**EU ANNOUNCEMENTS:**

	Units	Source of report	Time of Release	Frequency	N
ECB Rate Announcement(ECB)	Percent	European Central Bank	From 06:45am to 08:45amET	FED meets 11 times per year	96
Euro-Zone Consumer Confidence(EU-CCI)	Percent	European Commission	From 04:00am to 10:00amET	Monthly	109
Euro-Zone Consumer Price Index(EU-CPI)	Percent	Eurostat	From 05:00am to 06:00amET	Monthly	109
Euro-Zone Gross Domestic Product(EU-GDP)	Percent	Eurostat	From 05:00am to 06:00amET	Quarterly	41
Euro-Zone Producer Price Index(EU-PPI)	Percent	Eurostat	05:00am ET	Monthly	109
Euro-Zone Retail Sales(EU-RS)	Change(%)	Eurostat	From 05:00am to 06:00amET	Monthly	109
Ifo Business Climate(Ifo)	Number	Ifo Institute	From 04:00am to 06:00amET	Monthly	105
ZEW Survey(ZEW)	Number	Center for European Economic Research	05:00am ET	Monthly	104

**Table 1 (continue)**

Summary statistics for the levels:

	Yield to maturity of Greece	Yield to maturity of German	Spread
#Observations	2391	2391	2389
Mean	8.288	3.398	4.877
Std.Deviation	7.648	0.818	8.321
Skeweness	2.073	-0.843	2.006
Kurtosis	6.393	2.977	6.050
Jarque-Berra	<b>2860.051*</b>	<b>283.573*</b>	<b>2528.632*</b>
P <sub>1</sub>	<b>0.998*</b>	<b>0.997*</b>	<b>0.996*</b>
ADF	-0.269726	-1.303011	0.463831

Summary statistics for the first differences:

	Yield to maturity of Greece	Yield to maturity of German	Spread
#Observations	2390	2390	2387
Mean	0.006342	-0.001151	0.007252
Std.Deviation	0.455955	0.046366	8.321019
Skeweness	-26.43130	0.022139	-26.92633
Kurtosis	1050.203	4.684993	6.050312
Jarque-Berra	<b>1.09E+08*</b>	<b>282.9323*</b>	<b>1.03E+08*</b>
P <sub>1</sub>	0.026	0.032	0.034
ADF	<b>-45,577*</b>	<b>-47,287*</b>	<b>-47,189*</b>

**Table 2:** Summary Statistics. Entries report the summary statistics for Yield to maturity of Greece and German and of spreads in the levels and the daily first differences. The first order autocorrelation  $\rho_1$ , the Jarque-Bera and the Augmented Dickey Fuller (ADF) test values are also reported. One and two asterisks denote rejection of the null hypothesis at the 1% level. The null hypothesis for the first order autocorrelation, Jarque-Bera and the ADF tests is that the first order autocorrelation is zero, that the series is normally distributed and that the series has a unit root, respectively. The sample spans the period August 1, 2003-September 28, 2012.

The following tables show us the results of the coefficients and the respective values of t-tests. One or two or three asterisks denote rejection of the null hypothesis of zero coefficients at 1% and 5% 10% level, respectively.

	Yield to Maturity of 10Y Greek bonds	Yield to Maturity of 10y Germa 1 bonds	Spreads
	Coeff. t-stat.	Coeff. t-stat	Coeff. (t-stat)
C	0.006 (0.58)	-0.000 (-0.83)	0.007 (0.69)
FOMC	-0.00 (-0.08)	-0.000 (-0.35)	-0.000 (-0.00)
DGO	0.000 (0.25)	0.000 (0.58)	0.00 (0.20)
IJC	0.000 (0.10)	<b>0.000*</b> (9.31)	-0.00 (-0.03)
LEI	-0.000 (-0.44)	-0.000 (-0.84)	-0.000 (-0.37)
NHS	0.000 (0.08)	-0.000 (-0.65)	0.000 (0.15)
NFP	0.000 (0.02)	-0.000 (-0.52)	-0.000 (-0.02)
USCPI	-0.001 (-0.68)	-0.000 (-1.26)	-0.001 (-0.55)
USGDP	-0.000 (-0.44)	0.000 (0.82)	-0.001 (-0.51)
USCCI	0.000 (0.11)	-0.000 (-0.81)	0.000 (0.01)
USPPI	0.000 (0.04)	-0.000 (-0.71)	0.000 (0.01)
USRS	0.000 (0.86)	0.000 (1.15)	0.000 (0.71)
R <sup>2</sup>	0.0007	0.0035	0.0005

**Table 3:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 11 U.S. scheduled news announcements for the whole sample (01/08/2003-28/09/2012).



	Yield to Maturity of 10Y Greek bonds	Yield to Maturity of 10Y German bonds	Spreads
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.003 (0.39)	-0.001 (-1.20)	0.004 (0.48)
EUCCI	-0.001 (-0.16)	<b>-0.001**</b> (-1.96)	-0.000 (-0.01)
ECB	0.299 (0.81)	<b>0.142*</b> (2.74)	0.157 (0.42)
EUPPI	0.007 (0.18)	-0.000 (-0.15)	0.008 (0.19)
ZEW	0.000 (1.21)	-0.000 (-0.33)	0.000 (1.29)
EUGDP	0.000 (0.03)	<b>0.000**</b> (2.44)	-0.000 (-0.03)
IFO	-0.000 (-0.54)	-0.000 (-1.05)	-0.000 (-0.46)
EURS	0.015 (0.59)	0.000 (0.32)	0.014 (0.56)
EUCPI	0.007 (0.08)	<b>0.004**</b> (2.47)	0.0003 (0.03)
R <sup>2</sup>	0.0010	0.0076	0.00092

**Table 4:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 8 Europe scheduled news announcements for the whole sample (01/08/2003-28/09/2012).

	Yield to Maturity of 10Y Greek	Yield to Maturity of 10Y German	Spreads
	bonds	bonds	
	Coeff. (t-stat)	Coeff (t-stat)	Coeff. (t-stat)
C	0.003 (0.34)	-0.000 (-0.86)	0.004 (0.44)
FDTR	-0.000 (-0.08)	-0.000 (-0.34)	-0.000 (-0.00)
DGO	0.000 (0.28)	0.000 (0.60)	0.000 (0.23)
IJC	0.000 (0.11)	<b>0.000*</b> (9.31)	-0.000 (-0.01)
LEI	-0.000 (-0.41)	-0.000 (-0.83)	-0.000 (-0.34)
NHS	0.000 (0.10)	-0.000 (-0.64)	0.000 (0.17)
NFP	0.000 (0.00)	-0.000 (-0.53)	-0.000 (-0.05)
USCPI	-0.001 (-0.66)	-0.000 (-1.26)	-0.001 (-0.53)
USGDP	-0.001 (-0.43)	0.000 (0.83)	-0.000 (-0.50)
USCCI	-0.000 (0.17)	-0.000 (-0.66)	0.000 (0.06)
USPPI	-0.000 (-0.13)	-0.000 (-0.71)	-0.000 (-0.07)
USRS	0.000 (0.78)	0.000 (1.16)	0.000 (0.63)
EUCCI	-0.001 (-0.18)	-0.001 (-1.93)	-0.000 (-0.02)
ECB	0.299 (0.81)	<b>0.142*</b> (2.73)	0.157 (0.42)
EUPPI	0.007 (0.18)	-0.000 (-0.17)	0.008 (0.19)
ZEW	0.000 (1.14)	-0.000 (-0.44)	0.000 (1.22)
EUGDP	0.000 (0.01)	<b>0.000**</b> (2.51)	-0.000 (-0.06)
IFO	-0.000 (-0.56)	-0.000 (-1.11)	-0.000 (-0.48)
EURS	0.001 (0.60)	0.000 (0.37)	0.015 (0.57)
EUCPI	0.001 (0.11)	<b>0.005*</b> (2.90)	0.004 (0.05)
R <sup>2</sup>	0.0017	0.0111	0.0014

**Table 5:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the whole sample (01/08/2003-28/09/2012).

	Yield to Maturity of 10Y Greek bonds	Yield to Maturity of 10Y German bonds	Spreads
	Coeff. (t-stat)	Coeff (t-stat)	Coeff. (t-stat)
C	0.004 (0.37)	-0.000 (-0.83)	0.004 (0.45)
FDTR	-0.000 (-0.06)	-0.000 (-0.34)	0.000 (0.00)
DGO	0.000 (0.29)	0.000 (0.61)	0.000 (0.23)
IJC	0.000 (0.11)	<b>0.000*</b> (9.31)	-0.000 (-0.01)
LEI	-0.000 (-0.41)	-0.000 (-0.83)	-0.000 (-0.34)
NHS	0.000 (0.10)	-0.000 (-0.64)	0.000 (0.17)
NFP	0.000 (0.00)	-0.000 (-0.54)	-0.000 (-0.05)
USCPI	-0.001 (-0.65)	-0.000 (-1.26)	-0.001 (-0.52)
USGDP	-0.001 (-0.43)	0.000 (0.83)	-0.000 (-0.50)
USCCI	-0.000 (0.17)	-0.000 (-0.66)	0.000 (0.07)
USPPI	-0.000 (-0.13)	-0.000 (-0.72)	-0.000 (-0.08)
USRS	0.000 (0.78)	0.000 (1.16)	0.000 (0.63)
EUCCI	-0.001 (-0.18)	-0.001 (-1.93)	-0.000 (-0.02)
ECB	0.30 (0.81)	<b>0.142*</b> (2.74)	0.157 (0.42)
EUPPI	0.007 (0.18)	-0.000 (-0.17)	0.008 (0.19)
ZEW	0.000 (1.14)	-0.000 (-0.44)	0.000 (1.22)
EUGDP	0.000 (0.01)	<b>0.000**</b> (2.51)	-0.000 (-0.06)
IFO	-0.000 (-0.55)	-0.000 (-1.11)	-0.000 (-0.47)
EURS	0.001 (0.60)	0.000 (0.37)	0.015 (0.57)
EUCPI	0.001 (0.11)	<b>0.005*</b> (2.90)	0.004 (0.05)
UNSCH.	-0.006 (-0.16)	-0.000 (-0.08)	-0.003 (-0.09)
R <sup>2</sup>	0.0017	0.0111	0.0014

**Table 6:** Entries report results from the L.S.  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_{k,t} + b_k^j D + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the whole sample(01/08/2003-28/09/2012).

**RESULTS BEFORE CRISIS(04/08/2003-29/12/2006)**

	YIELD TO MATURITY OF 10Y GREEK BONDS		YIELD TO MATURITY OF 10Y GERMAN BONDS		SPREADS
	Coeff. t-stat.		Coeff. t-stat		Coeff. (t-stat)
C	0.000 (0.46)		0.000 (0.30)		0.000 (0.67)
FDTR	-		-		-
DGO	-0.000 (-1.03)		-0.000 (-1.01)		-0.000 (-0.83)
IJC	<b>0.001**</b> (1.80)		<b>0.000***</b> (1.84)		-0.000 (-0.29)
LEI	-0.000 (-0.11)		-0.000 (-0.21)		0.000 (0.40)
NHS	-0.000 (-0.98)		-0.000 (-0.92)		-0.000 (-0.32)
NFP	<b>-0.000**</b> (-1.71)		-0.000 (-1.67)		-0.000 (-0.05)
USCPI	-0.000 (-0.79)		-0.000 (-0.42)		-0.000 (-1.40)
USGDP	0.000 (1.09)		0.000 (1.04)		0.000 (0.11)
USCCI	0.000 (1.32)		0.000 (1.42)		-0.000 (-0.46)
USPPI	-0.000 (-1.60)		<b>-0.000***</b> (-1.69)		0.000 (0.47)
USRS	-0.000 (-0.01)		-0.000 (-0.03)		0.000 (0.00)
R <sup>2</sup>	0.016		0.0167		0.0034

**Table 7:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 11 U.S. scheduled news announcements for the sample before crisis (01/08/2003-31/12/2006).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.000 (0.45)	0.000 (0.34)	0.000 (0.44)
EUCCI	-0.001 (-1.46)	-0.001 (-1.41)	-0.000 (-0.07)
ECB	-	-	-
EUPPI	<b>0.049**</b> (1.95)	<b>0.049**</b> (1.91)	0.000 (0.02)
ZEW	<b>-0.000**</b> (-2.42)	<b>-0.000**</b> (-2.37)	-0.000 (-0.20)
EUGDP	0.000 (0.70)	0.000 (0.56)	0.000 (0.49)
IFO	<b>-0.000**</b> (-2.46)	<b>-0.000**</b> (-2.43)	0.000 (0.08)
EURS	-0.001 (-0.49)	-0.001 (-0.31)	-0.000 (-0.53)
EUCPI	-0.003 (-0.078)	-0.001 (-0.22)	0.007 (0.59)
R <sup>2</sup>	0.0209	0.0200	0.0010

**Table 8:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 9 Europe scheduled news announcements for the sample before crisis (01/08/2003-31/12/2006).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.001 (0.95)	0.001 (0.79)	0.000 (0.66)
FDTR	-	-	-
DGO	-0.000 (-1.21)	-0.000 (-1.10)	-0.000 (-0.20)
IJC	<b>0.000***</b> (1.79)	<b>0.000***</b> (1.83)	-0.000 (-0.29)
LEI	-0.000 (-0.20)	-0.000 (-0.30)	0.000 (0.37)
NHS	-0.000 (-1.06)	-0.000 (-1.00)	-0.000 (-0.32)
NFP	<b>-0.000**</b> (-1.98)	<b>-0.000**</b> (-1.96)	0.000 (0.04)
USCPI	-0.000 (-0.92)	-0.000 (-0.54)	-0.000 (-1.42)
USGDP	0.000 (1.05)	0.000 (1.00)	0.000 (0.11)
USCCI	<b>0.000***</b> (1.71)	<b>0.000***</b> (1.80)	-0.000 (-0.46)
USPPI	-0.000 (-1.62)	<b>-0.000***</b> (-1.70)	0.000 (0.41)
USRS	0.000 (0.28)	0.000 (0.24)	0.000 (0.14)
EUCCI	<b>-0.001***</b> (-1.72)	-0.001 (-1.68)	-0.000 (-0.03)
ECB	-	-	-
EUPPI	<b>0.052**</b> (2.07)	<b>0.052**</b> (2.04)	-0.000 (-0.01)
ZEW	<b>-0.000**</b> (-2.44)	<b>-0.000**</b> (-2.38)	-0.000 (-0.26)
EUGDP	0.000 (0.68)	0.000 (0.54)	0.000 (0.48)
IFO	<b>-0.000*</b> (-2.70)	<b>-0.000*</b> (-2.68)	0.000 (0.09)
EURS	-0.000 (-0.25)	-0.000 (-0.10)	-0.000 (-0.58)
EUCPI	0.003 (0.07)	-0.003 (-0.06)	0.006 (0.56)
R <sup>2</sup>	0.0405	0.0395	0.0045

**Table 9:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the whole sample (01/08/2003-31/12/2006).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.001 (1.07)	0.001 (0.90)	0.000 (0.69)
FDTR	-	-	-
DGO	-0.000 (-1.13)	-0.000 (-1.11)	-0.000 (-0.20)
IJC	<b>0.000***</b> (1.80)	<b>0.000***</b> (1.83)	-0.000 (-0.29)
LEI	-0.000 (-0.17)	-0.000 (-0.27)	0.000 (0.38)
NHS	-0.000 (-1.09)	-0.000 (-1.02)	-0.000 (-0.33)
NFP	<b>-0.000**</b> (-1.91)	<b>-0.000**</b> (-1.89)	0.000 (0.06)
USCPI	-0.000 (-0.96)	-0.000 (-0.58)	-0.000 (-1.43)
USGDP	0.000 (1.03)	0.000 (0.98)	0.000 (0.10)
USCCI	<b>0.000***</b> (1.75)	<b>0.000***</b> (1.84)	-0.000 (-0.45)
USPPI	-0.000 (-1.59)	<b>-0.000***</b> (-1.67)	0.000 (0.42)
USRS	0.000 (0.38)	0.000 (0.34)	0.000 (0.17)
EUCCI	<b>-0.001***</b> (-1.75)	-0.001 (-1.71)	-0.000 (-0.02)
ECB	-	-	-
EUPPI	<b>0.052**</b> (2.05)	<b>0.052**</b> (2.02)	-0.000 (-0.02)
ZEW	<b>-0.000**</b> (-2.48)	<b>-0.000**</b> (-2.41)	-0.000 (-0.27)
EUGDP	0.000 (0.67)	0.000 (0.54)	0.000 (0.48)
IFO	<b>-0.000*</b> (-2.52)	<b>-0.000*</b> (-2.51)	0.000 (0.14)
EURS	-0.000 (-0.28)	-0.000 (-0.13)	-0.000 (-0.59)
EUCPI	0.003 (0.05)	-0.003 (-0.09)	0.006 (0.55)
UNSCH.	-0.016 (-1.65)	-0.015 (-1.49)	-0.001 (-0.48)
R <sup>2</sup>	0.0405	0.0395	0.0048

**Table 10:** Entries report results from the L.S.  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_{k+} + b_k^j D + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the sample before crisis(01/08/2003-31/12/2006)

**RESULTS AFTER CRISIS(1/01/2007-28/09/2012)**

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.006 (0.39)	-0.001 (-1.31)	0.007 (0.48)
EUCCI	-0.002 (-0.09)	-0.002 (-1.09)	0.000 (0.00)
ECB	0.295 (0.63)	<b>0.144*</b> (2.74)	0.152 (0.32)
EUPPI	0.006 (0.12)	-0.000 (-0.36)	0.007 (0.14)
ZEW	0.000 (1.15)	0.000 (0.46)	0.000 (1.14)
EUGDP	0.000 (0.00)	<b>0.000*</b> (4.81)	-0.000 (-0.05)
IFO	-0.000 (-0.53)	-0.000 (-0.71)	-0.000 (-0.49)
EURS	0.024 (0.58)	0.000 (0.27)	0.023 (0.56)
EUCPI	0.006 (0.05)	<b>0.000**</b> (2.47)	0.002 (0.02)
R <sup>2</sup>	0.0014	0.0091	0.0011

**Table 11:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 9 Europe scheduled news announcements for the sample after crisis (01/01/2007-28/09/2012).



	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. t-stat.	Coeff. t-stat	Coeff. (t-stat)
C	0.009 (0.54)	-0.001 (-0.81)	0.011 (0.64)
FDTR	-0.000 (-0.07)	-0.000 (-0.33)	-0.000 (-0.01)
DGO	0.000 (0.36)	0.000 (1.40)	0.000 (0.25)
IJC	-0.000 (-0.16)	-0.000 (-0.72)	-0.000 (-0.10)
LEI	-0.000 (-0.37)	-0.000 (-0.73)	-0.000 (-0.32)
NHS	0.000 (0.34)	0.000 (0.08)	0.000 (0.34)
NFP	0.000 (0.13)	-0.000 (-0.03)	-0.000 (-0.01)
USCPI	-0.001 (-0.59)	-0.000 (-1.15)	-0.001 (-0.49)
USGDP	-0.001 (-0.48)	0.000 (0.25)	-0.001 (-0.50)
USCCI	0.000 (0.05)	-0.000 (-1.48)	0.000 (0.01)
USPPI	0.000 (0.00)	0.000 (0.12)	0.000 (0.00)
USRS	0.000 (0.82)	0.000 (1.42)	0.000 (0.68)
R <sup>2</sup>	0.0011	0.0056	0.0008

**Table 12:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 11 U.S. scheduled news announcements for the sample after crisis (01/01/2007-28/09/2012).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.004 (0.27)	-0.001 (-0.91)	0.006 (0.37)
FDTR	-0.000 (-0.05)	-0.000 (-0.32)	0.000 (0.37)
DGO	0.000 (0.40)	0.000 (1.43)	0.000 (0.28)
IJC	-0.000 (-0.08)	-0.000 (-0.73)	-0.000 (-0.02)
LEI	-0.000 (-0.34)	-0.000 (-0.71)	-0.000 (-0.29)
NHS	0.000 (0.37)	0.000 (0.16)	0.000 (0.36)
NFP	0.000 (0.14)	-0.000 (-0.00)	-0.000 (-0.00)
USCPI	-0.001 (-0.57)	-0.000 (-1.14)	-0.001 (-0.47)
USGDP	-0.001 (-0.47)	0.000 (0.27)	-0.001 (-0.49)
USCCI	0.000 (0.12)	-0.000 (-1.37)	0.000 (0.07)
USPPI	-0.000 (-0.08)	0.000 (0.02)	-0.000 (-0.08)
USRS	0.000 (0.78)	-0.000 (1.35)	0.000 (0.64)
EUCCI	-0.003 (-0.10)	-0.002 (-0.99)	-0.000 (-0.01)
ECB	0.300 (0.64)	<b>0.145*</b> (2.71)	0.154 (0.32)
EUPPI	0.006 (0.12)	-0.001 (-0.39)	0.007 (0.14)
ZEW	0.000 (1.09)	0.000 (0.32)	0.000 (1.09)
EUGDP	-0.000 (-0.07)	<b>0.000*</b> (2.30)	-0.000 (-0.11)
IFO	-0.000 (-0.54)	-0.000 (-0.72)	-0.000 (-0.50)
EURS	0.025 (0.60)	0.000 (0.27)	0.025 (0.59)
EUCPI	0.008 (0.07)	<b>0.004*</b> (3.04)	0.004 (0.03)
R <sup>2</sup>	0.0025	0.0051	0.002

**Table 13:** Entries report results from the method of Least Squares  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_k + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the sample after crisis (01/01/2007-28/09/2012).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
C	0.004 (0.30)	-0.001 (-0.98)	0.006 (0.40)
FDTR	-0.000 (-0.04)	-0.000 (-0.33)	0.000 (0.01)
DGO	0.000 (0.41)	0.000 (1.42)	0.000 (0.29)
IJC	-0.000 (-0.08)	-0.000 (-0.73)	-0.000 (-0.02)
LEI	-0.000 (-0.35)	-0.000 (-0.70)	-0.000 (-0.30)
NHS	0.000 (0.38)	0.000 (0.15)	0.000 (0.37)
NFP	0.000 (0.14)	-0.000 (-0.00)	-0.000 (-0.01)
USCPI	-0.001 (-0.56)	-0.000 (-1.15)	-0.001 (-0.46)
USGDP	-0.001 (-0.47)	0.000 (0.26)	-0.001 (-0.49)
USCCI	0.000 (0.12)	-0.000 (-1.37)	0.000 (0.07)
USPPI	-0.000 (-0.09)	0.000 (0.03)	-0.000 (-0.09)
USRS	0.000 (0.78)	0.000 (1.34)	0.000 (0.64)
EUCCI	-0.003 (-0.10)	-0.002 (-0.99)	-0.000 (-0.01)
ECB	0.300 (0.64)	<b>0.144*</b> (2.66)	0.154 (0.33)
EUPPI	0.006 (0.13)	-0.001 (-0.39)	0.007 (0.14)
ZEW	0.000 (1.09)	0.000 (0.32)	0.000 (1.09)
EUGDP	-0.000 (-0.07)	<b>0.000*</b> (2.31)	-0.000 (-0.11)
IFO	-0.000 (-0.54)	-0.000 (-0.73)	-0.000 (-0.50)
EURS	0.025 (0.60)	0.000 (0.28)	0.025 (0.58)
EUCPI	0.008 (0.07)	<b>0.004*</b> (3.06)	0.004 (0.03)
UNSC.	-0.009 (-0.16)	0.001 (0.31)	-0.007 (-0.14)
R <sup>2</sup>	0.0025	0.0051	0.002

**Table 14:** Entries report results from the L.S.  $Y_t^j = a^j + \sum_{k=1}^K a_k^j S_{k,t} + b_k^j D + e_t^j$  where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German and K equals the number of surprise variables for the 19 U.S. and Europe scheduled news announcements for the sample after crisis (01/01/2007-28/09/2012).

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. t-stat.	Coeff. t-stat.	Coeff. t-stat.
C	0.006 (0.69)	-0.001 (-1.20)	0.007 (0.77)
UNSCHEDULED ANNOUNCEMENTS	-0.006 (-0.16)	-0.000 (-0.00)	-0.003 (-0.09)
R <sup>2</sup>	0.0000	0.0000	0.0000

**Table 15:** Entries report results from the method of Least Squares  $Y_t^j = a^j + a^j D + e_t^j$  (3) where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German, D indicates the dummy variable for the whole sample (01/08/2003-28/09/2012)

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. t-stat.	Coeff. t-stat.	Coeff. t-stat.
C	0.000 (0.07)	-0.000 (-0.05)	0.000 (0.50)
UNSCHEDULED ANNOUNCEMENTS	-0.018*** (-1.86)	-0.017*** (-1.72)	-0.001 (-0.46)
R <sup>2</sup>	0.0039	0.0033	0.0001

**Table 16:** Entries report results from the method of Least Squares  $Y_t^j = a^j + a^j D + e_t^j$  (3) where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German, D indicates the dummy variable for the sample before crisis (01/08/2003-31/12/2006)

	YIELD TO MATURITY OF 10Y GREEK BONDS	YIELD TO MATURITY OF 10Y GERMAN BONDS	SPREADS
	Coeff. t-stat.	Coeff. t-stat.	Coeff. t-stat.
C	0.010 (0.70)	-0.001 (-1.32)	0.001 (0.77)
UNSCHEDULED ANNOUNCEMENTS	-0.009 (-1.17)	0.002 (0.37)	-0.008 (-0.15)
R <sup>2</sup>	0.0000	0.0000	0.0000

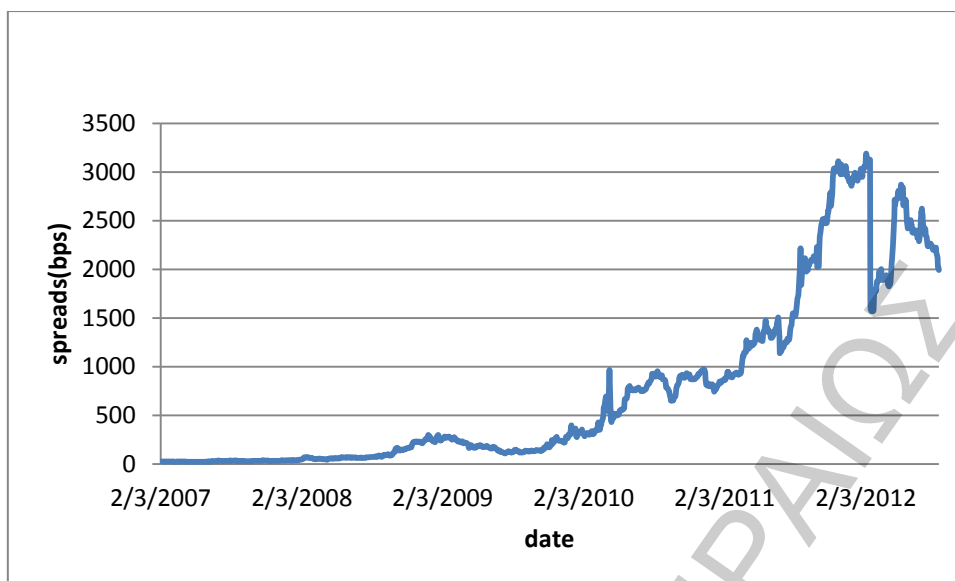
**Table 17:** Entries report results from the method of Least Squares  $Y_t^j = a^j + a^j D + e_t^j$  (3) where the superscript j indicates whether the dependent variable is the spreads between Greek and German bonds, yield to maturity of Greece or yield to maturity of German, D indicates the dummy variable for the sample after the crisis (01/01/2007-28/09/2012)

Trace test indicates no cointegration at the 0.05 level			
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Prob.**
None	0.000831	3.030044	0.8439
At most 1	0.000438	1.046082	0.3560
Max-eigenvalue test indicates no cointegration at the 0.05 level			
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Prob.**
None	0.000831	1.983962	0.9247
At most 1	0.000438	1.046082	0.3560

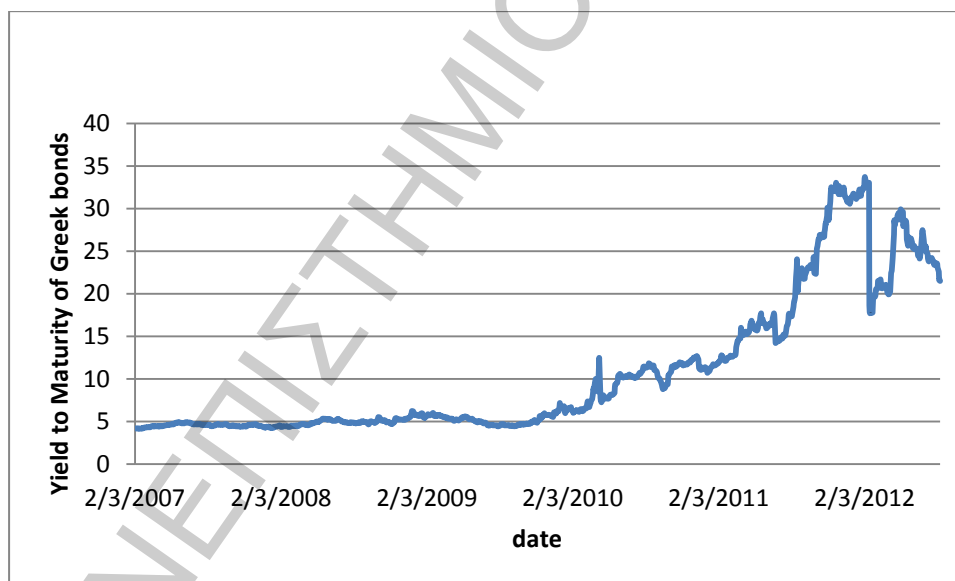
**Table 18:** Entries report results from the cointegration between the Greek and German yield to maturity of bonds (non-stationary time-series). The null hypothesis for each test is that there are no cointegration.

	YTM Greek bonds	YTM German bonds
	Coeff. t-stat.	Coeff. t-stat.
C	0.002 (0.23)	-0.000 (-0.78)
YTMGerm <sub>t-1</sub>	-0.646* (-3.19)	0.030 (1.48)
YTMGerm <sub>t-2</sub>	-0.337*** (-1.65)	-0.022 (-1.07)
YTMGreek <sub>t-1</sub>	0.026 (1.26)	-0.000 (-0.22)
YTMGreek <sub>t-2</sub>	0.032 (1.56)	-0.003 (-1.50)
FDTR	-0.001 (-0.11)	-0.000 (-0.82)
DGO	0.000 (0.15)	0.000 (0.52)
IJC	0.000 (0.18)	0.000 (1.26)
LEI	-0.000 (-0.39)	-0.000 (-0.65)
NHS	0.000 (0.15)	-0.000 (-0.47)
NFP	-0.000 (-0.039)	-0.000 (-0.82)
USCPI	-0.001 (-0.69)	-0.000 (-1.25)
USGDP	-0.001 (-0.45)	0.000 (0.73)
USCCI	0.000 (0.23)	-0.000 (-0.66)
USPPI	-0.000 (-0.16)	-0.000 (-0.56)
USRS	0.000 (0.96)	0.000 (1.33)
EUCCI	-0.001 (-0.16)	-0.001 (-1.41)
ECB	0.253 (0.68)	0.136 (3.62)
EUPPI	0.011 (0.27)	-0.000 (-0.11)
ZEW	0.000 (1.10)	-0.000 (-0.37)
EUGDP	-0.000 (-0.04)	0.000 (0.64)
IFO	-0.000 (-0.55)	-0.000 (-0.80)
EURS	0.015 (0.60)	0.001 (0.40)
EUCPI	0.014 (0.15)	0.004 (0.54)
Unscheduled	-0.009 (-0.22)	-0.000 (-0.08)
R <sup>2</sup>	0.009	0.013

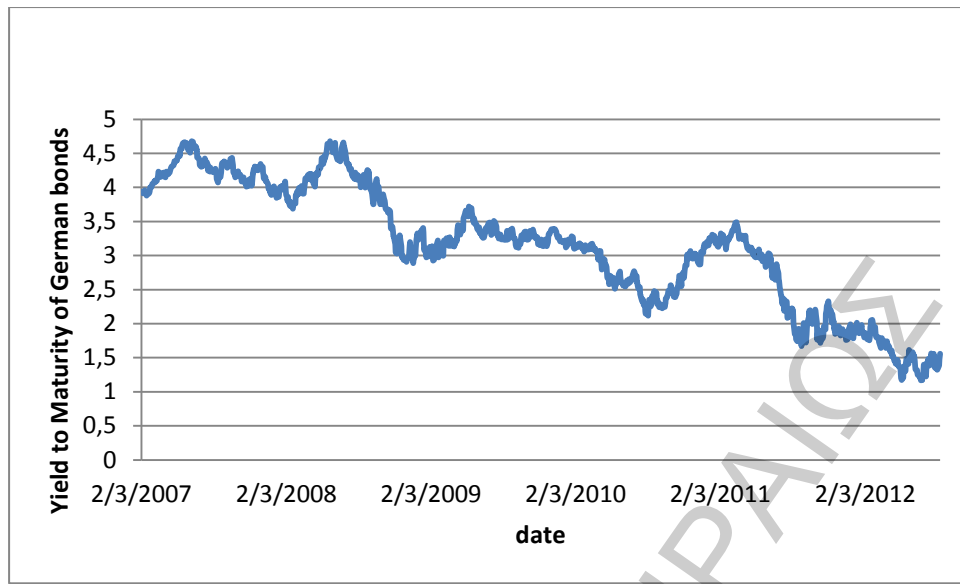
**Table 19:** Entries report results from the VAR(2) model equation (4) and (5). The coefficient estimates, t-statistics in parentheses and R<sup>2</sup>. The null hypothesis H<sub>0</sub>: is the one yield to maturity does not affect the other, once we account for the surprise effect of scheduled releases and the announcement effect of unscheduled releases for the whole sample.(01/08/2003-28/09/2012)



**FIGURE 1:** Greek spreads: the difference between the 10-year sovereign yield to maturity of Greek bonds and the 10-year sovereign yield to maturity of German bonds for the whole sample (01/08/2003-28/09/2012).



**FIGURE 2:** The 10-year sovereign yield to maturity of Greek bonds for the whole sample (01/08/2003-28/06/2012)



**FIGURE 3:**The 10-year sovereign yield to maturity of German bonds for the whole sample (01/08/2003-28/096/2012)



DATE	UNSCHEDULED ANNOUNCEMENTS	TIME
September 30,2003	U.S. Retail sales forecast lowered by bank of Tokyo.	
December 11,2003	Euro rises versus dollar as German Investor Confidence(in Europe)climbs to the higher rate in 16months.	
December 12,2003	Bomb wounds 2 polish troops in South Iraq. British pound has fifth weekly gain versus dollar on rate views.	
December 14,2003	Saddam Hussein is arrested in Iraq.	Market closed
January 1,2004	Gazprom ceased to import gas to Belarus.	Market closed
February 18, 2004	Gazprom terminated gas deliveries to Belarus.	
March 11,2004	Explosions on packed rush-hour trains in Madrid.	
May 11,2004	Rodrigo Rato, the next head of the International Monetary Fund, said to the United States should use the current period of economic prosperity to gain control of its soaring budget deficits. U.K. natural gas for delivery in the first three months of 2005 rose to record highs as traders continued to bet that suppliers may struggle to meet demand especially if freezing temperatures helping to boost consumption.	
September 25,2004	Four arrest in London on Terrorism charges.	Market closed
December 26, 2004	Magnitude 9.0 earthquake in Indonesia which triggered a tsunami.	Market closed
January 6,2005	UK pound is sixth week low against dollar .	
July 7,2005	Suicide bomb attacks on London's transport network.	
January 1, 2006	Russia cut off gas supplies passing through Ukraine in an energy price dispute.	Market closed
January 4, 2006	Russia and Ukraine reach a gas deal and the supply of gas was restored.	
February 11,2006	Italy and Greece report the first cases of bird flu.	Market closed
January 8, 2007	Russia cuts oil to Poland, Germany and Ukraine due to a dispute with Belarus.	
January 10, 2007	Russia resumes oil exports after Belarus ended the tariff.	
April 2, 2007	New Century Financial Corporation announces that it filed for Chapter 11.	
July 31,2007	Bear Stearns liquidates two hedge funds that invested in various types of mortgage-backed securities.	
August 1,2007	Gazprom sents a notification on a decrease of gas supply to the Belarusian consumers due to the default on payment commitments for the gas delivered in the first half of 2007 and the absence of any payment guarantees.	
August 9,2007	Gazprom receives the last payment from Belarus as settlement of the debt for Russian gas deliveries in the first half of 2007 and it will	

	continue to export gas to Belarus under the <u>existing Contract</u> . BNP Paribas halts redemptions on three investment funds. 26	
August 10, 2007	The Federal Reserve Board announces that it will provide reserves as necessary to promote trading in the federal funds market at rates close to the FOMC's target rate of 5.25 percent.	
August 23, 2007	Bank of America invests \$2bn in Countrywide Financial Corporation (the nation's largest mortgage lender) which struggles with a liquidity crunch.	
September 10, 2007	Blasts rip Mexico gas and oil pipelines.	
September 14, 2007	The Chancellor of the Exchequer authorised the Bank of England to provide a liquidity support facility to Northern Rock against appropriate collateral and at an interest rate premium.	
November 1, 2007	The Federal Reserve injects \$41bn in temporary reserves into the U.S. money markets.	
November 12, 2007	Citigroup, Bank of America, and JPMorganChase agree to a \$75 bn superfund to restore confidence to credit markets.	
November 15, 2007	US House of Representatives passes the Mortgage Reform and Anti-Predatory Lending Act of 2007.	
December 6, 2007	President Bush announces a plan to voluntarily and temporarily freeze the mortgage rates of a limited number of mortgage debtors holding adjustable rate mortgages.	
December 12, 2007	The Federal Reserve injects \$40B into the money supply and coordinates such efforts with central banks from Canada, United Kingdom (UK), Switzerland and European Union.	
December 18, 2007	The Federal Reserve approves measures to give mortgage holders more protection to prevent the current housing crisis from worsening further.	
January 11, 2008	Bank of America agrees to purchase Countrywide Financial.	
February 13, 2008	President Bush signs the Economic Stimulus Act of 2008 into law.	
February 17, 2008	The UK Government decided to bring forward legislation that will enable Northern Rock plc to be taken into a period of temporary public ownership.	Market closed
February 22, 2008	The UK government nationalises the troubled mortgage lender Northern Rock.	
March 16, 2008	JPMorgan Chase announced it is acquiring Bear Stearns. The Boards of Directors of both companies have unanimously approved the transaction.	
March 24, 2008	JPMorgan Chase and Bear Stearns announced an amended merger agreement regarding JPMorgan Chase's acquisition of Bear Stearns.43	
April 2, 2008	Iceland is prepared to order direct intervention	

	in the currency and stock markets in an attempt to punish international hedge funds that it claims are attacking its financial system.	
May 12, 2008	Thousands dead in Chinese quake.	
July 24, 2008	Libya's state shipping company says it has halted oil shipments to Switzerland in protest at the brief arrest of leader Muammar Gaddafi's youngest son.	
July 30, 2008	President Bush signs into law the Housing and Economic Recovery Act.	
August 8, 2008	Georgia-Russia conflict escalates	
August 16, 2008	After more than a week of hostilities, the two sides sign a French-brokered peace agreement.	Market closed
September 15, 2008	Lehman Brothers filed for Chapter 11 bankruptcy protection. Bank of America announces its intent to purchase Merrill Lynch for \$50bn.	
September 16, 2008	The Federal Reserve Board authorizes the Federal Reserve Bank of New York to lend up to \$85bn to American International Group (AIG).	
September 17, 2008	The SEC announces a temporary emergency ban on short selling in the stocks of all companies in the financial sector.	
September 19, 2008	The U.S. Treasury Department announces a temporary guaranty program that will make available up to \$50b from the Exchange Stabilization Fund to guarantee investments in participating money market mutual funds.	
September 20, 2008	The U.S. Treasury Department submits draft legislation to Congress for authority to purchase troubled assets.	
September 21, 2008	The Federal Reserve Board approved the applications of Goldman Sachs and Morgan Stanley to become bank holding companies.	Market closed
September 29, 2008	Icelandic government announced a plan to nationalise Glitnir. The U.S. House of Representatives rejects a \$700bn rescue plan for the U.S. financial system.	Market closed
October 3, 2008	The U.S. House of Representatives passes a \$700bn government plan to rescue the U.S. financial sector.	
October 6, 2008	Germany's finance ministry agreed a €50bn plan to save one of the country's biggest banks (Hypo Real Estate) from collapse. Germany said it would guarantee all private German bank accounts in an emergency move to prevent panic withdrawals amid fears about the spreading financial crisis. Fed provides \$900 bn in short-term cash loans to banks.	
October 7, 2008	Icelandic Financial Supervisory Authority took control of Landsbanki (second largest bank).	

	Fed makes emergency move to lend around \$1.3 trillion directly to companies.	
October 8, 2008	The UK government announced a package of measures aimed at rescuing the banking system that makes available £400bn of fresh money. The U.S. Federal Reserve, European Central Bank (ECB), Bank of England, and the central banks of Canada, Sweden and Switzerland make emergency interest rate cuts of half a percentage point. The Federal Reserve Board authorizes the Federal Reserve Bank of New York to borrow up to \$37.8bn in investment-grade, fixed-income securities from AIG in return for cash collateral.	
October 9, 2008	Icelandic Financial Supervisory Authority took control of Kaupthing (Iceland's largest bank). Libya blocks Swiss oil deliveries.	
October 10, 2008	Libya is to withdraw assets from Swiss banks, estimated at \$7bn, as a diplomatic row over the arrest of the Libyan leader's youngest son escalates.	
October 11, 2008	The G7 nations issue a five-point plan of "decisive action" to unfreeze credit markets, after a meeting in Washington.	
October 12, 2008	European leaders agree finance crisis battle plan.	Market closed
October 13, 2008	The UK government announces plans to pump billions of pounds of taxpayers' money into three UK banks in one of the UK's biggest nationalisations. Royal Bank of Scotland, Lloyds TSB and HBOS will have a total of £37bn injected into them.	
October 14, 2008	The U.S. treasury announced a \$250bn plan to purchase stakes in a wide variety of banks in an effort to restore confidence in the sector.	
October 16, 2008	The Federal Council, the Swiss National Bank and the Swiss Federal Banking Commission have decided on a package of measures to further stabilise the Swiss financial system and to sustainably strengthen confidence in Switzerland's financial market. The Confederation will strengthen the UBS capital base by subscribing to mandatory convertible notes to the amount of CHF 6 bn. The loan required was approved by the Finance Delegation.	
October 24, 2008	The International Monetary Fund (IMF) announced an initial agreement with Iceland on a \$2.1bn two-year loan to support an economic recovery program to help the island restore confidence in its banking system and stabilize its currency. OPEC to cut oil output by 1.5 million barrels a day.	
October 29, 2008	The IMF approved the creation of the Short-Term Liquidity Facility to establish quick-	

	disbursing financing for countries with strong economic policies that are facing temporary liquidity problems in the global capital markets.	
November 10, 2008	The Federal Reserve Board and the U.S. Treasury announced the restructuring of the government's financial support to the AIG.	
November 19, 2008	The IMF approved a two-year SDR 1.4bn Stand-By Arrangement for Iceland to support the country's program to restore confidence and stabilize the economy.	
November 23, 2008	The U.S. government entered into an agreement with Citigroup to provide a package of guarantees, liquidity access, and capital.	Market closed
November 26, 2008	The Federal Reserve Board announced its approval of the notice of Bank of America to acquire Merrill Lynch.	
December 3, 2008	The SEC approved a series of measures to increase transparency and accountability at credit rating agencies, and ensure that firms provide more meaningful ratings and greater disclosure to investors.	
December 17, 2008	OPEC to cut oil production starting January in a bid to prop up falling oil prices.	
December 19, 2008	U.S. auto industry bailout approved.	
December 24, 2008	The Federal Reserve Board approves the applications of GMAC and IB Finance Holding Company, to become bank holding companies.	
December 30, 2008	The U.S. Treasury Department announces that it will purchase \$5bn in equity from GMAC as part of its program to assist the domestic automotive industry. The Treasury also agrees to lend up to \$1bn to General Motors.	
January 1, 2009	Russia shuts off gas to Ukraine	Market closed
January 5, 2009	Russian PM Vladimir Putin told gas giant Gazprom to cut supplies sent via Ukraine to Europe over allegations Kiev is siphoning some off.	
January 7, 2009	All Russian gas flows through Ukraine are cut off (i.e. no supplies to Southeastern Europe).	
January 8, 2009	Moody's Investor Services issues a report suggesting that the Federal Home Loan Banks are currently facing the potential for significant accounting writedowns on their \$76.2bn private-label MBS securities portfolio. According to Moody's, only four of 12 Banks' capital ratios would remain above regulatory minimums under a worst-case scenario.	
January 11, 2009	Gazprom and European Commission (EC)'s monitors of gas transit via Ukraine ready for their mission, but Terms of Reference for monitoring signed by all parties officially not received yet.	Market closed

January 12, 2009	At the request of President-Elect Obama, President Bush submits a request to Congress for the remaining \$350 bn in Troubled Asset Relief Program (TARP) funding for use by the incoming administration.	
January 14, 2009	S&P cuts Greece to A- from A. The rating company cites the country's weakening finances as the global economy slowed.	
January 16, 2009	The U.S. Treasury Department, Federal Reserve, and FDIC announce a package of guarantees, liquidity access, and capital for Bank of America. The U.S. Treasury Department, Federal Reserve and FDIC finalize terms of their guarantee agreement with Citigroup. (See release on November 23, 2008.)	
January 18, 2009	The dispute between Ukraine and Russia was resolved.	
January 19, 2009	The UK government announces a second package of measures to help Britain's ailing banks. S&P cuts Spain to AA+ from AAA.	Market closed
January 20, 2009	Russia restores gas supply to Ukraine.	
February 3, 2009	The Federal Reserve announces the extension, through October 30, 2009, of the existing liquidity programs scheduled to expire on April 30, 2009. In addition, the swap lines between the Federal Reserve and other central banks are also extended to October 30, 2009. The expiration date for the TALF remains December 31, 2009, and the TAF does not have an expiration date.	
February 6, 2009	The Federal Reserve Board releases additional terms and conditions of the Term Asset-Backed Securities Loan Facility	
February 10, 2009	The Federal Reserve Board announces that it is prepared to expand the Term Asset-Backed Securities Loan Facility to as much as \$1 trillion and broaden the eligible collateral to include AAA-rated commercial mortgage-backed securities, private-label residential mortgage-backed securities, and other assetbacked securities.	
February 13, 2009	Congress passed the American Recovery and Reinvestment Act of 2009.	
February 17, 2009	President Obama signs the American Recovery and Reinvestment Act of 2009 to law.	
February 18, 2009	President Obama unveiled the Homeowner Affordability and Stability Plan.	
February 20, 2009	Germany approved a 50bn eurostimulus plan.	
February 24, 2009	The Federal Reserve Board, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency and Office of Thrift	

	Supervision announce that they will conduct forward-looking economic assessments or "stress tests" of eligible U.S. bank holding companies with assets exceeding \$100bn.
February 27, 2009	The U.S. Treasury Department announces its willingness to convert up to 25bn of Citigroup preferred stock issued under the Capital Purchase Program (CPP) into common equity. The conversion is contingent on the willingness of private investors to convert a similar amount of preferred shares into common equity.
March 2, 2009	The U.S. Treasury Department and Federal Reserve Board announce a restructuring of the government's assistance to AIG.
March 13, 2009	The Federal Council announced today that Switzerland intends to adopt the OECD standard on administrative assistance in tax matters in accordance with Art. 26 of the OECD Model Tax Convention.
March 18, 2009	The FOMC decides to increase the size of the Federal Reserve's balance sheet by purchasing up to an additional \$750bn of agency mortgage-backed securities and to increase its purchases of agency debt this year by up to \$100bn. The FOMC also decides to purchase up to \$300bn of longer-term Treasury securities over the next six months to help improve conditions in private credit markets. Finally, the FOMC announces that it anticipates expanding the range of eligible collateral for the Term Asset-Backed Securities <u>Loan Facility</u> . The Federal Reserve Bank of New York releases more information on the Federal Reserve's plan to purchase Treasury securities.
March 19, 2009	The U.S. Department of the Treasury announces an Auto Supplier Support Program that will provide up to \$5bn in financing to the <u>automotive industry</u> . The Federal Reserve Bank of New York releases the initial results of the first round of loan requests for funding from the Term Asset-Backed Securities Loan Facility .
March 23, 2009	The Federal Reserve and the U.S. Treasury issue a joint statement on the appropriate roles of each during the current financial crisis and into the future, and on the steps necessary to ensure <u>financial and monetary stability</u> . The U.S. Treasury Department announces details on the Public-Private Investment Program for Legacy Assets.
March 26, 2009	Consumer Confidence drops in Germany, Italy, as Europe recession deepens.
March 30, 2009	S&P downgrades Ireland from AAA to AA+
April 6, 2009	The Federal Reserve announces new reciprocal

	currency agreements (swap lines) with the Bank of England, the ECB, the Bank of Japan and the Swiss National Bank that would enable the provision of foreign currency liquidity by the Federal Reserve to U.S. financial institutions.	
April 26, 2009	Swine Flu declared public health emergency.	Market closed
April 30, 2009	Chrysler will file for Chapter 11 bankruptcy protection in New York.	
May 7, 2009	The Federal Reserve releases the results of the Supervisory Capital Assessment Program ("stress test") of the 19 largest U.S. bank holding companies.	
May 20, 2009	President Obama signs the Helping Families Save Their Homes Act of 2009.	
May 21, 2009	The Federal Deposit Insurance Corporation announces the approval of GMA Financial Services to participate in the Temporary Liquidity Guarantee Program. GMAC will be allowed to issue up to \$7.4 bn in new FDIC guaranteed debt. S&P lowers its outlook on the UK government debt from stable to negative.	
June 1, 2009	The General Motors Board of Directors authorised the filing of Chapter 11 bankruptcy protection.	
June 8, 2009	S&P downgrades Ireland for the second time from AA+ to AA.	
June 9, 2009	The U.S. Treasury Department announces that 10 of the largest U.S. financial institutions participating in the CPP have met the requirements for repayment established by the primary federal banking supervisors.	
June 10, 2009	Fiat closes deal to take Chrysler's good assets	
June 17, 2009	The U.S. Treasury Department releases a proposal for reforming the financial regulatory system.	
June 24, 2009	The SEC proposes rule amendments designed to strengthen the regulatory framework for money market funds.	
June 25, 2009	AIG announces that it has entered into an agreement with the Federal Reserve Bank of New York to reduce the debt AIG owes the Federal Reserve Bank of New York by \$25 bn.	
July 23, 2009	Citigroup announces that it completed a previously announced exchange offer with private investors of convertible preferred securities and a previously announced matching exchange offer with the U.S. Government.	
July 26, 2009	Citigroup announces the preliminary results of its offers to exchange its publicly held convertible and non-convertible preferred and trust preferred securities for newly issued shares of its common stock. Citigroup also announces that it expects to complete a further exchange	



	with the U.S. Government of \$12.5bn in aggregate liquidation preference of Citigroup preferred stock, and that in aggregate, approximately \$58bn in aggregate liquidation value of preferred and trust preferred securities will have been exchanged to common stock as a result of the completion of all the exchange offers.
August 28, 2009	The Federal Reserve announces that the amounts of Term Auction Facility credit offered at each of the two auctions in September will be reduced to \$75bn from \$100bn in August.
September 14, 2009	The U.S. Treasury releases the report "The Next Phase of Government Financial Stabilization and Rehabilitation Policies".
September 18, 2009	The U.S. Department of the Treasury announces the expiration of the Guarantee Program for Money Market Funds.
November 9, 2009	The Federal Reserve Board announces that 9 of the 10 bank holding companies that were determined in the Supervisory Capital Assessment Program earlier this year to need to raise capital or improve the quality of their capital now have increased their capital sufficiently to meet or exceed their required capital buffers.
November 11, 2009	Angela Merkel, the prime minister of Germany, was alarmed by worsening credit crisis, and as result the German government is rushing through a fresh package of measures to shore up ailing banks and prevent a second wave of the debt crisis by suffocating situation in large parts of manufacturing industry
December 1, 2009	AIG announces that it has closed two transactions with the Federal Reserve Bank of New York. This agreement reduces the debt AIG owes the Federal Reserve Bank of New York by \$25bn in exchange for preferred equity interests in newly formed subsidiaries.
December 2, 2009	Bank of America announces that it will repurchase the entire \$45bn of cumulative preferred stock issued to the U.S. Treasury under the TARP after the completion of a securities offering.
December 9, 2009	U.S. Treasury Secretary Timothy Geithner sends a letter to Congressional leaders outlining the Administration's exit strategy for the TARP.
December 11, 2009	The U.S. House of Representatives approves legislation that would create a Financial Stability Council to identify financial firms that pose systemic risk and which will be subject to increased oversight and regulation. The legislation would also create a Consumer Financial Protection Agency, impose new

	regulations on over-the-counter financial derivatives, require the registration of hedge funds with the Securities Exchange Commission, and establish an orderly process for shutting down large, failing financial institutions.	
December 14, 2009	Citigroup announces that it has reached an agreement with the U.S. Government to repay the remaining \$20bn in TARP trust preferred securities issued to the U.S. Treasury. Wells Fargo announces that it will redeem the \$25bn of preferred stock issued to the U.S. Treasury under the TARP, upon successful completion of a \$10.4bn common stock offering.	
December 16, 2009	S&P Cuts Greece to BBB+ from A-.	
January 21, 2010	President Obama proposes new restrictions on the trading activities and market shares of commercial banks.	
February 1, 2010	The Commercial Paper Funding Facility, Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, Primary Dealer Credit Facility, and Term Securities Lending Facility programs expire.	
February 27, 2010	Chile earthquake	Market closed
March 24, 2010	Fitch cuts Portugal's credit rating to AA-.	
March 25, 2010	Trichet says that the ECB will continue to accept bonds rated as low as BBB- as collateral, reversing his January refusal to give Greece special treatment.	
April 12, 2010	Euro-area finance ministers agree to provide up to €30bn of loans to Greece over the next year with the IMF agreeing to put up another €15bn in funds.	
April 22, 2010	The EU revises Greece's 2009 budget deficit to 13.6% of GDP, higher than the government's previous forecast of 12.9%. Moody's cuts Greece one level to A3.	
April 23, 2010	Papandreou asks EU for a €45bn bailout from the EU and IMF.	
April 27, 2010	S&P cuts Greece to junk, downgrades Portugal to A-.	
April 28, 2010	S&P Downgrades Spain To AA; Outlook Negative	
May 2, 2010	Euro-region agrees on a €110bn rescue package for Greece. Greece agrees to €30bn in austerity cuts over the next three years in exchange for the aid.	Market closed
May 3, 2010	The ECB says it will indefinitely accept Greek collateral regardless of the country's credit rating.	
May 9, 2010	The Federal Reserve re-establishes temporary reciprocal currency arrangements (swap lines) with the Bank of Canada, the Bank of England, the ECB and the Swiss National Bank in	Market closed

	<p>response to the re-emergence of strains in U.S. <u>dollar short-term funding markets in Europe.</u></p> <p>The Economy and Finance Council of the EU announce a loan package to cover the needs of members with solvency problems and to defend the euro, and the ECB announces a series of measures to contribute to the stabilization of the <u>Eurozone.</u></p>	Market closed
	<p>The IMF approves a three-year SDR 26.4bn Stand-By Arrangement for Greece. The IMF is making immediately available \$4.8 bn to Greece as part of joint financing with the EU, for a combined €20.0bn in immediate financial <u>support.</u></p> <p>The Council of the EU and the Member States decides on a comprehensive package of measures to preserve financial stability in Europe, including a European Financial Stabilisation mechanism with a total volume of up to €500bn, with terms similar to those offered by the IMF</p>	Market closed
May 26, 2010	The U.S. Treasury Department announces the completion of the sale of 1.5bn shares of its holdings of Citigroup common stock.	
May 28, 2010	Fitch downgrades Spain to AA+; outlook stable	
July 21, 2010	President Obama signs the Dodd-Frank Wall Street Reform and Consumer Protection Act to law.	
July 23, 2010	The Committee of European Banking Supervisors, publishes the results of the EU-wide stress-testing exercise, in close cooperation with the ECB.	
August 24, 2010	S&P downgrades Ireland for the third time from AA to AA- .	Market closed
September 10, 2010	The IMF completes the first review of Greece's performance since being granted a 3-year, SDR 26.4 bn stand-by arrangement. Greece receives the immediate disbursement of an amount equivalent to SDR 2.16bn, which brings total disbursements to SDR 6.97bn	
September 30, 2010	Moody's Downgrades Spain to Aa1, Outlook Stable	Market closed
November 3, 2010	The Federal Reserve announced a second round of quantitative easing through the purchase of \$600 bn in long term Treasury bonds.	
November 22, 2010	Ireland requested urgent financial assistance Sunday from the EU and the IMF, abandoning its attempt to weather a banking and budget crisis on its own.	
November 23, 2010	Staff teams from the EC, ECB, and IMF visit Athens from November 14-23 and conduct the second review of the government's economic program. The assessment is positive. Ireland meets the end-September quantitative criteria.	

	<p>Significant progress is made, particularly in <u>reducing the fiscal deficit</u>.</p> <p>The U.S. Department of the Treasury announces that with the delivery of \$11.7bn in proceeds from the initial public offering of General Motors, the total amount of TARP funds returned to taxpayers now exceeds \$250 bn.</p>	
November 24, 2010	Ireland's government outlines €15 bn in austerity measures over four years.	
November 28, 2010	IMF reaches staff-level agreement with Ireland on <u>€22.5 bn extended fund facility arrangement</u> Eurogroup and ECOFIN Ministers Statement on Ireland Aid	
December 7, 2010	The U.S. Treasury sells its remaining shares of Citigroup common stock.	
December 15, 2010	Irish parliament approves EU/IMF bailout.	
December 16, 2010	IMF Executive Board approves €22.5 bn extended arrangement for Ireland	
December 23, 2010	Fitch Downgrades Portugal to A+; Outlook Negative.	Market closed
January 1, 2011	German Economic growth reached record last year, Bruederle (the economy minister) says.	
January 22, 2011	Obama's economic agenda is to boost U.S. competitiveness.	
January 27, 2011	IMF says to larger European countries to lower their deficits.	Market closed
May 20, 2011	East Europe faces risks from Euro crisis and inflation, European Bank for Reconstruction and Development says.	
February 24, 2011	Europe Economic Confidence rises more than Economists Forecast.	
June 28, 2011	Lagard gets US support for IMF managing Directors job.	
November 10, 2011	U.S. bonds drop as Europe debt plans to erode <u>demand for safety</u> . Angela Merkel has made it clear that with the package everything will be solved and will be over which has as result the swift of euro crisis	
November 11, 2011	U.K. inflation probably slowed to 5.1% in <u>October on Food costs</u> . Venizelos, the minister of finance, says priority is to secure 6 <sup>th</sup> loan payment for Greece	
November 12, 2011	Lucas Papademos, the prime minister of Greece, said that country's new government must implement decisions from the summit to receive a sixth loan installment of 8 billions euros before <u>it runs out of money in mid-December</u> . Obama says that Europe is making progress.	
April 11, 2012	Greek Prime Minister Lucas Papademos has called elections on 6 May, after five months of technocratic government. Mr Papademos, an economist, was made prime minister last November to help steer Greece through its debt crisis.	

May 7,2012	The results of elections in Greece showed that this country will face another round of elections next month.
June 20,2012	Three political parties of Greece came to an agreement on Wednesday to form a coalition government with prime minister Antonis Samaras.
August 11,2012	German inflation rate dropped to lowest in June. The commission is awaiting details so it can assess the impact of the measures on Spain's economy he said.
August 12,2012	European central bank, Draghi said inflation in the euro area is slowing faster than expected, justifying last week's rate cuts to a record low. Greece's unemployment rate rose to 22,5% in April.
September 12,2012	Euro rises for 4 <sup>th</sup> month high against the dollar.

**Table 20 : List of unscheduled news announcements.** Entries provide a brief description of 200 unscheduled news announcements under consideration and if the market is closed it is referred. The sample spans August 1, 2003 – September 28, 2012.

**REFERENCES:**

- Anderesen, T.G., Bollerslev, T., Diebold F.X., Vega, C., (2007) 'Real-time price discovery in global stock, bond and foreign exchange markets', *Journal of International Economics*, Vol. 73, pp. 251-277
- Andritzky, J., Nowack., S., Jobst, A., Tamirisa, N., (2009), 'Macroeconomics Fundamentals, Price discovery and Volatility Dynamics in Emerging Markets', *International Monetary Fund, Working Paper*, No. 147,(July)
- Arru, D., Iacovini, D., Monteforte, L., Pericolli, F.M., (2012) 'EMU sovereign spreads and Macroeconomic News' *Munich Personal Repec Archive*
- Attinasi, M.G., Checherita, C., Nickel, C., (2009) 'What explains the surge in Euro area sovereign spreads during the financial crisis' *Working Paper*, European Central Bank, No.1131 (December)
- Balduzzi, P., Elton, E.J., Green, T.C., (2001) 'Economic News and Bond Prices: Evidence from the U.S. Treasury Market', *Journal of Financial and Quantitative Analysis*, Vol. 36, pp. 523-543
- Barrios., S., Iversen, P., Lewandowska., M., Setzer, R.,(2009), 'Determinants of intra-euro area governments bond spreads during the financial crisis', *European Commission, Working paper*, No. 388 (November)
- Bartollini, L., Goldberg, L., Sacarny, A., (2008), 'How economic news move markets?', *Federal Reserve Bank of New York*, Vol. 14, No. 6, (August)
- Brenner, M., Pasquariello, Subrahmanyam, M., 'On the Volatility and Comovement of U.S. Financial Markets around Macroeconomic News Announcements' *Journal of Financial and Quantitative analysis*, Vol. 44, pp. 1265-1289
- Culha, O.Y., Ozatay, F. Sahinbeyoglu, G. (2006) 'The determinants of sovereign spreads in Emerging Markets' *Working Paper*, Central Bank of the Republic of Turkey, No 6
- Cutler, D.M., Poterba, J.M., Summers, L.H., (1989) 'What moves stock prices?', *Journal of portfolio Management*, Vol. 15, pp. 4-12

- Dwyer, G.P., Hafer, R.W., (1989), 'Interest Rates and Economic Announcements', Federal Reserve Bank OF ST. Louis, Economic Review , No. 71, pp. 34-45 (March/April)
- Ederington , L.H., Lee, J.H., (1993) 'How markets process information News Releases and Volatility', Journal of Finance, Vol. 48, pp. 1161-1191
- Fleming, M.J., Remolona, E.M., (1999) 'Price Formation and Liquidity in the U.S. Treasury Market: The Response to Public Information' , Journal of Finance, Vol. 54, pp. 1901-1915
- Fleming, M.J., Remolona, E.M., (1997) 'What moves the Bond Market?', Federal Reserve Bank of New York Research paper No.9706 (February)
- Gibson, H.D., Hall, S.G., Tavlas, G.S.,(2011) 'The Greek financial crisis: growing imbalances and sovereign spreads', Bank of Greece, No.124, (March)
- Goldberg, L., Leonard, D., (2003) 'What Moves Sovereign Bond Markets? The Effects of Economic News on U.S. and German Yields' Federal Reserve Bank of New York, Vol. 9, No 9 (September)
- Hardouvelis, G.A., (1987), 'Macroeconomic Information and Stock Prices', Journal of Economics and Business, Vol.39, pp. 131-140
- Hardouvellis, G.A., (1988) 'Economic News, Exchange Rates and Interest Rates' Journal of International Money and Finance, Vol.7, pp. 23-35
- Jiagan, P., Cui., J., Qin, F., Groenewold, N.,(2009) 'Stock Prices and the Macro Economy in China', University of Western , Working Paper, No. 9
- Jiang, G.J., Konstandinidi, E., Skiadopoulos G., (2012) 'Volatility Spillovers and the Effect of News Announcements', Journal of Banking and Finance, Vol. 36, pp. 2260-2273
- Jones, C.M., Lamont, O., Lumsdaine, R.L., (1998), 'Macroeconomic News and Bond Market Volatility', Journal of Financial Economics, No.47, pp. 315-337

- Liebermann, J., (2011) 'The impact of Macroeconomic News on Bond Yields: (In)Stabilities over Time and Relative Importance', Central Bank of England, No.7 (March)
- Manganelli, S., Wolswijk, G., (2009), 'What drives spreads in the euro area government bond market?', *Economic Policy*, Vol. 24, pp. 191-240
- Merikas, A., G., Merika, A., A., (2006), *Econometrics For Financial Analysis with E-views Applications*, Papazisis Publishers, Athens
- Michael C. Ehrhart and Eugene F. Brigham (2010), *Financial Management practice and theory*, South Western , United States of America
- N. Gregory Mankiw (2007), *Macroeconomics*, Worth Publishers, 6-th edition, New York
- N. Gregory Mankiw and Mark P. Taylor (2006), *Economics*, Thomson Learning, London
- Pasquariello, P., Vega, C., (2007), 'Informed and Strategic Order Flow in The Bond Markets', *The Review of Financial Studies*, Vol. 20, No. 5
- Pearce, D.K., Roley, V.V., (1984) 'Stock prices and economic News' Working Paper, National Bureau of Economic Research, No.1296 (March)
- Protopapadakis, A.A., Flannery, M.J., (2002) 'Macroeconomic Factors do Influence Aggregate Stock Returns?' *The Review of Financial Studies* Summer, Vol.15, pp. 751-782
- Robert J. Gordon (2000), *Macroeconomics*, Addison-Wesley Longman, 8-th edition, United States
- Robitaille, P., Roush, J., (2006) 'How FOMC Actions and U.S. Macroeconomic Data Announcements Move Brazilian Sovereign Yield Spreads and Stock Prices?', Federal Reserve Bank of New York, No.868, (September)
- Urich, T., Wathtel, P., (1984), 'The effects of inflation and money supply announcements on interest rates', National Bureau of Economic Research, Working Paper, No.1313, (March)



Verbeek M. (2004), Modern Economics, John Wiley & Sons, Ltd, 2-nd edition, Great Britain

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ