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Relevance of macroeconomic announcements for European bonds

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Abstract

This dissertation uses a recent methodology based on the variation of the 10 years bond bid yields of several Eurozone countries, in a small interval of time following a macroeconomic announcement from 4 different countries or from the Eurozone, in order to determine several things: Are foreign announcements important in terms of explaining the bond variations? How much of the total variation of the 10 year bond bid yields can be explained by the announcements? Are "good" news capable of explaining more of the variation of the bonds than "bad" news? These are all relevant questions to ask as the announcement sources and country bond combinations present in this dissertation are often ignored by the literature. This dissertation find that for this sample, announcements from the USA are the ones with the most explanatory power, explaining on average 8.7%, of the daily variation, furthermore we also find that Eurozone announcements have close to none explanatory power on the daily variation of the 10 years bond bid yields, lastly we find that "good" news have a greater explanatory power then "bad" news.

Keywords: Macroeconomic announcements; Eurozone; Government bonds

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1. Introduction

One of the most important questions in finance is how do capital markets define their prices?

The most widely accepted explanation is the Efficient Market Hypostases (Fama 1970), according to this hypothesis, prices reflect all of the relevant available information, and, therefore, will only change if new relevant information answer to the market, which begs the question, what is relevant information?

This dissertation analyzes the reaction of the 10 years bond bid yields of Eurozone countries, in relation to the release of macroeconomic announcements, related to the Eurozone as a whole, the USA, the UK, Germany and Italy.

We will be using the results to try to answer three different questions: Are announcements from those countries and from the Eurozone considered relevant information for the bond variation of the countries in the sample? What source or sources of announcements, have the greater explanatory power on the variation of the 10 year bonds? And lastly do "good" news have more or less explanatory power than "bad" news.

This dissertation aims at shedding some lighting a gap in the literature. Although there is quite a bit of research done relating macroeconomic announcements to financial assets prices, most of those focus on the USA and ignore the rest of the world, and as far as the author of this dissertation knows only Andersson, Hansen and Sebestyén (2006) have done a considerable analysis of the importance of announcements from the Eurozone as a whole and from its countries in the bonds of other Eurozone countries, and in that paper the only bonds used, where the ones from Germany. This dissertation will focus on the Eurozone although we will still uses announcements from the USA and from the UK.

The model we use in this dissertation is very similar to the one used by Brazys (2015), with the difference that we will be using a 30 minute interval immediately after the release of the announcements, in order to estimate the total daily variation, then we capture the R^2, as a measure of the explanatory power of the announcements on the daily variation of the 10 year bonds.

As for the organization of this dissertation, first we review the existing literature on the subject of macroeconomic news and asset prices, secondly we will explain the methodology used, followed by the description of the data used and lastly we will use the result to answer the questions presented by this dissertation. This dissertation will be closed afterword by the conclusion.

2. Literature review

The question: how relevant are news to the asset prices is one that has been around for a long time and the methodologies used have changed over time in particular, with regards to the measure of surprise.

For the interest of this revision we will divide it in three different periods, a pre-2001 period, a period running from 2001 to 2014, and finally a period encompassing 2015.

The pre-2001 period can be seen as the early days for this particular area of study. During these times the authors experiment with a multitude of different methodologies, with some success.

Some of the oldest literature was written during 1980's.

For example, Hardouvelis (1988) presented a simple question: "what is the response of exchange rates and interest rates to the new information contained in the first announcement of fifteen US macroeconomic series." To answer this question he used a model that toke this form:

$$DP_k = \alpha_k + \beta_k S_t + \varepsilon_k$$

Where DP_k is the percentage change in the interest rate or in the relative value of a foreign currency for day k, α_k is a constant, S_t is the value of the surprise for

announcement t and ε_k is the random error term. The author described surprise as the perceptual difference between the actual value and the forecast.

This paper focused on a high frequency analysis(daily) and the author found that the news could explain at best 4.1% of the daily variation of the exchange rates and at best 7.6% of the daily interest rate variation.

In the same year, Cutler, Poterba and Summers (1988) published a paper that focused on studying how much of the monthly variation of the aggregate stock return could be explained by macroeconomic announcements. In order to do this they created a rather complex methodology. First they created 7 different classifications for the announcements, secondly they created an estimation that related the current value of the announcement classification with the lags of the other 6 classifications, lastly they used the random errors from the estimation as explanatory variables for real dividend-inclusive returns, and used the resulting R^2 as the measure for the explanatory power of the news, on the variation of the monthly variation of the aggregate stock return. Using this methodology the authors found, that news could explain close to half of the variation of the aggregate stock return during a month.

More recently Fleming and Remolona (1997) asked: "to what extent can movements in the financial markets be attributed to the arrival of new information?" Stating that for that particular paper they would focus on the bond market, using High-frequency intraday data. They use a model very close

to de one used by Hardouvelis (1988), but with one particularity, the way they measured forecasts (the expected value) for announcements related to treasury security options and fed fund target rate.

For the treasury security they used "the yield in the when-issued market" and for fed fund target rate they used "the rates on fed funds futures contracts."

Results show that announcements could account for 42% of the price variation and for 29% of the trading activity.

From 2001 onwards we observe a much more standard way of dealing with this type of question, with the differences between the papers becoming related to their datasets and to the frequency that they used and not with the methodologies used.

Balduzzi, Elton and Green (2001), examine the effect of USA economic announcements on the price, volume, bid-ask spread, and price volatility of USA Treasury securities. To do this they used a base model similar to the one used by Hardouvelis (1988) as this type of model is considered to be the basic tool.

$$R_{k,t} = \alpha_k + \beta_k S_{k,t} + \varepsilon_t$$

Where $R_{k,t}$ is the variation of the bond return during a given period around announcement k at time t, α_k is a constant, $S_{k,t}$ is the value of the surprise for announcement k at time t. But this begs the question: how to measure surprise?

It is on this point that Balduzzi, Elton and Green (2001) innovated by defining surprise with the following tool:

$$S_{k,t} = \frac{A_{k,t} - E_{k,t}}{\sigma_k}$$

Where $S_{k,t}$ is the value of the surprise, $A_{k,t}$ is the actual value of the announcement, $E_{k,t}$ is the expected value of the announcement and σ_k is the standard deviation of all the $A_{k,t} - E_{k,t}$.

Using this set of tools they found that the surprise associated with the announcements varied with maturity and could explain explained up to 68% of total variation in a very small window (high frequency).

Other examples of this methodology can be found thought out this period although most of them have small adaptions.

For example Vrugt (2010) uses the aggregation of the multiple announcement surprises in a day to check if the different sections of the USA bond yield curve reacted differently to announcements, as well as to see if the reaction varies depending on the economic cycle finding that the impact of the announcements increases with the maturity and find that bad news are significantly stronger when they appear during good economic times, furthermore he finds that "Daily macroeconomic announcements explain a significant 70% of monthly changes of the bond futures market."

The difference with Vrugt approach is that he is using a larger window (low-frequency) around the announcements and as such, he aggregated all the announcement surprises in a day.

The previous two papers use different frequencies in their analysis but this is not always the case, for example in 2014 Altavilla, Giannone and Modugno (2014) analyzed the reaction of the USA treasury bond market and S&P 500 returns to both announcements related to economic fundaments as well as to non-economic fundamentals. They found that when utilizing the announcements related to fundamentals, the low frequency intervals had more explanatory power (up to 35%) and when utilizing non-economic fundamentals, the high frequency have the larger explanatory power (up to 8%), this led then to conclude that announcements related to non-economic fundaments only have a transitory effect.

The previous examples focus on the impact USA an announcement on USA assets, but this is not always the case.

Gravelle and Moessner (2001) test two different things: first they wanted to test if announcements from the USA could better explain the variation of the Canadian interest rates when compared to Canadian announcements and secondly they wanted to test if this relationship changed with different transparencies of the Canadian monetary policy.

Using the Balduzzi, Elton and Green (2001) model they found some interesting results namely: "We find that Canadian interest rates react very little to Canadian macroeconomic news and are significantly affected by U.S. macroeconomic news…", they also found that thedifferent transparencies of the Canadian monetary policy did not impact the explanatory power of Canadian announcements.

One last example of this period is the paper from Andersson, Hansen and Sebestyén, (2006) where they utilized a high frequency windows following the announcements and found that USA announcements had more explanatory power on the German bonds than announcements from Germany, France, Italy and the Eurozone.

Brazys (2015) departs from the standard methodology, by utilizing a different tool to measure surprise, aiming at improving the methodology in order to overcome some of the limitations of the Balduzzi, Elton and Green (2001) model.

The main question present by Brazys (2015) is: "how much of the variation in bond returns can be attributed to macroeconomic news announcements."

Applying his methodology he found "that economic news can explain 20% of the total daily variation in U.S. Treasury returns." As for the methodology used its basic framework was the same the one used by Hardouvelis (1988), but he

measured surprise in a new manner by using the variation of the USA treasury returns 5 minutes before the announcement and 15 minutes after the announcement.

Furthermore Brazys (2015) applied a bootstrap procedure, to show that announcements at least in a specific hour can be used to explain the variation in an asset, it does this by taking a predetermined hour at which announcements are common and applying the model for both days with announcements and for days without using that hour, then by observing the resulting R^2 we can see if days with announcements have a greater explanatory power then days without announcements

3. Methodology

In order to answer the questions proposed by this dissertation we will be testing announcements from 5 different sources namely the USA, the Eurozone as a whole, the UK, Italy and Germany. We will follow the methodology proposed by Brazys in 2015.

To capture the impact of prices, macroeconomic announcements on the variation of bonds, we use the surprise created by the macroeconomic announcement and then relate this value to the variation of the bond returns, in a given period around the release of the announcement, that period may be short (Faust, Rogers, Wang and Wright, 2007) or long (Vrugt, 2010).

The surprise contained in the announcement is normally calculated as Balduzzi, Elton and Green (2001):

$$S_{k,t} = \frac{A_{k,t} - E_{k,t}}{\sigma_k}$$

Where $S_{k,t}$ is the value of the surprise, $A_{k,t}$ is the actual value of the announcement, $E_{k,t}$ is the expected value of the announcement and σ_k is the standard deviation of all the $A_{k,t} - E_{k,t}$.

As for the tool used to calculate the impact and the explanatory power of the macroeconomic announcements on the yield returns, "The basic tool in this literature is the following univariate regression" (Brazys, 2015):

$$R_{k,t} = \alpha_k + \beta_k S_{k,t} + \varepsilon_t$$

Where $R_{k,t}$ is the variation of the bond return during a given period around announcement k at time t, α_k is a constant, $S_{k,t}$ is the value of the surprise for announcement k at time t.

This methodology has two main downsides.

Firstly in order to calculate the surprise, the forecast regarding a particular announcement must be available, which is not the case for several announcements, this results in a much smaller database.

Secondly, the surprise does not take into consideration the impact of the announcement which can be positive or negative, for example a surprise of 1% growth in GDP is likely to have a different effect on the bond than a 1% surprise in unemployment growth.

To address these problems, in this dissertation will use the methodology by Brazys (2015) but rather than using an interval starting 5 minutes before and ending 15 minutes after the announcement we will be using, 30 minute interval, starting when the announcements are released.

The main idea of this methodology is that for announcements to be important, they must not only have an impact on the bonds in a short interval, around the announcement, but that the impact caused by the announcement must remain

relevant thought out the rest of the day, to capture this effect the model takes this shape.

$$Rd_k = \alpha_k + \beta_k Ri_k + \varepsilon_t$$

Where Rd_k is the variation of the bond bid yield with a generic benchmark from open to close of the day when announcement k is released, α_k is a constant and Ri_k is the variation of the bond bid yield with a generic benchmark in 30 minutes immediately following the announcement.

This model solves the two main downsides of the more standard way of calculating the importance of announcements on the bond market, by the use of the variation of the bond bid yield with a generic benchmark in a small window, rather than the normal tool used in the calculation of surprise, means that forecasts are unnecessary and it also means that surprise will be directly connected to the market's reaction to the announcement rather than through a tool that measures surprise as a value rather a reaction.

As the purpose of this dissertation is to measure the explanatory power of foreign announcements on the variation of a country's 10 year bid yield with a generic benchmark the entiretyof the announcement used will be from foreign countries.

As for the interpretation of the R^2 it tell us about how much of the variation of the bonds during the day is explain by the variation during the 30 minute

window after the announcement and by proxy how much of the daily variation is explained by the announcement.

3.1 Bootstrap

With the purpose of keeping with the methodology of Brazys, (2015) we will use the bootstrap procedure to see what combinations of bond and announcement sources are relevant when explaining the daily variation of the 10 year bonds.

The idea behind the use of bootstrap is that as we are using the variation of the bid yields in a period of 30 minutes to explain the total variation of the bid yields in a day, as such it is reasonable to assume that there will be a relation between this 2 variables,this may mean that the explanatory power of the model does not depend on the existence of news, as it is possible that these bear no impact on either of the variations.

It is important to test this hypothesis, as it raises questions about the validity of the model itself, as it depends on the news having an impact in order to make sense.

The test on this hypothesis is done by tacking an hour in which announcements are common and applying the same tool used for days with announcements on days without announcement and then comparing the explanatory power of day with announcements against days without announcements.

If the days with announcements have a larger explanatory power, a larger R^2, then the model is valid and the particular set of announcements being used do bear an impact on the bid yield variation.

4. Data

This part of the dissertation serves to describe both the Macroeconomic Announcements used, as well as the Country Bond Data used.

4.1 Macroeconomic Announcements

This dissertation uses a total of 1027 macroeconomic announcements collected from Thomson Reuters which are divided in 7 broad classifications as well as 4 countries and 1 monetary union.

Our dataset includes information related to the day, the hour, the classification and what the announcement is.

All announcements occur between 7:00 GMT and 17:00 GMT, span a period of 1 year from 17-12-2014 to 16-12-2015.

The classifications are used to divide the and are as follows: the Consumer Sector classification which aggregates announcements related to retail sales; The External Sector classification that aggregates announcements related to exports and imports; The Government Sector classification that aggregates news related to government policies and budgets as well as monetary policy; The Industry Sector classification that aggregates all news related to industry; The Labor Market classification which aggregates all news related to the labor

market such as wages and unemployment; The National Accounts classification mostly aggregates news related to variations in GDP and in prices; The Surveys and Cyclical classification which contains all of the announcements related to the measure of confident of the participants in the economy for example consumer confidence index.

As for the sources of the announcements we have, the USA with 535 announcements, the UK with 134, Italy with 105, Germany with 100 and the Eurozone with 153.

4.2 Country Bond Data

In this dissertation we use the 10 years bond bid yield with generic benchmark data from Thomson Reuters related to 10 Eurozone countries namely Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal and Spain.

The data present in the data set run for the total of 1 year namely between the 17-12-2014 and the 16-12-2015 and is divided in 2 different frequencies, first we have 30 minute intervals with the 10 years Bid yield with generic benchmark at the beginning of the internal and its end, secondly he have information for the opening and the closing value of the 10 years Bid yield with generic benchmark on each day.

5. Results

5.1 Do foreign announcements serve to explain variation on the 10 year bonds?

We start by applying the bootstrap as described in the methodology section, to analyze which sources of foreign announcements actually have a relevant explanatory power on the variation of the 10 years bond Bid yield.

	R^2 With announcements	R^2 Without announcements
Austria	0.0044	0.0355
Belgium	0.0303	0.0445
Finland	0.0477	0.0565
France	0.0214	0.0616
Germany	0.0102	0.0332
Ireland	0.0261	0.1161
Italy	0.0018	0.1348
Netherlands	0.0517	0.0365
Portugal	0.0284	0.1659
Spain	0.0009	0.0985

Table 1: Eurozone bootstrap

For the Eurozone news the hour we picked was 10:00 GMT, as this was the hour with the most Eurozone announcements namely 71, by observing the values for the R^2s we see that the only country that has the days with announcements explaining more of the daily variation are the Netherlands as such we will only

be utilizing the Netherlands on the next section of the dissertation when talking about Eurozone announcements.

	R^2With announcements	R^2Without announcements
Austria	0.1964	0.1250
Belgium	0.1826	0.1097
Finland	0.1476	0.1267
France	0.2616	0.1260
Germany	0.1943	0.1602
Ireland	0.1678	0.2506
Italy	0.1279	0.0899
Netherlands	0.2469	0.0851
Portugal	0.1191	0.0295
Spain	0.1000	0.0660

Table 2: USA bootstrap

As we can see for USA announcements, the hypothesis that announcements matter for the variation of the bid yield holds for all of the countries in the dataset with the exception of Ireland,the hour chosen for the USA bootstrap is 15:00 GMT with a total of 143 announcements.

	R^2 With announcements	R^2 Without announcements
Austria	0.0378	0.0037
Belgium	0.0387	0.0016
Finland	0.0533	0.0018
France	0.0627	0.0174
Germany	0.0519	0.0263
Ireland	0.0151	0.0245
Italy	0.0494	0.0166
Netherlands	0.0611	0.0417
Portugal	0.1427	0.0319
Spain	0.0369	0.0004

Table 3: UK bootstrap

The hour used for the UK announcements was 9:30 GMT as this hour is the most common with a total of 123 announcements, furthermore we can see that the bootstrap methodology stands for all countries with the exception of Ireland.

	R^2 With announcements	R^2 Without announcements
Austria	0.0062	0.0023
Belgium	0.0081	0.0081
Finland	0.0501	0.0003
France	0.0115	0.0030
Germany	0.0301	0.0124
Ireland	0.0173	0.0284
Netherlands	0.0637	0.0010
Portugal	0.0080	0.0513
Spain	0.0154	0.0395

Table 4: Italian bootstrap

Table 4 shows the Italian bootstrap results, for this particular bootstrap we choose the hour 9:00 as it is the most common hour for Italian announcements, from this test we will only be carrying forward a few countries namely Finland, France, Germany, the Netherlands and Portugal. It is important to mention that there are other countries that have a greater R^2 on days with announcements then in days without announcements but that those will not be carried forth as the difference between the R^2's is very small.

	R^2With announcements	R^2Without announcements
Austria	0.0141	0.0028
Belgium	0.1364	0.1820
Finland	0.0350	0.0024
France	0.0067	0.0054
Ireland	0.0391	0.0028
Italy	0.0519	0.0002
Netherlands	0.1049	0.0158
Portugal	0.0131	0.0072
Spain	0.0166	0.0004

Table 5: German bootstrap

As for German announcements the most common time is 7:00 GMT with 62 announcements, in keeping with the same criteria we will be dumping Belgium and France.

The first question that will be answered is whether or not foreign announcements are important in terms of explaining the variation of the 10 year

bonds, in other words do foreign announcements constitute relevant information?

The answer to this question lies in the bootstrap results and it changes depending on the source of the announcements.

For the UK and USA announcements the answer is yes, foreign announcements are considered relevant information and as such, announcements from these sources not only cause a reaction in the 10 year bond in the 30 minute interval but that reaction remains relevant throughout the rest of the day, this statement is true for all the country 10 year bonds with the exception of Ireland but the 10 year bonds of Ireland only seen to be affected, at least in the daily spectrum, by announcements from Germany and even these have a very small explanatory power on their daily variation.

If where to look at the Eurozone announcements we would find that unlike the USA and the UK these do not make it pass the bootstrap as the 30 minute intervals with announcements do not have a greater explanatory then the 30 minute intervals at the same time without announcements, this is true for all countries with the exception of the Netherlands.

Lastly we have announcements from Germany and Italy for whom we have mixed relevance as for some countries these announcements are relevant when explaining the daily variation while for others these are not.

5.2 The impact of foreign announcements

In this subsection we will use the methodology to try to answer the question of what sources of foreign announcements have the most explanatory power on the variation of the 10 year bonds.

	Eurozone (R^2)	Germany (R^2)	Italy (R^2)	UK (R^2)	USA (R^2)
Austria		0.0005		0.0443	0.0853
Belgium				0.0396	0.1007
Finland		0.0006	0.0565	0.0585	0.0922
France			0.0122	0.0678	0.1250
Germany			0.0312	0.0485	0.0975
Ireland		0.0046			
Italy		0.0256		0.0592	0.0528
Netherlands	0.1457	0.0046	0.0477	0.0591	0.0785
Portugal		0.0264	0.0602	0.1446	0.0578
Spain		0.0167		0.0423	0.0931

Table 6: How much of the daily variation of the 10 year bond bid yields is explained by foreign announcements

On the table above the first line show the announcement source and the first Colum shows the country whose 10 year bond yield variation is being explained by the announcements, furthermore the empty cell are the ones with combinations that did not get past the bootstrap methodology.

Taking the averages of the explanatory power of which source of announcements on the countries we can see that USA announcements are the most relevant as these can explain 8.7% of the total daily variation of the bond, followed by announcements from the UK that can explain 6.27%, followed by

Italian announcements that explain 4.16% and lastly German announcements that only explain 1.11% of the total daily variation.

The order of importance in regards of the explanatory power of the announcements is the same as the one using averages for most countries with some exceptions.

In the case Ireland the order of importance above is impossible to see as the 10 year bonds of Ireland seem to only be explainable by German announcements and even those com can only explain 0.46% of the total variation which means that the daily variation of the 10 year bonds are close to impossible to explain using foreign announcements.

In the case of Italy the order is similar but announcements from the UK have a slightly more explanatory power then announcements from the USA namely 0.64%.

The Netherlands are an interesting case as they are the only country that attributes relevance to the Eurozone announcements, not only that but it attributes to Eurozone news more explanatory power then to any other source namely 14.57%.

Lastly we have Portugal, this country attributes a lot of explanatory power to UK announcements (14.46%) these are follow in terms of their explanatory

power by the Italian (6.02%), only then the USA announcements (5.78%) and lastly by German announcements (2.64%).

5.3 "Good" news versus "bad" news

In this final section of the results we will be comparing the explanatory power of "good" news against "bad" news.

For the purpose of this Dissertation we will count announcements that caused a negative variation of the 10 year bonds in the 30 minute period as "good" news and announcements that caused a positive variation of the 10 year bonds as "bad" news.

	Bad news (R^2)	Good news (R^2)
Netherlands	0.0747	0.0795

Table 7: Eurozone announcements, the explanatory power of good news against bad news

	Bad news (R^2)	Good news (R^2)
Austria	0.0368	0.1164
Belgium	0.0456	0.1035
Finland	0.0478	0.1074
France	0.0683	0.1403
Germany	0.0517	0.1248
Italy	0.0084	0.0527
Netherlands	0.0515	0.0471
Portugal	0.0107	0.0328
Spain	0.0676	0.0823

Table 8: USA announcements, the explanatory power of good news against bad news

	Bad news(R^2)	Good news(R^2)
Austria	0.0028	0.1006
Belgium	0.0029	0.1145
Finland	0.0494	0.0234
France	0.0409	0.0640
Germany	0.0564	0.1320
Italy	0.0034	0.0420
Netherlands	0.0098	0.0609
Portugal	0.0305	0.1428
Spain	0.0655	0.0108

Table 9: UK announcements, the explanatory power of good news against bad news

	Bad news(R^2)	Good news(R^2)
Finland	0.0052	0.0283
France	0.0350	0.0716
Germany	0.0021	0.1512
Netherlands	0.0476	0.0843
Portugal	0.1215	0.0608

Table 10: Italian announcements, the explanatory power of good news against bad news

	Bad news(R^2)	Good news(R^2)
Austria	0.0204	0.0040
Finland	0.0216	0.0031
Ireland	0.0316	0.0428
Italy	0.0145	0.0019
Netherlands	0.0163	0.0112
Portugal	0.0367	0.0342
Spain	0.0001	0.0114

Table 11: German announcements, the explanatory power of good news against bad news

Tables 7 to 11 show us that for most of the announcement sources and for most of the countries good news have a far greater explanatory power on the 10 year bonds daily variation, that said German announcements seen to have a different relationship between the explanatory powers of good news against bad news depending on what country the 10 year bonds belong to.

Overall good news have a greater explanatory power on the daily bid yield variation than bad news, that said there are some examples where this is not the case, that said in most of those the difference between the explanatory power is relatively small.

6. Conclusion

This dissertation finds that at least for this sample the daily variation of the 10 year bond bid yields with generic benchmark for some Eurozone countries can be partially explained utilizing announcements from the USA, the UK, Italy and France. This dissertation also finds that for the most part the same cannot be said for Eurozone announcements.

As for what countries that have the larger explanatory power in first place we have the USA with 8.7% followed by the UK with 6.27% followed Italy with 4.16% and finally Germany with 1.11%.

Furthermore we found that in some cases there are countries for who the announcements from the USA are not the ones with the ones with the greater explanatory power over they're 10 year bond variation.

Lastly this dissertation also found that "good" news have a larger explanatory power than "bad" news in most cases.

This result proves two thing, firstly although the USA is the country with the announcements that have the most overall explanatory power there are other countries that are also important in terms of explaining the variation of the 10 year bonds, secondly we show that Eurozone countries are far from

homogenous when it comes to what foreign announcements are the most important.

The biggest limitation faced during this dissertation was the availability of data related to the 10 year bond bid yields in 30 minutes intervals following the announcements for with there as only one year's worth of information, this resulted in a relatively small dataset.

Just as a final note I would like to see in the future further researcher made regarding the explanatory power of foreign announcements from Eurozone countries on other Eurozone countries with the purpose of finding what countries announcements have the greater explanatory power on the different Eurozone countries as well as checking whether this relationships changed with the 2008 crisis.

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Appendix

Announcement hour	Nº of announcements	Percentage of total announcements
9:00	57	37,25%
9:30	12	7,84%
10:00	71	46,41%
12:30	1	0,65%
15:00	12	7,84%

Table 12: Release hours for Eurozone announcements.

Announcement hour	Nº of announcements	Percentage of total announcements
8:30	1	0,95%
9:00	82	78,10%
10:00	18	17,14%
11:00	4	03,81%

Table 13: Release hours for Italian announcements.

Announcement hour	Nº of announcements	Percentage of total announcements
7:00	62	62%
8:30	12	12%
9:00	13	13%
10:00	12	12%
12:00	1	1%

Table 14: Release hours for German announcements.

Announcement hour	Nº of announcements	Percentage of total announcements
9:30	123	91,79%
11:00	11	8,21%

Table 15: Release hours for UK announcements.

Announcement hour	Nº of announcements	Percentage of total announcements
8:00	1	0,19%
11:00	4	0,75%
12:00	47	8,79%
12:30	25	4,67%
13:00	2	0,37%
13:30	134	25,05%
14:00	33	6,17%
14:30	5	0,93%
15:00	143	26,73%
15:30	56	10,47%
16:00	60	11,21%
17:00	25	4,67%

Table 16: Release hours for USA announcements.