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The Impact of Political Events on the Portuguese Stock Market

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Master in Business Administration

Supervisor: Prof. Dr. Luís Oliveira, ISCTE Business School, Department of Finance.

January, 2022

BUSINESS
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Acknowledgments

To Professor Luís, for all the guidance throughout this dissertation;

To my family, for all the support;

To my friends, for all the laughs:

Thank you.

Resumo

As Bolsas de Valores são um dos maiores trunfos atuais para os investidores, no entanto, os Eventos Políticos podem ser um dos maiores desafios atuais, uma vez que acrescentam uma componente crucial: Incerteza. Este estudo visa compreender o impacto dos Eventos Políticos (portugueses) na Bolsa de Valores Portuguesa. Especificamente, investiga as complexas relações entre estes conceitos, analisando ao mesmo tempo como os desenvolvimentos em cada campo influenciam e são influenciados um pelo outro. De modo a obter conclusões relevantes, foi feita uma extensa revisão bibliográfica sobre teorias clássicas e trabalhos académicos passados, bem como considerações sobre uma abordagem mais recente aos mercados bolsistas: Análise Sentimental. Além disso, foi realizada uma análise estatística utilizando duas metodologias diferentes: o Estudo de Eventos e a Análise de Regressão. Os resultados obtidos indicam que de facto, existem influências e ligações significativas entre Eventos Políticos e o Índice Geral para o mercado acionista Português (PSI-Geral): Nesta base, foram retiradas conclusões, tais como: o impacto positivo das Eleições Autárquicas no Índice e por outro lado, o impacto negativo das Eleições Europeias no Índice. Outra conclusão a mencionar, as Notícias Políticas Negativas têm mais peso que as Notícias Políticas Positivas. Este estudo pretende fornecer informações relevantes aos investidores do mercado no processo de avaliação para investimentos futuros.

Palavras Chave: Bolsas de Valores, Eleições, Índice Bolsista Português, Política, Mercado de Capitais

Classificação JEL:

M10 Business Administration: General

G10 Financial Markets: General

Abstract

Stock Markets are one of today´s greatest asset for investors, nonetheless, Political Events can be one of today´s biggest challenge, as they add a crucial component: Uncertainty. This study aims to understand the impact of (Portuguese) Political Events on the Portuguese Stock Market. Specifically, it investigates the complex relations between these concepts, while analyzing how developments in each field both influence and are influenced by each other. To provide relevant conclusions, an extensive literature review regarding classical theories and past academic works was carried, as well as, considerations regarding a more recent approach to stock markets: Sentimental Analysis. Furthermore, a statistical analysis was performed using two different methodologies; Event Study and the Regression Analysis. The results obtained show that are significant influences and connections between Political Events and the Portuguese Stock Index (PSI-Geral): On this basis, conclusions were drawn such as Regional Elections impact positively the Index, on the other hand, European Elections have a negative impact. Another main conclusion is that Negative Political News have more weight that Positive Political News. This study intends to provide relevant information to market investors in the evaluation process for future investments.

Keywords: Stock Markets, Elections, Portuguese Stock Index, Politics, Capital Markets

JEL classification:

M10 Business Administration: General

G10 Financial Markets: General

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List Of Abbreviations

AR – Abnormal Return

ACAR – Average Cumulative Abnormal Return

CNE – Comissão Nacional de Eleições

EMU – European Monetary Union

EUR/USD – Exchange Rate Impacts

EU – European Union

HICP – Harmonised Indices of Consumer Prices

Ind_Conf – Confidence Index

Int_Rate – Interest Rate Level

JPN – Japanese

MAJ – Majoritarian Electoral System

Nikkei 225 – Japanese Stock Market Index

OLS – Ordinary Least Squares

PR – Proportional Electoral System

PS – Partido Socialista

PSD – Partido Social Democrata

SEC – Securities Exchange Commission

S&P500 – Standards & Poor500

Stoxx600 – European Union Stock Market Index

T1 – Presidential Elections

T2 – Parliamentary Elections

T3 – Regional Elections

T4 – European Elections

T5 – Parliament Dissolutions

T6 – Entry into the Euro

T7 – Financial Rescue to Portugal

T8 – Positive Political News

T9 – Negative Political News

US – United States

VAR – Vector Autoregression

Chapter 1 Introduction

1.1 Framework and Contextualization

It is known since the beginning of time that politics and economy have been holding hands with each other. Political economy has always been a constant search for the effects of political life and political decisions on the economy (Madeira, 2011).

In 2017, Luigi Zingales, the director of the Stigler Center, a center dedicated to understand issues at the intersection of politics and economy, said that the connection between finance and politics has been under-researched for years. Aligned with this statement and with my personal academical background, I decided to study the impact that political events have on the Portuguese stock market.

A market in which prices always "fully reflect" all available information is classified as "an efficient market" (Fama, 1970). However, as Gartner (1995) explains, markets may not be quite as efficient as Fama's path breaking work made us believe, as empirical research has already established a number of by now well-known stock market anomalies which could distort the postulate of efficient markets. The problem of studying the effects of political events on the Portuguese stock market is interesting, as we´ll confirm if markets truly reflect economic plus political information, giving the investor a fair competition on his way to success.

It is important to stress that there are several scientific studies that in a precise way sought to find answers and relationships in the trail of thought that are the subject of further study here. However, different determinants and variables will be introduced in the model under study and will naturally translate into divergent results.

1.2 Objectives

Considering all of this, we have three particular objectives that we want to accomplish with this dissertation. The first one is to assess the relationship between political events, and their impact, on the stock market returns in Portugal. We want to find out, mainly to what extent, are investors influenced to a certain behaviour – such as buying stocks or selling stocks – when they are confronted with political events, like elections or a

government dissolution for example. Furthermore, we want to investigate whether the ideological composition of the Portuguese government affects (or not) the performance of the Portuguese stock market.
The second main objective is to investigate to what level the Portuguese political cycle is correlated with the financial cycle. More importantly, can the political cycle influence the financial cycle? Or is it the other way around?

Last but not least, the third objective is the most ambitious one. With this dissertation we hope to provide relevant information to market investors in their evaluation process. Nowadays, investors and entrepreneurs want answers fast and they want them in a very limited frame of time, thus leading to uncertainty increased by the markets. Add a political event like an election to this equation and more volatility is added. Given this, and aligned with their profitability incentives, it is fair to say that a model that helps to forecast the economic and financial environment, when we are in presence of a political event, is more than welcome.

1.3 Dissertation Structure

This dissertation is composed by the following structure: Chapter 2, the literature review, will be separated in several sections: Firstly, we will talk about the more general classical studies that started to conceptualize the relationship between politics and economy. In the second section, we shed light on the importance of taking electoral systems in account when we study the impact of elections on the stock market, following the work of Vuchelen (2003). Still within this section, we will explore empirical studies that were conducted in several countries throughout time, thus being more connected with the research problem itself. In our chapter 3, the spotlight will be on a more recent and "Gen Z" approach on stock markets - "Sentiment Analysis".
Following the literature review, Chapter 4, the Methodology, will present the characterization of the sample data and the methodology used, as well as the variables utilized in our study.

Chapter 5, Empirical Results and Discussion, addresses the findings from the statistical analysis of the Regression Analysis, as well as, the analysis of the Event Study, under the Market Model and the Constant Mean Return Model. Here, a confirmation of the research

questions is done, and an integrated result discussion is also performed in order understand how the topics presented before may connect and influence each other.

Finally, Chapter 6, presents the conclusions for this study, along with the limitations and suggestions for future investigations.

Chapter 2 Literature Review

We will start this Literature Review from the past, as all storylines should start: The Classics. What would become of us without them? They were the pioneers and they were the ones who began to elaborate arguments and theories regarding the joint venture of Economics and Politics. Next, we will introduce a Political Science term to the equation: Electoral Systems. After that, prior evidence and results from several empirical studies will be presented. Last but not least: The Future: Sentiment Analysis and the impact of social media on stock markets.

2.1 The Classics

Kalecki (1943) was the first to develop the idea that politicians might alter policies before elections. This led to the development of two main strands of literature. The literature of Political Business Cycles by Nordhaus (1975) and the Partisan Theory by Hibbs (1977).

Nordhaus (1975), much aligned with Kalecki (1943), theorized about how electoral pressures can force the incumbent party into manipulating economic policy in order to increase its probability of re-election. To this author, the role of political parties is easily outlined. Parties are assumed to be interested only in winning elections (an idea that nowadays parties try to run away from in theory, but in paper… maybe the ghost of Nordhaus haunts them at night), therefore, the government will choose economic policies during its incumbency which maximize its plurality at the next election.

Although it is assumed that parties are "myopic" in the sense that they do not look beyond the next election, it might be argued that a more realistic assumption would have parties maximize the discounted expected value of the number of years in power. This presents some interesting paradoxes. If a party is sure of losing, he will sabotage the opposition party by leaving it with a high inflationary “inheritance”. This means that the party will do as badly as he can from the point of view of future inflation. On the other hand, if a

party is sure of victory, he may have a policy which is deflationary so that its chances at the next election are favourable.

To summarize, governments are driven by private interest and care only about their re-election prospects. They exploit the short-term Phillips curve (unfavourable trade-off that exists between unemployment and inflation) and benefit from the naive expectations of voters to attain their goal. As voters are concerned about unemployment, the incumbent party improves the probability of being re-elected by increasing the inflation rate so that the unemployment rate decreases just before the election. After the election, the government faces a high inflation rate and then implements austerity measures, leading to more unemployment. Unemployment and inflation are thus subject to cyclical fluctuations linked to the rhythm of elections and these fluctuations are called Political Business Cycles.

Moving on to the Partisan Theory idealised by Hibbs (1977). The crucial point of this theory is that macroeconomic policy is based on the idea that political parties typically weight nominal and real economic performance differently. What is the meaning of this? Hibbs (1977) conducted a scientific study about unemployment and inflation outcomes in relation to the political orientation of governments in 12 West European and North American nations. The analysis revealed a low unemployment - high inflation configuration in nations regularly governed by the Left and a high unemployment - low inflation pattern in political systems dominated by center and right-wing parties.

The general conclusion is that overall, policies are predetermined by the party ideology, so it´s no surprise that governments pursue a macroeconomic approach broadly in accordance with their own objective economic interests (this still applies to the present days, it´s easy to understand this by simply looking at the Biden vs Trump policies regarding Taxation). As observed, it is expected that left wing parties are more conscious about unemployment and right-wing parties are more concerned on keeping inflation stable. As a result, economic fluctuations arise as a consequence of policy changes when different parties alternate in office.

Lastly, Hibbs (1977) left a very interesting reflection: “The real winners of elections are perhaps best determined by examining the policy consequences of partisan change rather than by simply tallying the votes”. Indeed, the best way of judging a party is by analysing the outcome of the acts he left behind.

An innovative way of dealing with political business cycles was presented by Alesina (1987). This author considered the interaction of two parties with different objectives concerning inflation and unemployment. He argued that if discretionary policies were followed, an economic cycle related to the political cycle can result in equilibrium, by reducing or even eliminating the magnitude of the economic fluctuations. This provides a much more pacific approach than Nordahus (1975), who perceived political parties as evil organizations by sabotaging one another. To the author, the repeated interaction of political parties, can reduce the excess volatility of policies. This reduction of volatility is particularly beneficial in all cases in which frequent and drastic switches of policies, associated with changes in administrations, are costly.

2.2 Dualities of Electoral Systems and Stock Markets

In order to discuss the relationship between electoral systems and stock markets, first, one must know the definition of an electoral system, in a broader sense and in a restrictive sense. In a broader and wider way, an electoral system concerns the "set of legal-positive and customary rules that regulate the election of representatives of the people" (Freire, 2002, p.91). On the other hand, in a more restricted and narrower sense, the electoral system covers the “set of rules that regulate the conversion of votes into mandates in the process of electing representatives for political positions” (Freire, 2002, p.91). In this definition, the issue of majoritarian representation vs proportional representation is addressed.

Arend Lijphart (2002), one of the most brilliant scholars of comparative politics and electoral systems pointed out that one of the most important constitutional choices, in democracies, is choosing between a majoritarian election method and a proportional representation. In harmony with Sartori (1968), describes electoral systems as “the most specific manipulative instrument of politics”. Also, Robert Dahl (1998), considered by many as the “father of political science”, argued that: “Probably no political institutions shape the political landscape of a democratic country more than its electoral system” (Dahl, 1998, p.130)

Given the importance given to electoral systems, how can we form a bridge between them and stock markets? First of all, we must distinguish two types of electoral systems: proportional electoral system (PR) and the majoritarian electoral system (MAJ), although

there are more than two types of electoral systems, let us stick to these dichotomous separations for reasons of theoretical clarity and empirical measurement, a quite common practice between academics and scholars.

Among the older democracies the most common electoral system is one deliberately designed to produce a close correspondence between the proportion of the total votes cast for a party in elections and the proportion of seats the party gains in the legislature. For example, a party with 53 percent of the votes will win 53 percent of the seats. An arrangement like this is usually known as a system of proportional representation or PR. (Dahl, 1998). Theoretically speaking, countries who adopt a PR system will most likely be countries with a multiparty system where governments are formed through the help of coalitions, given this, most of the times, the stability of the incumbent government is considered more fragile. In this type of system, there is not an unambiguous attribution of political responsibility and there is an opportunity for new political forces to emerge (Nohlen, 1984).

Opposed to the PR system, the majoritarian electoral system dictates arrangements that may greatly increase the proportion of seats won by the party with the largest number of votes. For example, a party with, say, 53 percent of the votes may win 60 percent of the seats (Dahl, 1998). Countries who adopt this type of electoral system, are countries with two-party systems where single-party governments are often seen. In theory, MAJ systems will foster stable governments, where there is not space for coalitions and for new political forces to emerge. However, because there is a single party in power, most of the times, there will be an attribution of political responsibility. At the same time, the MAJ system encourage political moderation, as the two biggest parties are forced to fight for the more centrist and non-radical electorate, which largely determines the victory of the electoral race (Nohlen, 1984).

As it was mentioned before, there are already studies devoted to explore, and somehow explain the relation between political events and stock markets. However, most of them, do not pay attention to the electoral system of the country in study.

Thus, Vuchelen (2003) points out that there “is no consequence as long as data for the United States or politically similar systems are used. In these two-party systems with majority representation and therefore single-party governments, elections remove all uncertainty concerning future policies. In countries with a proportional electoral system,

however, governments are mostly multi-party coalitions. The election results do not, therefore, lead to a straightforward prediction of the composition of each new coalition. This implies something of a variable time lag between the election and the stock market reaction" (Vuchelen, 2003, p.87)

The crucial point in Vuchelen (2003) argument is that elections in a MAJ electoral system constitute a decisive and critical political event, due to the fact that their results clarify which party will form a government and therefore future policies. Furthermore, this helps investors` future investments, since they know the election result, meaning, they know fairly accurately the next policies to be implemented. On the other hand, in systems based on proportional representation, most of the times, the election result does not give us the party that will be in power, so, "the main political event is the formation of the coalition and not the election itself since the results do not, in general, lead to a straightforward prediction of the new government" (Vuchelen, 2003, p.90).

At this point, we can say that in terms of election related political events, a PR system will provide us a more exciting intrigue, since in a MAJ system, the main and frankly, the only point of uncertainty is the election result "per se". However, in a system based on coalitions, there are four political events that can influence the stock market and therefore, influence investors' decisions (Vuchelen, 2003, p.90)

1. Election results;

2. Time required to form a coalition (most of the times, this requires an unknown period of time);

3. The composition of the coalition (we normally see right-wing coalitions or left-wing coalitions, a "purple coalition" is often rare);

4. The new government´s policies (the announcement of the composition of the coalition may give investors' reasonable clues about future policies, however, one should normally wait for the public programme to make his moves).

In other words, "given the same level of electoral uncertainty, election events in MAJ systems will resolve more information uncertainty (i.e., we know more about who will govern a country) than in PR systems" (Lausegger, 2020, p.7).

Since the stock market react to investors 'expectations, a slightly doubt about, for example, the time of arranging a coalition or the composition of the previous, might be

enough to depress the financial market. The reaction of the stock market to the election results is therefore difficult to predict since, in contrast to a two-party system, uncertainties are not eliminated in a coalition-based system (Vuchelen, 2003). A key factor is the investor expectation about the election result and therefore the composition of the coalition, if it's perceived to be a right-wing coalition, markets will thrive.

2.3 Empirical Studies

As it was stated earlier, there are already a large sample of studies that sought to investigate the connection between stock markets and politics. In this section, we will go through the main studies in order to have a broader view regarding what has already been achieved/discovered in the past.

The United States of America has been a focus of many studies throughout time regarding the "partisan theory" and at the same time, regarding the influence of politics on the stock market. One of the persistent myths of the American stock market is that the market prefers Republicans, as the Republican party is traditionally viewed as the party of business, however, there are no differences on the stock market returns when democrats and republicans alter in office (Gartner and Wellershoff, 1995). In fact, historically, higher average returns have been obtained during democratic administrations than during republican administrations (Huang, 1985).

The ability to forecast financial market volatility is important for portfolio selection (Engle and Ng, 1993). The authors measured and tested the impact of news on the Japanese stock returns and concluded that "bad news" introduce more volatility than positive ones.

China, more specifically, Hong Kong, was also a target of a similar study conducted by Chan and Wei (1996). Similarly, to Japan, it was observed empirically that favourable political news are correlated to positive returns for the Hang Seng Index, causing a rise in the Index. On the other hand, unfavourable political news has an opposite effect causing the Hang Seng Index to fall, by presenting negative returns.

Vuchelen (2003) added a different component to his case study by considering the impact of the electoral systems on the Belgian stock market (in fact, his work is one of the main references for my thesis). He argued that in electoral systems characterized by majority

representation and single party governments (as in the United States of America), elections results allow a straightforward prediction of future economic policies. In contrast, in countries with proportional electoral systems (such as Portugal), the information on future policies contained in elections results is generally more limited, since multi-party coalitions are frequently common. Vuchelen (2003) concluded that if a center-left coalition is formed, stock prices increase by a negligible percentage, on the other hand, a center-right coalition would give the stock prices a considerable boost. Lastly, a "purple" coalition (left wing parties + right wing parties, without any center party) is negatively perceived by the Belgian investors.

As we can see by now, a lot of scholars conducted studies of the impact of political news on their country´s stock market. Moskalenko (2005), was not an exception. He investigated the existence of a relationship between economic and non-economic news and the behaviour of the Ukrainian stock market. The project showed that both political and economic news influence the Ukrainian stock market returns. Moreover, it was really compelling to read that the stock market responded more to non-monetary news while the response to monetary news was weaker and insignificant.

In the analysis of Nimkhunthod (2007), political movements of great impact such as dissolutions, elections, coups d'état, revolutions / conflicts were evaluated, in a total of 30 events in Thailand between 1975 and 2006. This study sought to emphasize the moments of large-scale political reaction, aiming to understand whether these are perceived in advance by investors or not. The author assumed that these moments of consultation with voters (elections) or of rupture and political turmoil (coups and dissolutions) can lead to a change in economic policy. In this way, the author obtained significant evidence of abnormal results a week before and after elections.

Chapter 3 Stock Markets, Social Media, Gen Z, Sentiments

Political events, are not the only phenomenon that have the power to influence stock markets. It is astonishing, and at the same time, terrifying, the power that some celebrities (and social media) have to impact stock markets nowadays. Kylie Jenner, an American social media personality and "socialite", tweeted back in February 2018 the following: "Does anyone else not open Snapchat anymore? Or is it just me… this is so sad". If a normal person tweeted this, the likelihood of impacting the markets would be relatively

close to zero. However, when you have millions of followers, there are palpable consequences to your actions. Within a day, a 7% decrease on the share price of the social media Snapchat occurred, followed by a loss of 1.3$billions in market share value.

Another celebrity that usually likes to "mess" with the rationality of stock markets is Elon Musk (Professor Eugene Fama would turn in his grave if he knew that it would only take a single tweet to influence markets nowadays). The world´s richest man has many times tried to manipulate stock markets. And he successfully made it. Back in 2018, Tesla shares soared after a tweet by Elon saying that he was considering making the company private and he had the funding to do it at a price of $420 per share. More recently, by simply adding to his twitter bio "#bitcoin", the price of the crypto currency Bitcoin got a 20% boost. Then again, in January of this year, Elon Musk announced that Tesla invested 1.5$billion in Bitcoin, adding up that Bitcoin will be accepted as a form of payment in the future. Increasingly, investors are calling out Musk´s actions as they perceived them as being unethical and related to market manipulation. Should the Securities Exchange Commission (SEC) have a word on it? Are we really in the presence of the manipulation or some people are just "ahead of the game"?

Those who think that markets were being played by people of high status is something of the present, are mistaken. In the old days, bond prices were highly affected by news from the battlefield. During the battle of waterloo, a victory for Britain or its allies would skyrocket bond prices, since it diminished the risk of defeat, default and more government borrowing (Roberts, 2015). Given the fact that information in those days was not flowing as fast as it is now, conditions were set for market manipulation, as news about the war were being fabricated. One man in particular, Nathan Mayer Rothschild, benefited a lot from his rapid and reliable system of communication back in the days. He had early knowledge of the outcome of the battle of Waterloo, because his couriers delivered information about the victory back to London before the British Cabinet itself knew, with this news he speculated on the London stock exchange, thus making a huge profit by holding an unfair advantage against the other British stockholders, by deceiving them. It is curious to see how throughout times, certain people managed to trick everyone else and gain leverage over others.

One thing is clear by now, whether we were talking about the present or the past, there were always certain people, given their status, who managed to shake things up. However,

not everyone can be the richest man alive or an influencer with millions of followers. Nonetheless, sometimes, you only need to have a social media account and an interest for memes and stock markets, typical Gen Z starter pack.

Recently, in the early days of 2021, a battle took place in one of the most unlikely of places, the stock market. Obviously, we are making reference to what is being portrayed as the modern David Vs Goliath story, the conflict between small investors on Reddit Vs big hedge funds regarding GameStop (an American company that sells video games, who was, unsurprisingly, affected by the worldwide corona virus pandemic) stocks.

First of all, it is important to understand what "Reddit" is and how important was the role of this social media. Another important question, why are Hedge funds involved in this matter? Reddit is a social news aggregation, web content rating, and discussion website, and it claims to be "the front-page of the internet". Basically, it´s a network of communities based on people´s interests. Given this, one particular community stole the spotlight: "wallstreetbets", a community for making money and being amused while doing it. Or, realistically, a place to come and upvote memes when your portfolio is down.

Now, what role do Hedge Funds play in all of this? Remember GameStop? The American videogame retailer? Well, they weren´t doing particularly well recently. Globalization and technology have evolved far enough for people to start buying videogames online, instead of going to an actual shop, those were the old days. Given this, big hedge funds started to hold short positions against GameStop. What is the meaning of this? Financially speaking, it means that the Hedge Funds were going to win money betting on the price fall of GameStop´s stock. And this is where "wallstreetbets" come into play, by realizing that those big hedge funds were targeting GameStop, these small investors, in an incredible coordinated movement, started to buy abnormal amounts of stocks, skyrocketing their prices (400% in 1 week). They had a clear objective in mind, make big hedge funds like Melvin Capital and Citron Capital abandon their short positions and lose a lot of money. As we can see, this wouldn´t be possible without Reddit, as the social media was the catalyser of this revolution against Hedge funds.

Intrinsically, a question arose inside of me: If people can have such an impact on stock markets, and considering the fact that people are governed by values and morals, would not it be optimal and a good idea to take people´s sentiments into the equation? After all, our emotional state can influence our decisions, and no doubt that some of them stock

market investment decisions. Turns out that we are not a pioneer in this matter, as many researchers have already dug deep into what is commonly called as “Sentiment Analysis”.

Sentiment analysis is the idea of filtering mainstream media and social media news, for example, and classify them into different categories. This rather difficult task of extracting subjective feelings expressed in tweets, text or news has proved to be important as the data of emotions and moods in social media, helps to quantify the opinion of investors.

Shah, Isah and Zulkerinine (2018) conducted a study in 2018, where they managed to achieve an accuracy of about 70% in predicting the trends in the short term of stock prices in the pharmaceutical sector, using only new sentiments. In order to have a deeper understanding of sentiment analysis, they created a “dictionary” with several steps**.** The first one is to find a reliable source of news data, for this, a web scraper is essential to gather the data. Secondly, a pre-processing step is required to clean the data. After this, the data is compared, by going through a process of match-making with a predefined dictionary, composed by domain key words and phrases and their corresponded polarity strength, regarding sentiments. The end result of this comparison step is an aggregation list of news articles with their corresponding sentiment scores. The scores will then be validated and cross-analysed against the prices of several stocks in order to comprehend their effect. Finally, based on the score, there are 3 decisions that investors have to face: to ’buy’, ’sell’ or ’hold’ (neither buying nor selling a security, meaning: do nothing). For example, if the overall score of a news is negative and is below a predefined threshold, then the stock will be sold. As we can see, “the overall goal of the model is to enhance the stock trading decision-making process” (Shah et.al, 2018).

Chapter 4 Data and Methodology

In this chapter we will present the characterization of the sample data and the methodology used in this study. In the first section, we present the main political events and news that we consider having had impact on the stock market movements: Elections and parliament dissolutions; and the two special economic events that probably influenced and imposed structural changes in the Portuguese stock market: the integration

in the Eurozone in January 1999, and the financial assistance to the Portuguese economy whose first signs began to be observed in in May 2011.[1]

In the second section, we present the variables used in our study and which we divided into three groups. The first, includes the stock exchange index that more extensively represents the Portuguese stock market, PSI-Geral and three market variables generally used and generally accepted to describe the stock market movements on the three most important monetary areas, the European Union (EU), the United States (US) and the Japanese (JPN) stock market indexes, Stoxx600, S&P500 and Nikkei 225, respectively. The second group includes 4 economic variables to describe the Portuguese stock market movements, the business cycle indicator, proxied by the confidence index, Ind_Conf, the interest rate level, Int_Rate, the exchange rate impacts, EUR/USD, and the consumer price index, HICP. In the third group, 9 dummy variables were used to capture the political effects that have been described in the previous Subsection.

Finally, in the third Subsection we present and discuss the methodology details that will be used to test the Portuguese stock market reactions derived by the main political events and news.

4.1. Data

The data of this dissertation was collected through extensive research of the political events in Portugal between 1988 and 2019. Next, we will present a definition of what is in fact a "political event", as well as the ones that we considered for this study.

4.1.1. Political events

A political event is a counter actualisation of a turning point in the virtual but nonetheless real domain of intensive political relations (Mackenzie, 2008). This realm is commonly referred as "the political" by political theorists. Consequently, a "political non-event" is any occurrence that is assigned meaning which merely accepts, or possibly reinforces, established conceptions of the political

[1] Even though the formal memorandum of understanding on financial assistance to the Portuguese Republic in order to cope with the 2010–14 Portuguese financial crisis has been signed in May 2011, in March 2010 the Portuguese Government recognized serious financial and economic problems and takes the unprecedented decision to issue a statement to reassure investors that the government is committed to reducing the deficit, in response to a hike in debt interest rates in the markets. In March 2010, S&P cuts Portugal's long term rating to A- from A+ and the short-term ratings to A-2 from A-1, due to fears surrounding the country's ability to manage its debts.

Political events have the capacity to produce real change in the actual material constitution of things, bodies and state of affairs. Given this, in the present dissertation, what falls under the category of Political Event are the following: Presidential Elections, Parliamentary Elections, Regional Elections, European Elections, Parliament Dissolutions. As stated earlier, we are also going to add to this list: Entry to the Euro and Financial Rescue to Portugal, as we considered them as two of the most important economic events. Positive Political News and Negative Political News, were also added, in order to see their ability (and power) to influence stock markets (for a more detailed list of political events and news, please check annexes A, B and C).

4.1.2. Financial and economic variables

Because there is no precise identification of which financial and economic variables can best describe the relationship with the stock markets, it leads to a subjective and, at some extent, arbitrary decision in the process of identifying these variables. Therefore, for the purpose to describe both financial and economic movements that may influence the Portuguese stock market returns during the sample period, we include in our study the following variables:

Table 4.1. Financial, Economic and Political Variables

Panel A: Stock Market Variables	
PSI-Geral	Daily and quarterly returns based on the representative Portuguese stock index PSI-Geral. Source: Bloomberg
Stoxx600	Daily and quarterly returns based on the representative EU stock index STOXX600. Source Bloomberg
S&P500	Daily and quarterly returns based on the representative US stock index S&P500. Source Bloomberg
Nikkei225	Daily and quarterly returns based on the representative Japanese stock index Nikkei225. Source Bloomberg

Panel B: Financial and Economic Variables	
Ind_Conf	Quarterly changes of the confidence index for the portuguese economy. Confidence indicators - Economic sentiment indicator - 1990 index - Portugal - Seasonally adjusted. Source: Banco de Portugal
Int_Rate	Quarterly changes of the 3 months interest rate. Libor DM in 1988; Libor ECU between January 1989 and December, 1998; Euribor from January 1999 and December, 2019. The changes were computed on the logarithmic change of the correspondent discount factor[2]. Source: Bloomberg
EUR/USD	Quarterly changes of the EUR-USD exchange rate. Source Bloomberg
HICP	Quarterly changes of the consumer prices. Portuguese consumer price index between January 1988 and December 1996. Harmonized Index on Consumer Prices[3] - All Items, from January 1997 to December 2019. Source: Instituto Nacional de Estatística and Banco de Portugal.

[2] This way of treating the behaviour of interest rates reflects the instantaneous rate of return obtained on an investment with an interbank risk for a 3-month period. Note, however, that the relation price/interest rate is a perfect inverse relation, i.e., when the interest rate rises the discount factor declines and vice versa. The two series present a perfect negative correlation. See, for instance, Oliveira, Salen, Curto and Ferreira (2019).

[3] The HICP consists of a breakdown of final individual consumption of goods and services, and covers the monetary expenditures of households in the economic territory of the EMU-area.

Panel C: Political Events and News

T1	Presidential elections - dummy variable equal to 1 in the quarter in which elections took place.
T2	Parliamentary elections - dummy variable equal to 1 in the quarter in which elections took place.
T3	Regional elections - dummy variable equal to 1 in the quarter in which elections took place.
T4	European Elections - dummy variable equal to 1 in the quarter in which elections took place.
T5	Parliament dissolutions - dummy variable equal to 1 in the quarter in which dissolution took place.
T6	Entry into the Euro: dummy variable equal to 1 after entry into the euro; 0 in previous quarters.
T7	Financial rescue to Portugal: dummy variable equal to 1 after the rescue; 0 in previous quarters.
T8	Positive political news - dummy variable equal to 1 in the quarter in which positive news took place.
T9	Negative political news - dummy variable equal to 1 in the quarter in which negative news took place.

The variables described above were used to study the macroeconomic and political impacts on the stock market based on two types of tests: the event study and regression analysis.

The sample period of our study was set between January 1988 and December 2019. The event study uses a daily frequency and the regression analysis use a quarterly frequency.

4.2. Methodology

In the first stage of our analysis, we will test investors' reactions to major political events that could potentially have had an impact on stock prices and, as well, on the short-term returns of the PSI-Geral index. In line with uncertain sentiment analysis tested by the work of Brown, Harlow and Tinic (1988) and the Efficient Market Hypothesis proposed by Fama (1963 1965a, 1965b, 1970, 1991), we tested the responses of rational and risk-averse investors to the favorable and unfavorable surprises derived from political selected events. The second stage uses regression analysis to test whether the political events or political news have had impact in the stock market returns.

4.2.1. Event Study

The Portuguese political system is based on party representation obtained through elections to the Assembly of the Republic. It is important to note that the historical period under analysis presents a small weight of governing coalitions and a great predominance of one-party parliamentary and governing majorities, closely associated with the two largest parties of Portugal (Partido Socialista - PS and Partido Social Democrata - PSD).

Portugal can be characterized as a “50/50” country, it is laid right in the middle of both methodologies, in some way. This means that, in order to achieve a more complete dissertation, we considered appropriate to apply an event study methodology, as well as, a regression analysis.

Moreover, according to the theory of legislative majorities, expectations regarding the formation of parliamentary majorities, a case that does not apply completely to Portugal, are better suited to the event study methodology.

However, Portugal can also be portrayed as a bi-partisan country, where PS and PSD could eventually win the majority of votes, reason why we´re applying as well the regression analysis.

As a simplified methodology, the event study approach possesses a vast literature, containing much discussion on how it can be applied more reliably. Thus, various forms of statistical significance were developed to improve the reliability of the results presented by the model and to surpass some disadvantages or weaknesses of previously

developed tests, see for instance some of the most popular, Cramer (1961), Patell (1976), Hall (1992) and Rimoldini (2013).

Brown et. al (1988) have shown that the rationality assumption does not necessarily require an instantaneous assimilation of the new information. In fact, in the presence of imperfect information, investors may respond differently according to their expectations of the policy environment and its impact on the economy when political events, favorable or unfavorable, are analyzed separately. Thus, immediate price changes induced by these events are likely to be followed by positive or negative returns during the post-event period, although this ex-post pattern of returns may be merely illusory, since it is very difficult to predict on an ex-ante basis the direction and magnitude of returns.

Within our event study, the hypotheses that the excess mean returns of the PSI-Geral index portfolio are the same, before and after the event were tested. We will examine the responses to Presidential, Parliamentary, Regional and European elections, and Parliamentary dissolutions measuring those responses in terms of excess or abnormal returns ex-ante and ex-post the event date. To test the proposed hypotheses, this study uses the daily stock closing prices of the Portuguese stock index, PSI-Geral, and the main stock market's referential on Europe, Stoxx600, United States, S&P500, and Japan, Nikkei225.

The approaches used to calculate the 'normal' returns are the market model and the constant mean return model, assuming that asset returns are jointly multivariate normal and independently and identically distributed through time. This distributional assumption is strong but, in practice, it generally does not lead to problems because the assumption is empirically reasonable and inferences using the normal return models tend to be robust to deviations from the assumption when the sample is large, as this is the case.

4.2.2. Market Model Specification

The market model is a statistical model which relates the return of any given security to the return of the market portfolio. The model's linear specification follows the assumed joint normality of asset returns and regresses the returns from PSI-Geral stock index against the returns from Stoxx600, S&P500 and Nikkei225. Equation 4.1 specifies the analytical expression of the model,

$$R_t^{PSI-Geral} = b_0 + b_1 R_t^{Stoxx600} + b_2 R_t^{S\&P500} + b_3 R_t^{Nikkei225} + u_t \ , \quad Eq\ 4.1$$

where, R_t^i are the *t* daily returns on the *i*-index, calculated as the $\ln(I_t) - \ln(I_{t-1})$, b_0 to b_3 are the regression coefficients to be estimated and u_t is the stochastic disturbance term, which is assumed to be $u_t \sim i.i.d.$. Table 4.2 reports the summary statistics for each variable used in the model's estimation.

Before running the regression, it is important to ensure that all the variables included in the model. Hence, using the augmented Dickey Fuller test, time series on the first differences (returns) were examined in order to test for the existence of a unit root in the variables included in de model. The results are reported in Table 4.3 Unit Root Tests.

Table 4.2 Summary Statistics of all variables used in the Market Model

	PSI-Geral	Stoxx600	S&P500	Nikkei225
Mean	0.000154	0.000221	0.000321	1.17E-05
Standard Error	0.000118	0.000124	0.000124	0.000165
Median	0.000251	0.000638	0.000388	0
Minimum		-0.0793	-0.0947	-0.12111
Maximum	0.336502	0.0941	0.109572	0.132346
1st Decile (Largest)	0.053818	0.054904	0.052758	0.070858
10th Decile (Smallest)	-0.05953	-0.05714	-0.06312	-0.07085
Kurtosis	10.02927	5.968434	8.828071	6.07374
Skewness	-0.36407	-0.26072	-0.30513	-0.10471
Count	7,860	7,860	7,860	7,860

The first row of Table 4.3 shows the t-statistic of the Augmented Dickey-Fuller unit root test. The second row shows the probability of not rejecting the null hypothesis H0: existence of a unit root process, when the null is true. The null hypothesis of non-stationarity is strongly rejected for all variables.

Table 4.3 Unit Root Tests

	PSI-Geral	Stoxx600	S&P500	Nikkei225
Augmented Dickey-Fuller test statistic	-77.3447	-42.4109	-67.018	-91.7875
Probability*	0.0001	0.0000	0.0000	0.0001
Included observations after adjustments	7,859	7,855	7,858	7,859
Null Hypothesis: Variable has a unit root				
Exogenous: Constant, Linear Trend				
*MacKinnon (1996) one-sided p-values.				

Table 4.4 summarizes the results of the basic market model using Equation 4.1 and the ordinary least squares (OLS) methodology during the period of January 1987 to December 2019. The OLS procedure can be inefficient due to the potential presence of heteroscedasticity, that is, the standard deviation of the error (u_t) is an increasing function of the independent (or other exogenous) variables. To detect the presence of heteroscedasticity and first-order autocorrelation of the estimation errors, we used the test proposed by White (1980) and the Lagrange multiplier of Breusch (1978) – Godfrey (1978), respectively. Although we do not report the results of the tests in our work, they showed evidence that residuals are mostly heteroscedastic and autocorrelated, a problem that originates an efficiency loss on the OLS estimators, which could undermine the value of the statistical inferences that were reached. Therefore, we will use the procedures proposed by Newey and West (1987) to correct any autocorrelation and/or heteroscedasticity problems which may arise in the residual terms of the regressions.

Table 4.4 Market Model - Regression results using Equation 4.1

Variable	Coefficient	*p-value*
Intercept	5.17E-06	*(0.9542)*
Stoxx600	0.59055	*(0.0000)*
S&P500	0.039027	*(0.0000)*
Nikkei225	0.021631	*(0.0015)*
R-squared	0.41805	
Adjusted R-squared	0.41783	
S.E. of regression	0.00798	
F-statistic	1880.91	*(0.0000)*
Durbin-Watson stat	1.6727	

Regression's estimates from Equation 4.1 are tested jointly for the insignificance of the coefficients and the null hypothesis is strongly rejected since the *F*-Statistic value is statistically significant at less than 1% significance level. In the same way, the loadings' sign of the explanatory variables seems to be correct and present strong significance levels (*p*-values less than 1%) thus constituting reasonably good market drivers to explain the Portuguese stock market innovations.

Equation 4.1 will be used to regress the PSI-Geral daily returns, as the explained, against the daily returns from Stoxx600, S&P500 and Nikkei225, the explanatory variables, over 120 working days period (*t*-140, *t*-21) to estimate the risk factors. Armed with the estimated coefficients (risk factors) we will construct the expected normal returns during the event window from (*t*-20) and (*t*+20), and (*t*-10) and (*t*+10) trading days to capture the ex-ante and ex-post event responses, respectively.

The abnormal or unexpected return (AR) is computed by taking the regression's residual, u_t, that occurs in a particular day *t* during the event window (*t*-20) *and* (*t*+20).

4.2.3. Constant Mean Return Model

Undoubtedly, the test model based on that of constant average rates of return comes across as a relatively simplistic model. However, Brown and Warner (1980, 1985) showed that, despite being quite simple it could, in most situations, lead to results close to those that could be obtained through more sophisticated models. Although it is expected that the constant mean return model may lead to higher levels of dispersion of the variable under study, this approach will be used as a complement to verify the robustness of the results obtained via market model described above. The constant mean return of PSI-Geral will be estimated over a 120-day time window (*t*-140, *t*-21). The event test will be applied to the two event windows of 20 and 10 business days before and 20 and 10 days after the event and twenty days after the event are used, i.e. (*t*-20) and (*t*-10) compared to the periods (t+20) and (t+10) respectively, to measure the post-event responses.

$$\bar{R}_t^{PSI-Geral} = \frac{1}{120} \sum_{i=t-21}^{t-140} R_i^{PSI-Geral}, \qquad Eq\ 4.2$$

where, $\bar{R}_t^{PSI-Geral}$ is the constant mean return on PSI-Geral index on day *t* corresponding to a particular event that has been occurred on that date and computed between the (*t*-140) and (*t*-21) period.

The abnormal return in each day during the event window, (*t*-20) *and* (*t*+20), AR_t, is computed as the differences between the constant mean return value, $\bar{R}_t^{PSI-Geral}$, and the return occurring on each particular day belonging the event window.

4.2.4 Testing the Event Responses

As referred before, to analyse the impact of political events on Portuguese stock market, we will run our event study using both, the expected return derived by the market model and the constant mean return model, to analyse the short-term changes in returns. With multiple events analysis, it is possible to find pattern responses to the announcements, especially associated with a distinct period, typically days after the event. The Average Cumulative Abnormal Return (ACAR) gives us the average cumulative return that an investor could achieve after the event comparing with the period before the event. The overall average impact of all events of the same kind in the PSI-Geral stock index are measured as the overall average impacts.

Armed with the ACAR for twenty-, and ten-days prior the events and for the twenty and ten days after the event, we use the standard *t*-test, since it is a simple form to test for the existence of abnormal returns, the main focus of the study. The ACAR *t*-test is calculated under the following hypothesis:

$$H_0: \overline{ACAR}_{[t-20,t-1]} = \overline{ACAR}_{[t+1,t+20]}$$
$$H_1: \overline{ACAR}_{[t-20,t-1]} \neq \overline{ACAR}_{[t+1,t+20]}$$

and,

$$H_0: \overline{ACAR}_{[t-10,t-1]} = \overline{ACAR}_{[t+1,t+10]}$$
$$H_1: \overline{ACAR}_{[t-10,t-1]} \neq \overline{ACAR}_{[t+1,t+10]}$$

where, $\overline{ACAR}$ is the average abnormal return observed in each event window, i.e., the average abnormal return in each event observed in the *t*±20 and *t*±10 days ex-ante and ex-post event. The *t*-tests significance and the evolution of CAR for all the political events identified in Table 4.1 are reported in the Annex D, E, F, G and H.

4.2.5 Regression Analysis

As stated earlier, Portugal is in a "limbo" between the event study methodology and the regression analysis.

Based on an efficient view of stock market behaviour, we test the effects of various political events using time series data on the Portuguese stock market for the period January 1987 to December 2019. During this 33-year period, Portugal was characterized by a parliamentary political system, 10 governments held office, 6 were centre-left and 4 were centre-right. It is important to note that few coalitions between parties were in place before the elections.

Following the work of Vuchelen (2003), Juntilla, Larkomaa and Perttunen (1997) and Kim and Wu (1987), a regression approach using quarterly data seems to us to be an appropriate approach to capture the possible resulting average impacts of the political events and the political news. Therefore, we will try to explain the signs and magnitude of the changes in the PSI-Geral index, as the explained variable, and the percentage changes in European main stock index, Stoxx600; the changes in the Portuguese business cycle proxied by the confidence level index[4] Ind_Conf; the changes in the Euribor 3 months interest rate level, Int_Rate; the changes in the EUR/USD exchange rate, EUR/USD; and the changes in the harmonized index on the consumer prices, HICP, as the explanatory variables.

These 6 economic and financial variables and nine dummy variables described in Table 4.1 Financial, Economic and Political Variables, were included in the model regression described in Equation 4.3

$$R_t^{PSI-Geral} = \beta_0 + \beta X_t + \varepsilon_t \,, \qquad Eq\ 4.3$$

where $R_t^{PSI-Geral}$is the percentage change in the PSI-Geral stock index, β_0 is the intercept constant term, X_{jt} is *k*-vector of explanatory variables, and $\beta = (\beta_1, \dots, \beta_k)'$ are the coefficients for the explanatory variables. ε_{jt} is the stochastic disturbance term, which is assumed to be $\varepsilon_t \sim i.i.d.$. Table 4.5 reports the summary statistics for each of the financial and economic variables used in the model's estimation.

[4] As in Vuchelen (2003) the contemporaneously change in business cycle was not statiscally significant. However, knowing that these impacts have a certain period to be internalized by the investors, we decided to introduce the one quarter lagged value of this variable in the regression analysis.

Table 4.5 Descriptive Statistics

	PSI-Geral	Stoxx600	Ind_Conf	Int_Rate	EUR/USD	HICP
Mean	0.00948	0.01360	-0.00100	0.00264	-0.00104	0.00883
Median	0.01139	0.02921	0.00233	0.00113	-0.00141	-0.00675
Maximum	0.37773	0.22209	0.14030	0.20311	0.12877	0.11037
Minimum	-0.30606	-0.26572	-0.13760	-0.11916	-0.14395	-0.0527
Std. Dev.	0.11165	0.08868	0.04243	0.037032	0.052371	0.03994
Skewness	0.09454	-0.94433	-0.12464	1.17628	-0.18313	0.91923
Kurtosis	4.02099	4.54177	4.58929	9.71891	2.846916	2.56910
Observations	128	128	128	128	128	128

Before the coefficient estimations using Equation 4.3, we should check for the stationarity of the variables included in the model using the standard augmented unit root test statistic proposed by Dickey-Fuller. The results are summarized in the Table 4.6.

Table 4.6 Unit Root Tests

	PSI-Geral	Stoxx600	Ind_Conf	Int_Rate	EUR/USD	HICP
Augmented Dickey-Fuller test	-10.5033	-10.3732	-8.0931	-7.19979	-11.2234	-2.3473
Probability*	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0188)

Null Hypothesis: variable Xi has a unit root

Exogenous: PSI-Geral, Stoxx600, Ind_Conf and EUR/USD, constant trend; HICP constant, linear trend

*MacKinnon (1996) one-sided (*p-values*).

All variables are represented by the first differences and show non-stationarity since we could reject for all the null hypothesis with a high confidence level.

Some researchers prefer to use a VAR model to extract news from the observed time series assuming implicitly that the investors respond more effectively for the measured news than for the true news (see for instance Cutler, Poterba and Summers, 1989; Viskari, 1992). In the present empirical analysis, we choose to use the first differences of the variables as proxies for the news and assume that all variables follow a normal

multi-variate process. If this assumption follows, then the first differences are equivalent to unexpected values which reflect the unanticipated innovations.[5]

Finally, Table 4.7 shows the correlation coefficients of the financial and economic variables included in the regression model.

Table 4.7 Correlation Coefficients

	PSI	Stoxx600	Ind_Conf	Int_Rate	EUR/USD	HICP
PSI-Geral	1	0.75779	0.29402	-0.16153	-0.04593	0.14214
Stoxx600	0.75779	1	0.35194	-0.25136	-0.23276	0.05817
Ind_Conf	0.29402	0.35194	1	-0.30849	0.11189	-0.02835
Int_Rate	-0.16153	-0.25136	-0.30849	1	0.01573	-0.08641
EUR/USD	-0.04593	-0.23276	0.11189	0.01573	1	-0.13985
HICP	0.14214	0.05817	-0.02835	-0.08641	-0.13985	1

As it could be expected, the PSI-Geral shows a high and positive correlation coefficient with the Stoxx600, and these two indexes respond negatively to the positive changes in the interest rates. The negative correlation of the PSI-Geral and Stoxx600 with the exchange rate is somewhat surprising but reflects the negative impacts on the trade balance induced by the exchange rate increases and the consequent loss of competitiveness of European companies and, most particularly, of Portuguese companies.

Chapter 5 Empirical Results and Discussion

In this section, we will start by going through the main differences between the results of the Market Model and the Constant Mean Model, as well as, the differences between the significance levels of the 2 windows of observations (t-20; t+20 and t-10; t+10). Furthermore, we will address some results that concern the Regression Analysis.

Overall, the results suggest evidence of the effect of some of Portugal political activities on its stock market. There are 4 types of elections: Presidential, Parliamentary, Regional and European.

The Market Model show us that Presidential and Parliamentary elections yield positive responses for the market, with significant abnormal returns before and after the election

[5] The main reason why we chose to work with first differences was that the regression model gives better results than when we used the residuals obtained by using the VAR model.

itself. Regional and European elections, on the other hand, influence the market negatively since day one. The Parliament Dissolution, overall, causes different responses by the market, depending on the time period. Before the dissolution itself, there is positive returns (t-20; t-1), however, after the dissolution occurs, the sign of cumulative abnormal return turn to negative after 10 days.

The constant mean return model, on an overall analysis, presents different results from the Market Model. Presidential and European elections yield negative correlations with the Portuguese stock market, as well as the Parliament Dissolution. On the other hand, Parliamentary and Regional elections present positive impact and yield abnormal results before and after the election itself.

5.1. Market Model

Starting with the Presidential Elections, the signs of cumulative abnormal returns are positive, regarding the two-window period established, meaning that the market reacts positively prior to the event, as well as, after the event. Thus, a significant abnormal return can be found with a 99% level of confidence 20 days before the presidential election, as well as 10 days after the election. Another aspect to take in consideration is that the effect is stronger in the time frame of (t-10; t+10). This might be because, on average, there was more uncertainty until (almost) Election Day, nonetheless, we must take in consideration that in the older elections the efficiency and speed of access to information was not yet what it is today (news, internet, information access equipment, etc).

Table 5.1 Market Model - Average Cumulative Abnormal Returns: Presidential Elections

	[t-20;t-1]	**[t+1;t+20]**	**P(T≤t) two-tail**	**[t-10;t-1]**	**[t+1;t+10]**	**P(T≤t) two-tail**
January,1991	-0.00203	0.05132	0.00000***	-0.00109	0.03181	0.00245***
January,1996	0.02547	0.08918	0.00000***	0.03599	0.08185	0.00001***
January,2001	0.02527	0.08189	0.00000***	0.03432	0.07524	0.00008***
January,2006	0.01139	0.01201	0.89614	0.01716	-0.00632	0.00000***
January,2011	-0.02241	-0.00028	0.00001***	-0.03014	-0.00511	0.00096***
January,2016	-0.00147	0.00108	0.66881	-0.00636	0.01543	0.01996**
Overall	**0.00604**	**0.03920**	**0.00000*** **	**0.00831**	**0.03215**	**0.00000*** **

Moving on to the Parliamentary elections, we can observe by the overall result that there is in fact a positive (and statistically significant) impact on the index, however, the effect in this type of election is stronger in the window of observation of t-20;t+20, which

possibly indicates that the electors start to build their expectations sooner than later, regarding parliamentary elections (to some, this election is the most important one because a new government could be elected, which will dictate new policies, meaning that the investors have to be carefully prepared). We can also observe that t-10 days before the election itself, there´s a switch from negative to positive abnormal returns, reaching its peak on the day of the event itself, and then slowly diminishing, although never returning to numbers below zero.

Table 5.2 Market Model - Average Cumulative Abnormal Returns: Parliamentary Elections

	[t-20;t-1]	**[t+1;t+20]**	**P(T≤t) two-tail**	**[t-10;t-1]**	**[t+1;t+10]**	**P(T≤t) two-tail**
October, 1991	0.00093	-0.00657	0.02437**	0.00495	0.00059	0.38612
October, 1995	0.00115	0.02963	0.00000***	0.00605	0.02599	0.00000***
October, 1999	0.01432	0.06296	0.00000***	0.03486	0.05966	0.00999***
March, 2002	-0.00281	0.00505	0.04955**	0.00986	0.00690	0.46046
February, 2005	0.00013	-0.03685	0.00000***	-0.00270	-0.03063	0.00000***
September, 2009	0.02227	0.06110	0.00000***	0.03875	0.06332	0.00002***
June, 2011	0.00293	-0.00191	0.09925*	0.00320	0.00257	0.86810
October, 2015	0.00023	0.02769	0.00004***	0.01497	0.04222	0.00016***
October, 2019	-0.00549	-0.01043	0.01689**	-0.00796	-0.01193	0.23770
Overall	**0.00374**	**0.01452**	**0.00008*** **	**0.01133**	**0.01763**	**0.02724****

On Table 5.3 we have Regional Elections. Although being significant, from a statistical point of view, they present a negative correlation with the Portuguese stock index, as shown by the negative overall result, thus positive values were never found, before, during or after the event itself. We can also see that investors and electors start paying attention earlier (stronger effect on the t-20; t+20 window of observation) as regional elections have a direct effect on the daily life of the Portuguese people.

Table 5.3 Market Model - Average Cumulative Abnormal Returns: Regional Elections

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
December, 1989	-0.04935	-0.18339	0.00000***	-0.09036	-0.16552	0.00000***
December, 1993	-0.02429	-0.04667	0.00000***	-0.03308	-0.05309	0.00037***
December, 1997	-0.01236	0.00871	0.00009***	-0.00841	-0.00726	0.76389
December, 2001	-0.00303	0.00378	0.02539**	0.00036	0.00189	0.72800
October, 2005	0.00827	0.02227	0.00005***	0.01679	0.02796	0.00411***
October, 2009	0.01520	-0.02451	0.00003***	0.01604	0.00415	0.10620
September, 2013	-0.01278	-0.00740	0.11286	-0.02131	-0.01106	0.00608***
October, 2017	-0.01149	-0.03424	0.00000***	-0.01012	-0.02740	0.00000***
Overall	**-0.01123**	**-0.03268**	**0.00000*** **	**-0.01626**	**-0.02879**	**0.00000*** **

Just like the Regional Elections, the European Elections are statistically significant, and have a negative correlation with the Portuguese stock market index. We can see that we have negative abnormal returns throughout the all-time series except for a small period between t-17 and t-11 where we can observe small, yet, positive abnormal returns. A plausible reason for the negative correlation with the Portuguese stock market is perhaps connected with the legislative packages, which appear around the time of the European elections. These packages lead to uncertainty, making companies more reluctant to distribute dividends to their shareholders.

Table 5.4 Market Model - Average Cumulative Abnormal Returns: European Elections

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
June, 1989	-0.01678	-0.04029	0.00000***	-0.02891	-0.04899	0.000243***
June, 1994	-0.02759	-0.12256	0.00000***	-0.04743	-0.12147	0.00000***
June, 1999	0.05092	0.04862	0.75814	0.06921	0.05168	0.00010***
June, 2004	-0.01766	-0.03354	0.00000***	-0.02342	-0.02912	0.00221***
June, 2009	-0.01406	-0.04634	0.00000***	-0.01334	-0.04645	0.00000***
May, 2014	-0.03334	-0.05336	0.01642**	-0.06178	-0.05036	0.11804
May, 2019	-0.00192	0.00727	0.00225***	-0.00253	0.01220	0.00005***
Overall	**-0.00863**	**-0.03431**	**0.00000*** **	**-0.01546**	**-0.03322**	**0.00000*** **

Finally, we have Parliament Dissolutions. Parliament Dissolutions are one of the biggest commotions among political events, given this, it wouldn´t be a surprise if a dissolution of parliament had a negative effect on the Portuguese capital market, however, the overall results obtained, from a statistical point of view, say otherwise. Why? Well, having a dissolution of the parliament, means that the President has to call for new elections, giving the possibility of having a different party/coalition, more attractive to investors, in power. We can understand by the positive abnormal returns, before the event, that there´s a general feeling of hope by the investors. Nonetheless, as we get closer to the parliament dissolution itself (t-8days), the sign of the cumulative abnormal returns, turn to negative, until t+5, where we observe a very low positive value, returning to negative fairly quick afterwards.

Table 5.5 Market Model - Average Cumulative Abnormal Returns: Parliament Dissolutions

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
December, 2001	0.00963	0.01749	0.00803***	0.01433	0.01480	0.90145
November, 2004	-0.00877	-0.02158	0.00000***	-0.01134	-0.02408	0.00011***
March, 2011	0.00164	-0.03029	0.00000***	-0.00280	-0.01593	0.00141***
Overall	**0.00083**	**-0.01146**	**0.00000*** **	**0.00006**	**-0.00840**	**0.00041*** **

5.2. Constant Mean Return Model

Starting with the Presidential Election once again, as shown by the overall result, this type of election is statistically significant, however, there´s a negative correlation with the Portuguese stock market, we can conclude, with a 99% level of confidence, that a negative (nonetheless, significant) abnormal result can be found 20 days before the presidential election, as well as 10 before after the election. However, this negative correlation changes after the event itself, as we can conclude, with a 99% level of confidence as well, that positive abnormal results can be seen starting from 2 days after the election occurs. In this model, there is not a big difference between the strength of the time frames.

Table 5.6 Constant Mean Return Model – Average Cumulative Abnormal Returns: Presidential Elections

	[t-20;t-1]	**[t+1;t+20]**	**P(T≤t) two-tail**	**[t-10;t-1]**	**[t+1;t+10]**	**P(T≤t) two-tail**
January, 1991	0.00026	0.06059	0.00000***	-0.00037	0.03611	0.00277***
January, 1996	0.02459	0.09223	0.00000***	0.03582	0.08326	0.00000***
January, 2001	-0.00884	0.05250	0.00000***	-0.00658	0.04690	0.00000***
January, 2006	0.01385	0.01834	0.38419	0.01983	-0.00148	0.00001***
January, 2011	-0.02852	-0.00573	0.00002***	-0.03491	-0.01433	0.00297***
January, 2016	-0.04957	-0.09767	0.0008***	-0.08469	-0.06714	0.22606
Overall	**-0.00804**	**0.02005**	**0.00000*** **	**-0.01182**	**0.01389**	**0.00000*** **

Moving on to the Parliamentary elections, we can observe that investors start to build expectations sooner than later, as we have negative abnormal returns until t-12. After this, we observe positive abnormal returns throughout all-time series, reaching its peak on election day and maintaining positive values after the election day. It is important to mention as well that the effect is stronger on the t-20; t+20 time frame, once again, confirming that the investors start to build expectations earlier.

Table 5.7 Constant Mean Return Model – Average Cumulative Abnormal Returns: Parliamentary Elections

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
October, 1991	-0.00630	-0.02366	0.00001***	-0.00359	-0.01110	0.02883**
October, 1995	0.00274	0.02544	0.00000***	0.00666	0.02341	0.00000***
October, 1999	0.01208	0.05836	0.00000***	0.02975	0.04851	0.03538**
March, 2002	0.00309	0.02570	0.00224***	0.02785	0.03244	0.76401
February, 2005	0.00797	-0.02826	0.00000***	0.00921	-0.01917	0.00000***
September, 2009	0.00501	0.01048	0.33061	0.01984	0.01355	0.32981
June, 2011	-0.00542	-0.04318	0.00000***	-0.01043	-0.03056	0.00034***
October, 2015	0.00818	0.09501	0.00000***	0.01187	0.08881	0.00000***
October, 2019	-0.00517	-0.00243	0.45115	-0.01206	-0.01267	0.85961
Overall	**0.00246**	**0.01305**	**0.00001*** **	**0.00879**	**0.01369**	**0.03881****

When it comes to Regional Elections, we can note that we have a positive correlation with the Portuguese stock index, opposite to what we saw in the market model. It is worth mentioning that from a statistical point of view, a significant abnormal return can be found with a 99% level of confidence 20 days before the regional election, as well as 10 days after the election, however, 10 days after the election, the abnormal return is negative. Ought to mention as well that the effect is stronger on the t-20; t+20 time frame, supporting the idea that, since regional elections, have a deeper impact on the daily life of the Portuguese people, investors start to build their expectations sooner than later.

Table 5.8 Constant Mean Return Model – Average Cumulative Abnormal Returns: Regional Elections

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
December, 1989	-0.02753	-0.11539	0.00000***	-0.04829	-0.09730	0.00001***
December, 1993	-0.04355	-0.06599	0.00011***	-0.05875	-0.07497	0.00179***
December, 1997	0.02638	0.07719	0.00000***	0.04622	0.05414	0.14012
December,2001	-0.00239	0.01437	0.00014***	0.00202	0.01165	0.16519
October, 2005	0.00901	0.00524	0.28993	0.01911	0.01222	0.07948*
October, 2009	0.01389	-0.01895	0.00017***	0.01323	0.01094	0.73221
September,2013	0.02806	0.04494	0.00173***	0.02951	0.02854	0.80690
October, 2017	-0.00203	-0.00626	0.13855	0.00537	0.00096	0.0295**
Overall	0.00023	-0.00811	0.00000***	0.00105	-0.00673	0.00000***

On Panel D we have European Elections. As shown by the negative overall result, these elections do not have a positive impact on the index, nevertheless, they are statistically significant (p-value<0, 05). As stated earlier, this might occur because of the uncertainty associated with legislative packages presented around the time of these elections. This uncertainty makes companies more reluctant to distribute dividends to their shareholders. Another reason could be the simple fact that nowadays, a lot of people, still don't see a point in voting in a European Election (in 2019 the abstention rate reached 68.9%), as people, nowadays, still do not know who they are voting for in these elections.

Table 5.9 Constant Mean Return Model – Average Cumulative Abnormal Returns: European Elections

	[t-20;t-1]	[t+1;t+20]	P(T≤t) two-tail	[t-10;t-1]	[t+1;t+10]	P(T≤t) two-tail
June, 1989	-0.01786	-0.04051	0.00000***	-0.02887	-0.04901	0.00020***
June, 1994	-0.02344	-0.10494	0.00000***	-0.04071	-0.10781	0.00001***
June, 1999	0.02198	0.02030	0.77233	0.03492	0.02282	0.00529***
June, 2004	-0.01228	-0.02299	0.000423***	-0.01371	-0.01541	0.40931
June, 2009	-0.01999	-0.06522	0.00000***	-0.01684	-0.05869	0.00003***
May, 2014	-0.02900	-0.02903	0.99671	-0.05368	-0.02783	0.00452***
May, 2019	-0.02241	-0.03231	0.03672**	-0.03285	-0.03247	0.91849
Overall	**-0.01471**	**-0.03924**	**0.00000*** **	**-0.02168**	**-0.03834**	**0.00000*** **

Lastly, Parliament Dissolutions. As mentioned before, parliament dissolutions are not seen with good eyes compared with elections, so, it is not a surprise to observe this time a negative correlation with the Portuguese stock index, throughout all time frame (before and after the event itself), as the table 5.10 below shows us. Only the parliament

dissolution that have taken place in December, 2001 present a positive sign, which could mean that this dissolution has been applauded by the Portuguese equity market.

Overall and nevertheless the negative signs are correct, the statistical significance between difference in means during the event window are not significant as the *p-value* is higher than 10%. Curiously, the mean differences are statistically significant if we consider the events individually.

Table 5.10 Constant Mean Return Model – Average Cumulative Abnormal Returns: Parliament Dissolutions

	[t-20;t-1]	**[t+1;t+20]**	**P(T≤t) two-tail**	**[t-10;t-1]**	**[t+1;t+10]**	**P(T≤t) two-tail**
December, 2001	0.00260	0.02596	0.00000***	0.00737	0.02344	0.00214***
November, 2004	0.00136	-0.00655	0.00006***	-0.00015	-0.01110	0.00048***
March, 2011	-0.01501	-0.03063	0.00041***	-0.02070	-0.01800	0.37980
Overall	**-0.00368**	**-0.00374**	**0.96290**	**-0.00449**	**-0.00189**	**0.11057**

5.3. Regression Analysis

We initiate the second part of our result discussion with the Regression Analysis. More specifically, with testing the significance of two of the most important political events: The Entry into the Euro (T6) and the Financial Rescue to Portugal (T7).

These regressions were used to test, jointly and individually, whether these two relevant events gave rise to a break in the structure of the PSI-geral time series. As we can see from the results obtained above, the dummy variable T6, had no influence on the Portuguese stock market index. This can be confirmed by the p-value statistic, which is higher than 10%, meaning that the integration in the Eurozone in January 1999, from a statistical point of view, does not affect the PSI-geral.

Table 5.11 Testing the Significance of T6 (Entry into the Euro) and T7 (Financial Rescue to Portugal)

	Regressions			
	Equation 1	Equation 2	Equation 3	Equation 4
Intercept	-0.006241	-0.01234	-0.012386	-0.004563
p-value	(0.31900)	(0.26360)	(0.26110)	(0.54910)
Stoxx600	0.973938	0.980704	0.97938	0.973035
p-value	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Ind_Conf(-1)	0.289256	0.294171	0.294874	0.29441
p-value	(0.00991)	(0.00990)	(0.00918)	(0.00981)
Int_Rate	-0.353236	-0.344649	-0.345316	-0.355089
p-value	(0.04260)	(0.04910)	(0.04830)	(0.04230)
EUR/USD	0.323373	0.317299	0.325931	0.318995
p-value	(0.00840)	(0.00970)	(0.00810)	(0.00990)
HICP	0.413763	0.42365	0.428792	0.407511
p-value	(0.00880)	(0.00820)	(0.00730)	(0.01040)
T6		0.014553	0.008919	
p-value		(0.32910)	(0.49670)	
T7		-0.012034		-0.005141
p-value		(0.42210)		(0.69710)
R	0.64273	0.64604	0.64411	0.64318
Adjusted R^2	0.62797	0.62522	0.62631	0.62534
S.E. of regression	0.06795	0.06820	0.06810	0.06819
F-statistic	43.536	31.028	36.197	36.05103
Prob(F-statistic)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Durbin-Watson	2.04143	2.05252	2.04610	2.04287

When it comes to the dummy variable T7, we can observe that the financial assistance to the Portuguese economy does not have a statistical influence on the PSI-geral, as the p-statistic is higher than 10%.

Next, as it was stated previously, this thesis aimed to explore the influence, and the at the same time, the likelihood of impact that positive and negative political news have on the Portuguese stock market. Nonetheless, we access first, the significance of all variables in the study, starting with T1. Ought to mention that in table 5.3.2, we have four more regressions with different dummy variables. Regression 5 has the core variables stated earlier, plus T1 (Presidential Elections), T2 (Parliamentary Elections), T3 (Regional

Elections), T4 (European Elections), T5 (Parliamentary Dissolutions), T8 (Positive Political News) and T9 (Negative Political News). Regression number 6 has the core variables and T1, T2, T3 and T4. Regression 7 has the core variables and T5 only. Lastly, Regression 8 has the core variables plus T8 and T9.

Table 5.12 Testing the Significance of T8 (Positive Political News) and T9 (Negative Political News)

	Regressions			
	Equation 5	*Equation 6*	*Equation 7*	*Equation 8*
Intercept	*0.001642*	*-0.006263*	*-0.005883*	*0.002234*
p-value	*(0.84990)*	*(0.36300)*	*(0.35280)*	*(0.79030)*
Stoxx600I	*0.949711*	*0.971293*	*0.977593*	*0.955179*
p-value	*(0.00000)*	*(0.00000)*	*(0.00000)*	*(0.00000)*
Ind_Conf(-1)	*0.311187*	*0.327475*	*0.284143*	*0.275502*
p-value	*(0.00771)*	*(0.00793)*	*(0.01937)*	*(0.00993)*
Int_Rate	*-0.362313*	*-0.318469*	*-0.358447*	*-0.397624*
p-value	*(0.03085)*	*(0.02070)*	*(0.02101)*	*(0.02170)*
EU/USD	*0.260234*	*0.288789*	*0.332387*	*0.294431*
p-value	*(0.01260)*	*(0.00851)*	*(0.00770)*	*(0.00878)*
HICP	*0.472971*	*0.422398*	*0.416329*	*0.460057*
p-value	*(0.00240)*	*(0.00640)*	*(0.00860)*	*(0.00350)*
T1	*0.002833*	*-0.002882*		
p-value	*(0.91850)*	*(0.91740)*		
T2	*-0.017888*	*-0.020246*		
p-value	*(0.44080)*	*(0.38250)*		
T3	*0.080123*	*0.078249*		
p-value	*(0.00130)*	*(0.00170)*		
T4	*-0.053257*	*-0.061334*		
p-value	*(.04010)*	*(0.01820)*		
T5	*-0.005199*		*-0.018578*	
p-value	*(0.89440)*		*(0.64850)*	
T8	*0.005094*			*0.002459*
p-value	*(0.68720)*			*(0.85070)*
T9	*-0.032351*			*-0.034891*
p-value	*(0.02570)*			*(0.01870)*
R^2	*0.70009*	*0.68636*	*0.64335*	*0.65904*
Adjusted R^2	*0.66824*	*0.66202*	*0.62552*	*0.63899*
S.E. of regression	*0.06439*	*0.06499*	*0.06817*	*0.06693*
F-statistic	*21.981*	*28.205*	*36.077*	*32.85946*
Prob(F-statistic)	*(0.00000)*	*(0.00000)*	*(0.00000)*	*(0.00000)*
Durbin-Watson	*1.90648*	*1.90227*	*2.03853*	*2.02063*

Immediately, we can identify the variables that are statistically significant, and the ones who are not. Starting with T1, Presidential Elections, this variable presents a p-value is higher than 10% so we can conclude that the Portuguese Index does not react to this type of election. A plausible reason for this to occur could be the fact that investors perceive the figure and the role of the President as secondary, behind the Prime Minister.

The variable T2, refers to Parliamentary Elections. As observed by the p-value, which is higher than 10%, we can also conclude that every time that Parliamentary elections occur, it seems that Portuguese stock Index does not suffer a significant statistical impact. This might be seen as odd, since *a priori*, it was not in our expectations, as parliamentary elections, decide which party is going to be in power. Furthermore, unlike some democracies where politicians have no differentiated policies, which could make a big difference on the economic performance" (Nimkhunthod, 2007), Portugal possesses several political parties that share different ideas and policies regarding the best way to govern the country, thus an election of this calibre, at the first glance, would impact the Portuguese stock market.

Moving on to T3, Regional Elections. Finally, with a p-value < 0,05, we can say that this variable is statistically significant to the Portuguese stock market. Meaning that there is always a positive response by the index, when regional elections take place, making this variable highly relevant for our study. It is important to note as well that, the "Left" (PS) has won more regional elections than the "Right" (PSD), which goes against Hibbs Partisan Theory, stating that investors and markets, overall, are happier with a right-wing party winning elections, as more supply-side policies are put in place.

T4, European Elections. Whenever there are European elections, the index reacts negatively with 96% of confidence. From a statistical point of view, these elections are very important and relevant to our research. As mentioned earlier, this negative response might be related to the legislative packages and risks associated with them for the companies.

The next variable is T5, Parliament Dissolutions. Although having a negative impact on the Portuguese index, from a statistical point of view, and with a p-value higher than 10% we can state that this political event holds no relation with the Portuguese stock market.

Lastly, dummy variables T8 and T9, which are variables connected with the Sentimental Analysis, addressed in the Literature, the main conclusion that we can make about T8 is

that the Portuguese index does not react to positive news, thus, the variable is not significant from a statistical point of view to our study. On the other hand, variable T9 tells us that whenever there is negative news, the index is negatively impacted. In fact, the estimated coefficient is negative and statistically significant at a 5% level supporting the narrative that investors, react more to negative news compared to positive news. This can be explained by the fact that, in general, investors are more loss averse than simply risk averse. Negative news has a more pronounced sentimental effect than positive news since the former may imply losses in the respective investment portfolios.

Chapter 6 Conclusions

This dissertation intended to show the relation between political events and stock markets, with a special focus on Portugal. A wide-ranging literature review was performed, in which classic theories, like the Political Business Cycle and the Partisan Theory, were addressed and explained, and where several studies were mentioned. Furthermore, in order to have the most possible holistic approach given the importance of this dissertation, we considered relevant to add a third chapter which concerns sentiment analysis and how social media can influence stock markets. To complement the literature, an event study, as well as, a regression analysis was conducted, which were later subjected to rigorous statistical analysis to show the existing connections between political events like elections and dissolutions with the PSI-Geral. Hopefully the conclusions reached by the empirical results and discussion will prove helpful for future investors and their future decisions regarding investments, especially around the time of important political events.

One of our first and main conclusions is that the Event Study proved to be more suitable to drawing conclusions about the impact of political events than the Regression Analysis.

In the Event Study, the first thing that we have to mention is the fact that on average and for the period studied, the impact is significant at a level of at least 5% in all the events studied and in any of the event windows. Nonetheless, it is important to mention as well, the differences between the results of the global average using the Market Model and using the Constant Mean Return Model. For instances, T1 (Presidential Elections) presents a positive value on average in the Market Model, regardless of the event window, while the Constant Mean Return Model gives us an overall negative value on (t-20;t-1) and on (t-10;t-1). Another variable in which we can see differences between these two models is T3 (Regional Elections) with the Market Model presenting overall negative

values throughout all the observation windows, while the Constant Mean Return Model gives us positive values on (t-20;t-1) and on (t-10;t-1). The values of variables T2 (Parliamentary Elections) and T4 (European Elections) showed no differences between the two models, with T2 always showing positive results, and T4 always showing negative results regardless of the window of observations. Lastly, it should be emphasized that in the constant mean model, the impacts resulting from the variable T5 (Parliament Dissolution) are only statistically significant for 2001 and 2004 and on the global average, this type of event did not present significant impacts.

In the Regression analysis, we must emphasize that the variables T3 (Regional Elections) and T4 (European Elections) were the only ones who presented statistical significance at a 5% level, with T3 impacting in a positive way, and T4 impacting in a negative way the Portuguese index, meaning that investors tend to value more Regional Elections as they can influence more the daily basis of the Portuguese people. On the other hand, European Elections can be perceived as "secondary" elections with a low level of impact on the Portuguese people. Apart from these two variables, we can say that the other dummy variables representing the political events do not have much influence or impact on the Portuguese capital market. The Entry into the Euro (T6) and the Financial Rescue to Portugal (T7) hold no impact over the PSI-Geral.

Still in the Regression Analysis, it is ought to mention the relative and uneven importance between good political news (T8) and bad political news (T9). While good political news has no impact on the market (the estimated parameter for the dummy variable T8 is not statistically different from zero); bad news, on average, has a negative and statistically significant impact at the 5% level on the behavior of the market index (the estimated parameter for the dummy variable T9 is negative and has a p-value less than 5%), confirming that investors tend to overreact to negative news, when compared to positive news and confirming the pessimistic nature of the human being.

Further investigation should analyse the impacts of political events on the individual portfolios of the most important institutional investors in order to better assess the possible effects. More specifically, the access to those investment portfolios, banks, insurance companies, and international pension funds. However, the access to the portfolios of these entities, to better understand when they begin to introduce their

political/economic expectations in their investment decisions, is difficult but it could assure a more reliable micro-analysis at the level of the investment decisions.

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Annexes

Annex A Political Events

Political Event	**Date**	**Result**	**Source**
Parliamentary Election	06/10/1991	PSD (center right) wins the election with 50.60% of the votes	CNE
Parliamnetary Election	01/10/1995	PS (center left) wins the election with 43.76% of the votes	CNE
Parliamentary Election	10/10/1999	PS wins the election with 44.05% of the votes	CNE
Parliamentary Election	17/03/2002	PS wins the election with 40.15% of the votes	CNE
Parliamentary Election	20/02/2005	PS wins the election with 45.04% of the votes	CNE
Parliamentary Election	27/09/2009	PS wins the election with 36.55% of the votes	CNE
Parliamenary Election	05/06/2011	PSD wins the election with 38.65% of the votes	CNE
Parliamentary Election	04/10/2015	The coalition of two center right parties PSD and CDS ("Portugal à Frente") wins the election with 36.86% of the votes[6]	CNE
Parliamentary Election	06/10/2019	PS wins the election with 36.34% of the votes	CNE
Presidential Election	13/01/1991	PS candidate, Mário Soares, is elected with 70% of the votes	CNE
Presidential Election	14/01/1996	PS candidate, Jorge Sampaio, is elected with 53.91% of the votes	CNE
Presidential Election	14/01/2001	Jorge Sampaio is re-elected with 55.76% of the votes	CNE
Presidential Election	22/01/2006	PSD candidate, Aníbal Cavaco Silva, is elected with 50.54% of the votes	CNE
Presidential Election	23/01/2011	Cavaco Silva is re-elected with 53.14% of the votes	CNE

[6] Despite winning the election, the center right coalition didn´t held office in 2015, due to a coalition of the parties on the left (the famous "Geringonça"). Given this, António Costa took office as Prime Minister of a minority PS government with the parliamentary support of BE and PCP-PEV. It was the first time since the 25th of April that the party or coalition that won the elections did not lead the government.

Presidential Election	24/01/2016	PSD candidate, Marcelo Rebelo de Sousa, wins the election with 52% of the votes	CNE
Regional Elections	17/12/1989	Overall, PS is the winner by helding 116 regional chambers	CNE
Regional Elections	12/12/1993	PS further increases its regional power by helding 126 regional chambers	CNE
Regional Election	14/12/1997	PSD is the clear winner of this election by regaining 11 chambers, equalling PS, with 127 chambers	CNE
Regional Election	16/12/2001	PSD wins the election by gaining 159 regional chambers.	CNE
Regional Election	09/10/2005	PSD holds 138 chambers while PS holds 109.	CNE
Regional Election	11/10/2009	PS is the winner by regaining 23 chambers, holding 132 in total.	CNE
Regional Election	29/09/2013	PS wins 150 regional chambers, being the clear winner.	CNE
Regional Election	01/10/2017	PS gains 9 more chambers, totalling 159 regional chambers.	CNE
European Election	18/06/1989	PSD elects 9 MPs, while PS elects 8 MPs	CNE
European Election	12/06/1994	PS elects 10 MPs, PSD elects 9 MPs	CNE
European Election	13/06/1999	PS elects 12 deputies, PDS elects 9 deputies	CNE
European Election	13/06/2004	PS elects 12 PMs once again and solo defeats the right-wing coalition (PSD + PP), who elects 9	CNE
European Election	07/06/2009	PSD elects 8 MPs, while PS elects 7 MPs	CNE
European Election	25/05/2014	PS elects 8 MPS, while the right-wing coalition (PSD + CDS) elects 7	CNE
European Election	26/05/2019	PS elects 8 MPs, and PSD elects 6.	CNE
Parliament Dissolution	27/02/2002	President Jorge Sampaio dissolves the parliament after the resignation of the Prime Minister António Guturres, who resigned in order to avoid a “political quagmire”	RTP archive
Parliament Dissolution	30/11/2004	President Jorge Sampaio has begun moves to dissolve parliament and call	RTP archive

		an election after deciding Prime Minister Pedro Santana Lopes could no longer continue in the job. Durão Barroso's resignation led to this nomination.	
Parliament Dissolution	31/03/2011	Aníbal Cavaco Silva, President of the Republic, accepts the resignation of the government after the disapproval of the PEC IV in the Parliament, announcing the dissolution of the parliament and the scheduling of early elections.	RTP Archive
Integration in the Eurozone	01/01/1999		RTP archive
Financial assistance to the Portuguese economy	01/05/2011		RTP archive

Annex B Positive Political News

News	**Date**	**Source**
Portugal integrates the EU	01/01/1986	RTP archive
Brussels European Council adopts the Delors package, allowing the doubling of structural funds. The own resources "ceiling" is raised to 1.4% of Community GNP	11/02/1988	RTP archive
PRD Convention; resignation of Eanes and election of Hermínio Martinho to the presidency	29/05/1988	RTP archive
PS-PSD agreement for constitutional revision, after negotiations between Fernando Nogueira and António Vitorino	14/10/1988	RTP archive
Portugal's second constitutional revision approved	02/06/1989	RTP archive
Portugal becomes a member of the WEU	27/03/1990	RTP archive
Escudo joins the EMS (European Monetary System)	03/04/1992	RTP archive
Portuguese Parliament ratifies the Maastricht Treaty.	10/12/1992	RTP archive
The revised Constitution is approved	04/09/1997	RTP archive
Government reshuffle announced. António Costa becomes minister of parliamentary affairs. Jorge Coelho at internal administration. Pina Moura at economy. Veiga Simão at national defense. Ferro Rodrigues takes on the post of Employment. José Sócrates becomes deputy prime minister. Besides António Vitorino, Maria João Rodrigues, Augusto Mateus, and Alberto Costa are out.	23/11/1997	RTP archive
Inauguration of Expo-98; The universal exhibition, said to be the last of the century, was held in Lisbon and, until its closure, would receive about 10 million visitors.	21/05/1998	RTP archive
Engravings from Foz Coa are declared a world heritage site by UNESCO.	03/12/1998	RTP archive

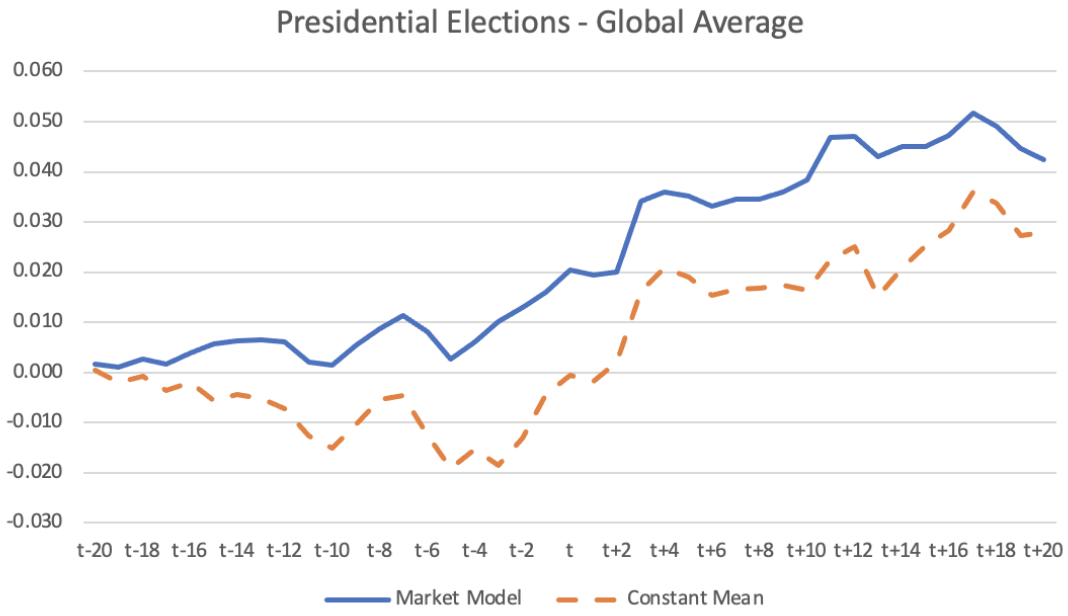
Summit at the Lajes Base with the presence of George W. Bush, Tony Blair, José Maria Aznar and Durão Barroso, to discuss the international crisis triggered by the Iraq issue.	16/03/2002	RTP archive
Assembly of the Republic votes and approves the Treaty of Lisbon	23/04/2007	RTP archive

Annex C Negative Political News

News	**Date**	**Source**
General strike called by CGTP and UGT fails	28/03/1988	RTP archive
Police union demonstration in Terreiro do Paço. "Police against Police".	21/04/1989	RTP archive
Parliament votes against amnesty for FP25	20/06/1991	RTP archive
5% devaluation of the escudo	23/11/1992	RTP archive
"Totonegócio" was voted down in the Assembly of the Republic	27/06/1996	RTP archive
Project on decriminalization of abortion is defeated in Parliament by one vote	20/02/1997	RTP archive
Defence Minister, António Vitorino, resigns, in the face of accusations of tax evasion that would be reported the next day by the weekly newspaper o Independente.	08/11/1997	RTP archive
Referendum on regionalization. 51.3% abstention. About 60% of voters are against the proposed administrative reform.	08/11/1998	RTP archive
Freeport case (Departamento Central de Investigação e Ação Penal investigates the Freeport case, a commercial space case related to suspicions of corruption in the alteration of the Special Protection Zone of the Tagus Estuary, decided three days before the 2002 legislative elections through a decree-law).	23/04/2009	RTP archive
Prime Minister José Sócrates submits his resignation to Aníbal Cavaco Silva, President of the Republic.	23/03/2011	RTP archive
In a communication to the country, José Sócrates, Prime Minister, announces that the Portuguese government needs to ask for external	07/04/2011	RTP archive

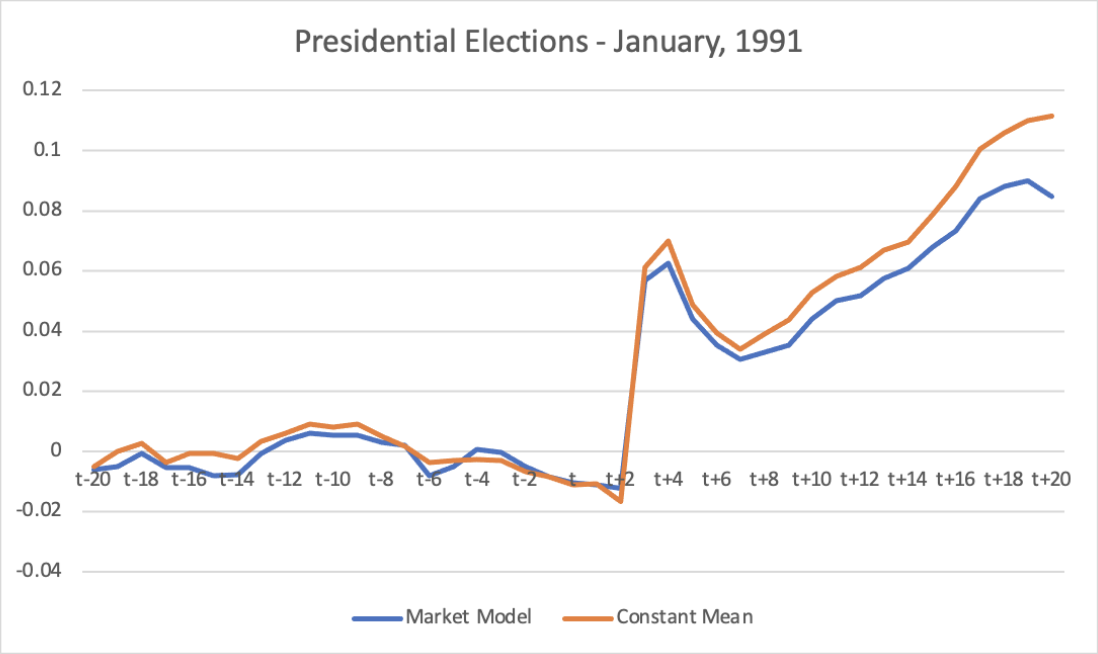
help to cope with the serious financial problems it faces.		
In Lisbon, the organizers of the "Que se lixe a Troika" demonstration say that more than 500,000 people are expected to take to the streets of the capital, with the demonstration scheduled to take place in Praça Marquês de Pombal, from where it will continue to Terreiro do Paço.	02/03/2013	RTP archive
In a statement Paulo Portas, Minister of State and Foreign Affairs, explains the reasons for his resignation from the Government.	02/07/2013	RTP archive

Annex D Cumulative Abnormal Returns - Presidential Elections



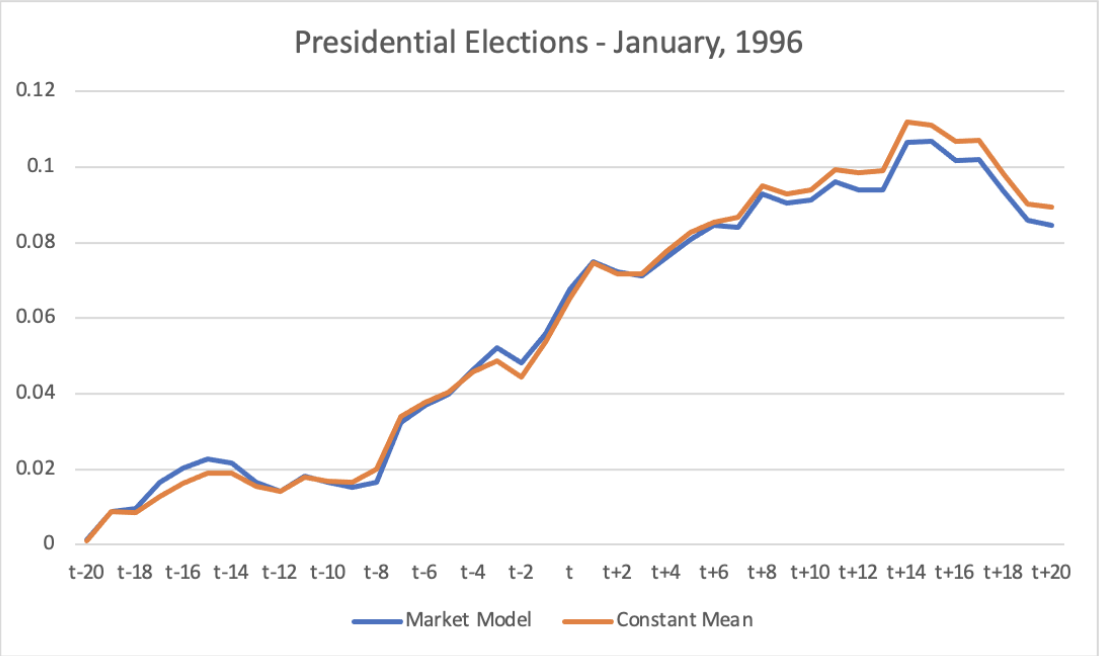
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0.0060388	0.0391979	-0.0080403	0.0200465
Variance	1.7595E-05	7.7145E-05	3.6213E-05	8.3947E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0.002275		0.074551	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0.000000		0.000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0.0083146	0.0321506	-0.0118174	0.0138855
Variance	2.0653E-05	4.4448E-05	3.0505E-05	5.6087E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0.268995		0.377774	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0.000000		0.000000	



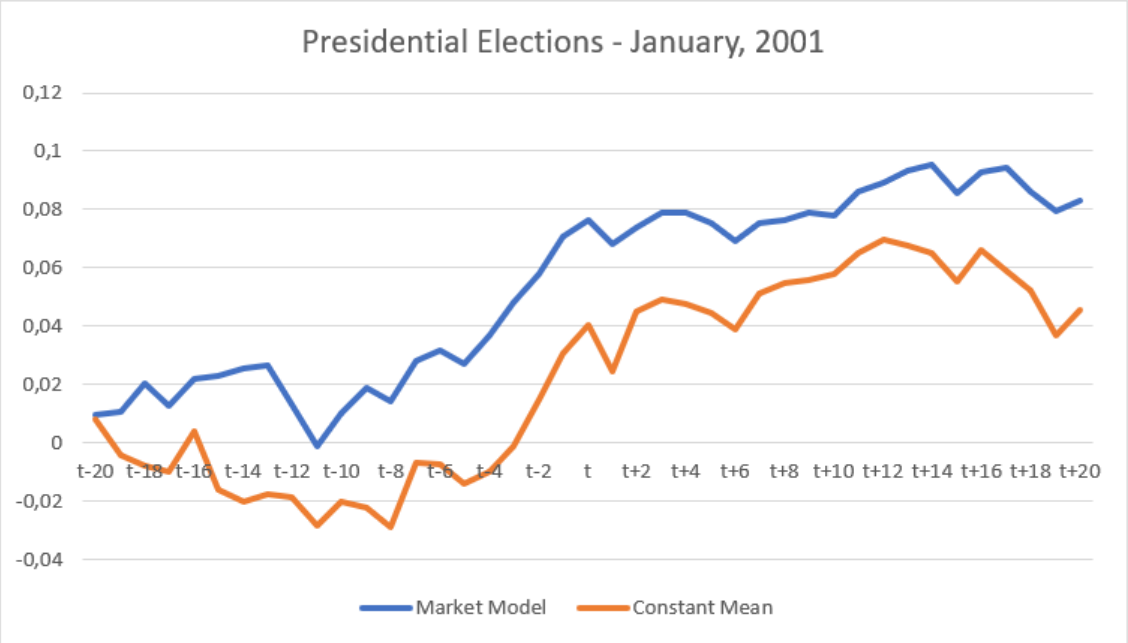
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0.0020272	0.0513244	0.0002585	0.0605939
Variance	2.5003E-05	8.1238E-04	2.6993E-05	1.2203E-03
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0.000000		0.000000	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0.000000		0.000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0.0010888	0.0318079	-0.0003720	0.0361129
Variance	2.7116E-05	6.3357E-04	3.6544E-05	8.1079E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0.000068		0.000084	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0.002448		0.002773	



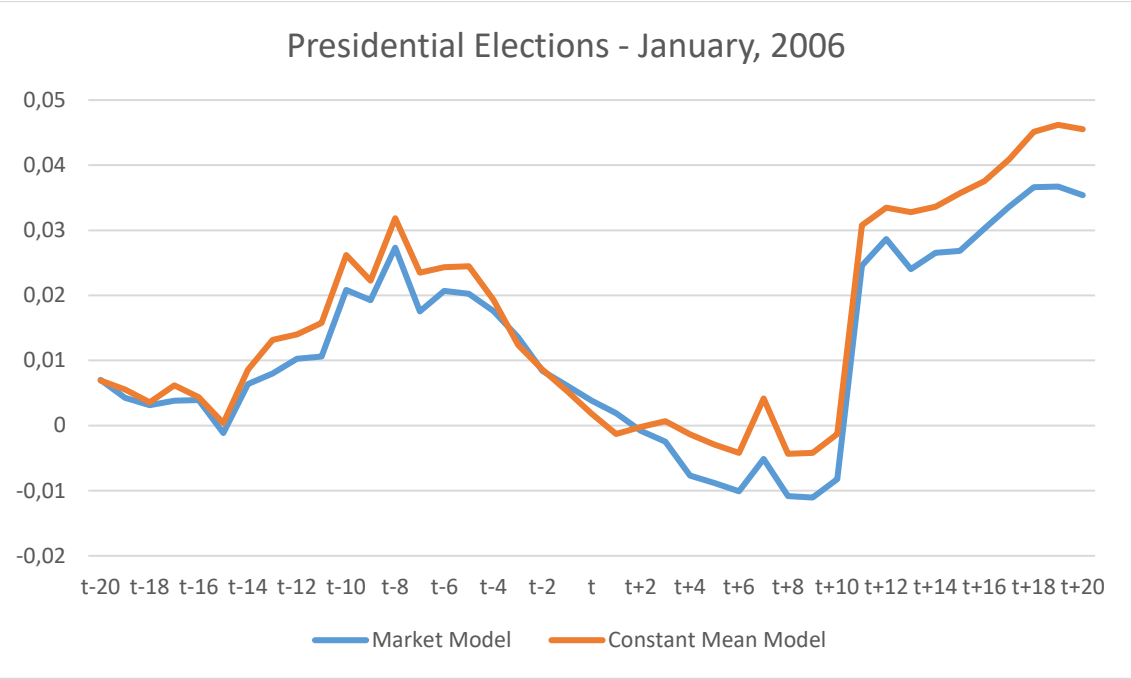
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0.0254711	0.0891776	0.0245887	0.0922338
Variance	2.4941E-04	1.1551E-04	2.3623E-04	1.5288E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0.101826		0.351143	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0.000000		0.000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0.0359934	0.0818546	0.0358209	0.0832571
Variance	2.3555E-04	6.4769E-05	1.8577E-04	8.1720E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0.067927		0.237045	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0.000001		0.000000	



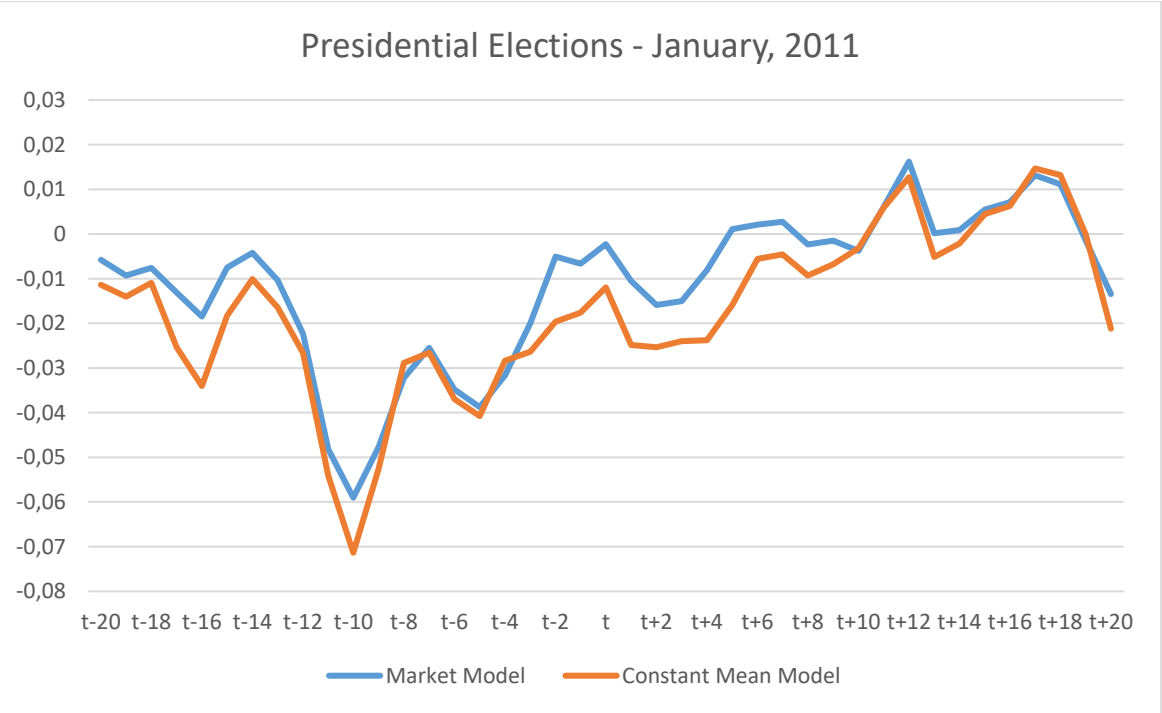
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0252745	0,0818885	-0,0088435	0,0525007
Variance	3,0029E-04	6,6496E-05	2,1922E-04	1,3345E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,001883		0,288075	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0343182	0,0752390	-0,0065848	0,0468991
Variance	3,7718E-04	1,4661E-05	3,2260E-04	9,6356E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,000045		0,086379	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000076		0,000001	



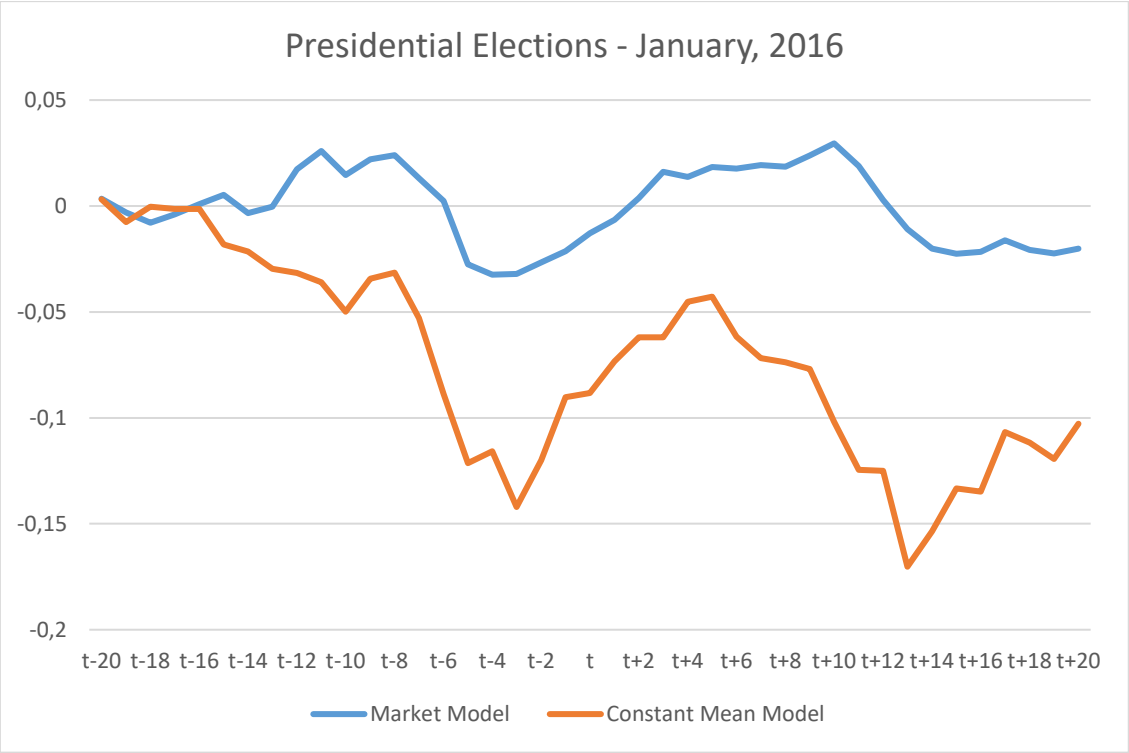
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0113918	0,0120063	0,0138460	0,0183440
Variance	5,9744E-05	3,7461E-04	8,3162E-05	4,3330E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,000201		0,000732	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,896139		0,384187	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0171633	-0,0063175	0,0198309	-0,0014830
Variance	3,9403E-05	2,0371E-05	7,1039E-05	7,0193E-06
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,339927		0,001990	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,000012	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0224054	-0,0002849	-0,0285170	-0,0057258
Variance	2,7816E-04	8,1530E-05	2,6066E-04	1,7475E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,010340		0,391281	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000014		0,000021	

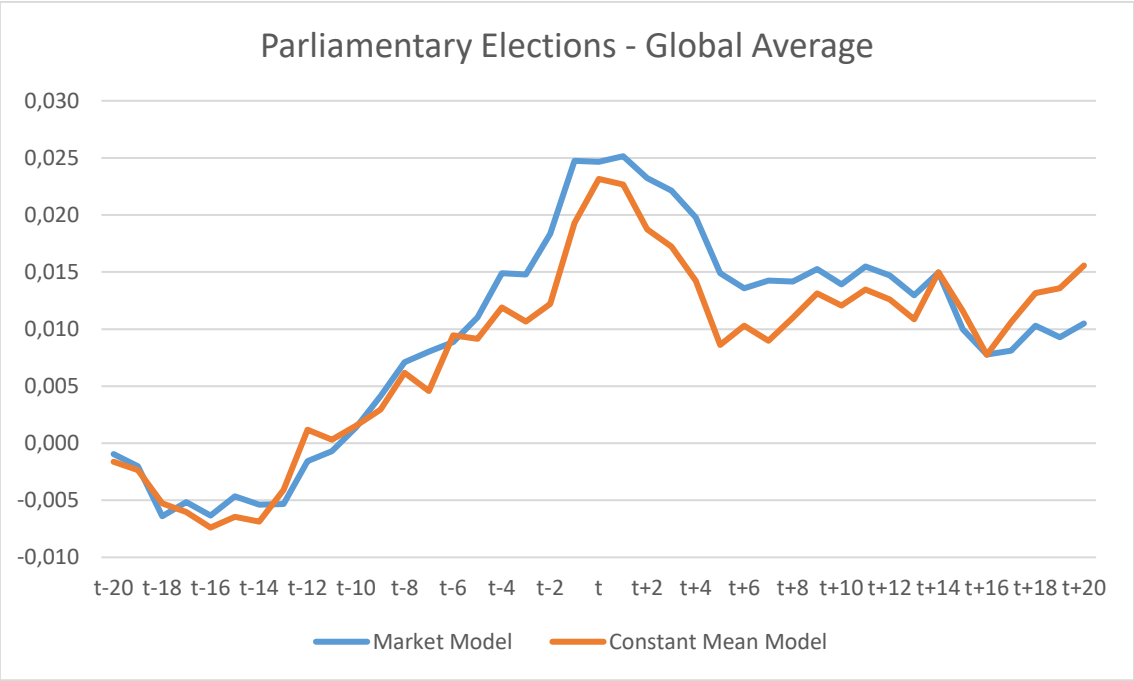
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0301367	-0,0051127	-0,0349066	-0,0143312
Variance	2,8359E-04	4,7481E-05	2,7074E-04	8,8577E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,013746		0,111473	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000959		0,002970	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0014718	0,0010755	-0,0495743	-0,0976675
Variance	3,4301E-04	3,5520E-04	2,1630E-03	1,3246E-03
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,940087		0,293926	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,668806		0,000804	

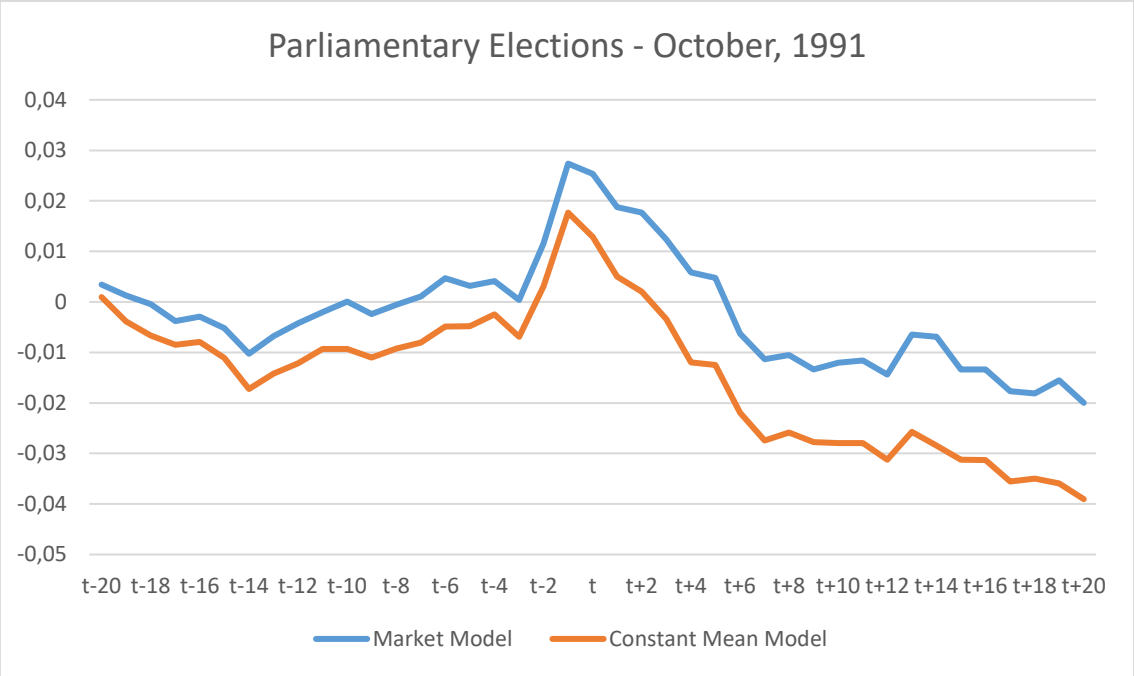
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0063617	0,0154322	-0,0846929	-0,0671421
Variance	5,6019E-04	1,0359E-04	1,6078E-03	2,8534E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,019307		0,016790	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,019956		0,226060	

Annex E Cumulative Abnormal Returns - Parliamentary Elections



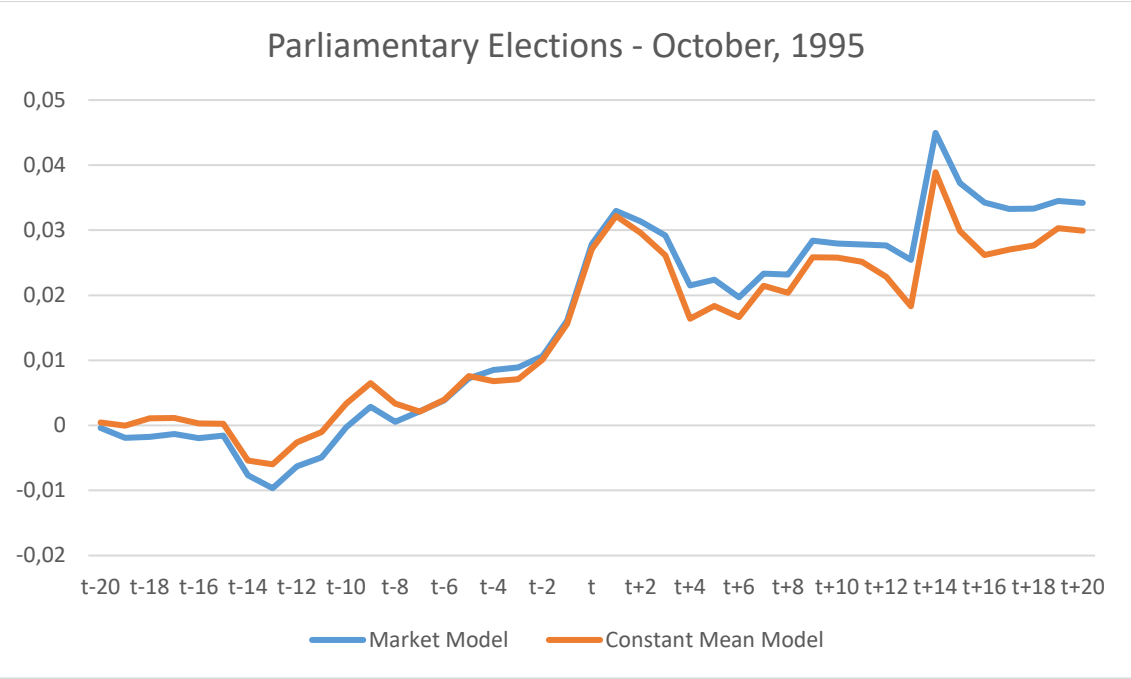
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0037400	0,0145183	0,0024647	0,0130515
Variance	8,6217E-05	2,3630E-05	5,9560E-05	1,2888E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,007011		0,001622	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000079		0,000007	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0113314	0,0176329	0,0087871	0,0136923
Variance	4,8787E-05	1,9962E-05	2,7458E-05	2,0975E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,199277		0,694770	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,027241		0,038808	



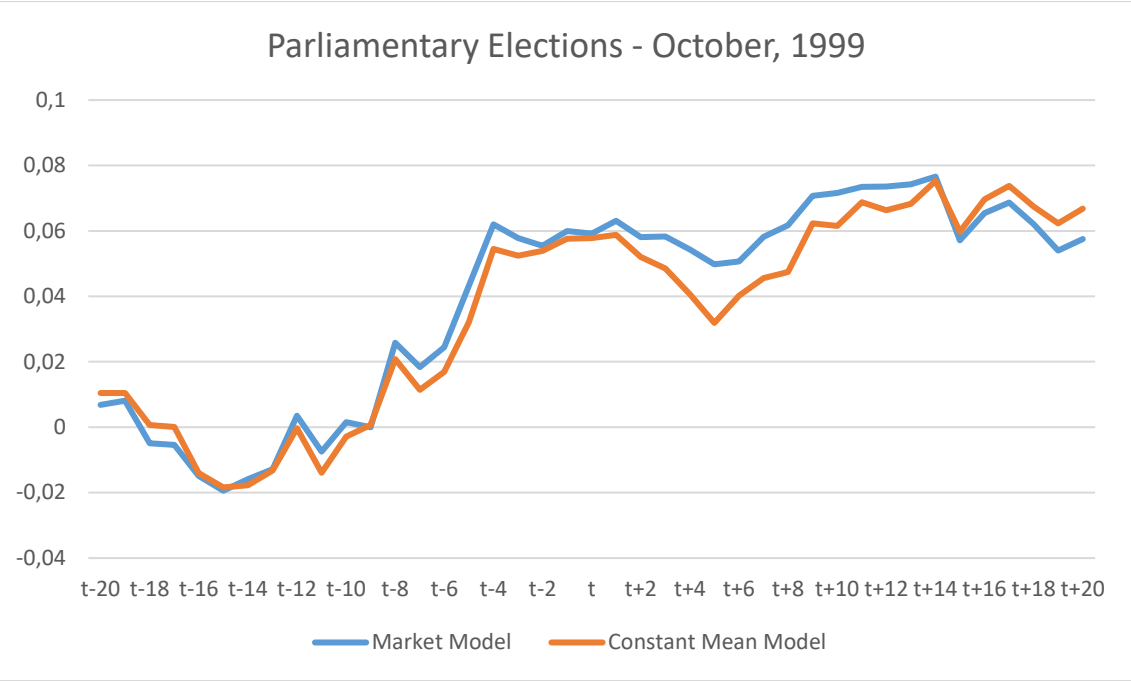
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0009282	-0,0065721	-0,0062971	-0,0236568
Variance	6,0956E-05	1,4103E-04	5,4723E-05	1,6230E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,075209		0,022303	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,024365		0,000010	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0049510	0,0005949	-0,0035920	-0,0111023
Variance	7,7103E-05	1,6341E-04	7,2356E-05	1,6569E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,278482		0,233004	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,386118		0,028827	



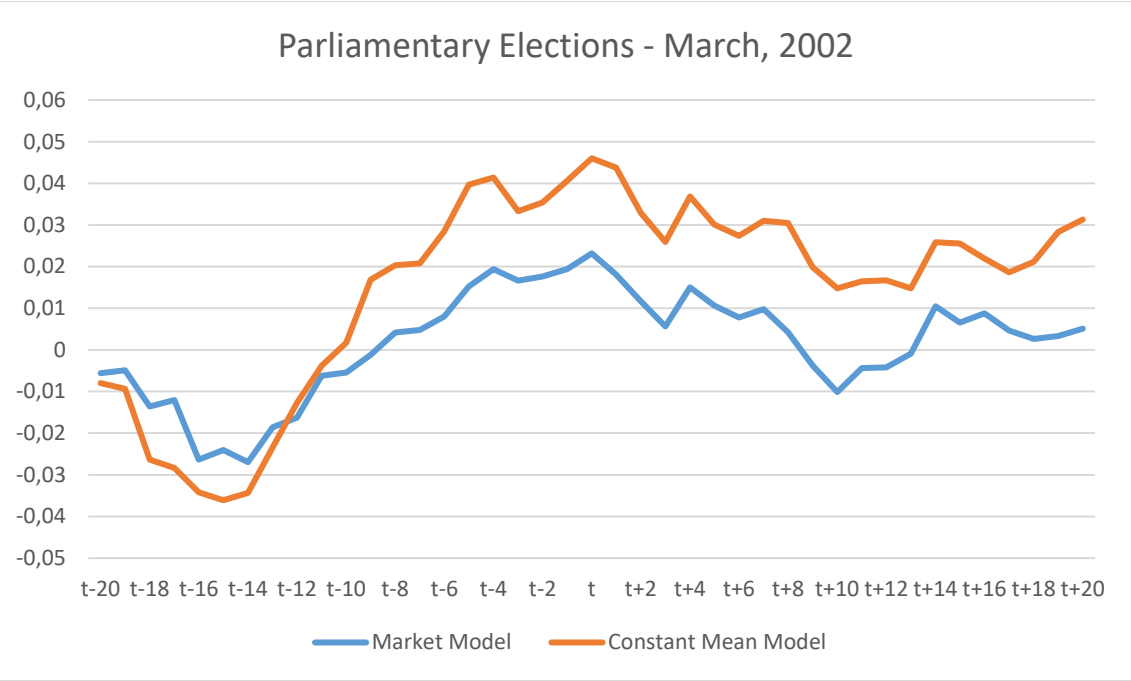
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0011519	0,0296311	0,0027423	0,0254444
Variance	4,2600E-05	3,8323E-05	2,6862E-05	3,2852E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,820002		0,665255	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0060545	0,0259926	0,0066559	0,0234055
Variance	2,6474E-05	2,0566E-05	1,5828E-05	2,9658E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,712945		0,363357	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,000000	



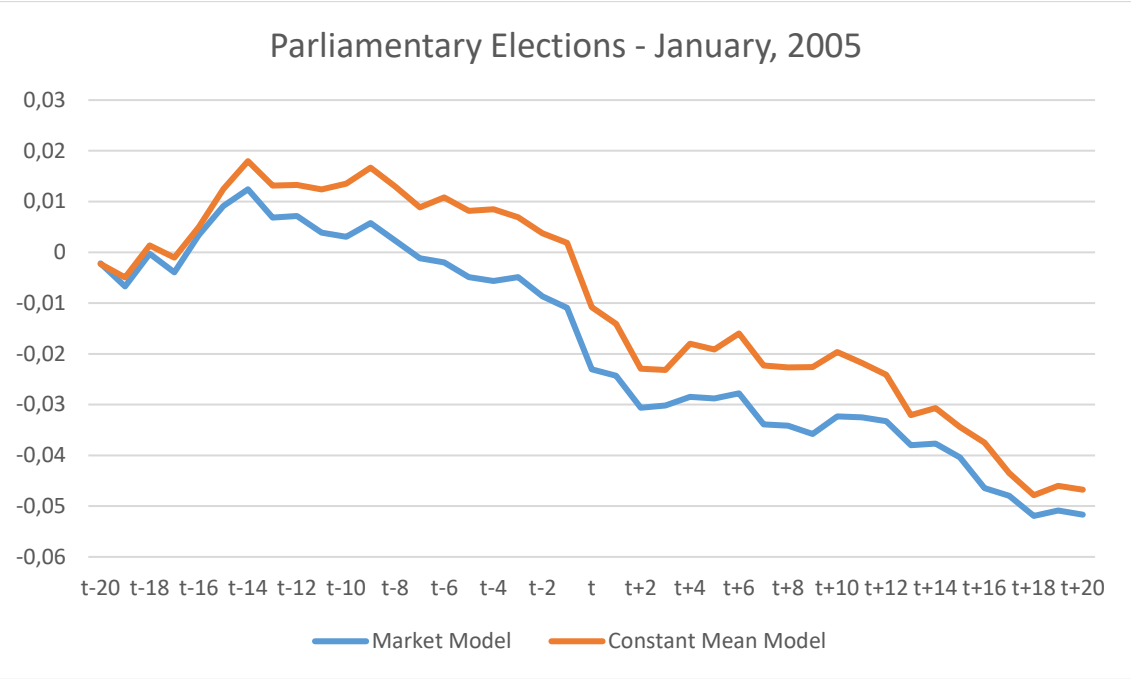
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0143165	0,0629587	0,0120802	0,0583635
Variance	7,6223E-04	6,9787E-05	6,5044E-04	1,5174E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,000003		0,002625	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0348643	0,0596584	0,0297514	0,0485138
Variance	5,7508E-04	5,5069E-05	5,5412E-04	9,9298E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,001763		0,017355	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,009992		0,035376	



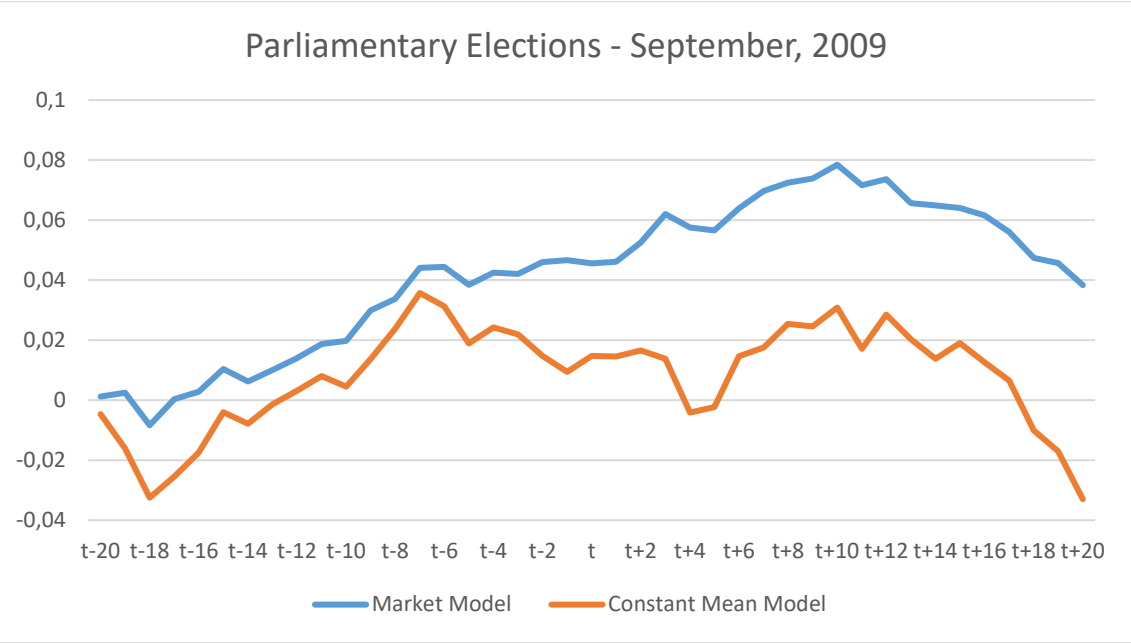
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0028054	0,0050478	0,0030892	0,0256980
Variance	2,4131E-04	4,9955E-05	7,9383E-04	5,9879E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,001214		0,000001	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,049547		0,002242	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0098570	0,0068996	0,0278518	0,0324414
Variance	8,1612E-05	7,2137E-05	1,6475E-04	6,6542E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,857158		0,193020	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,460461		0,764012	



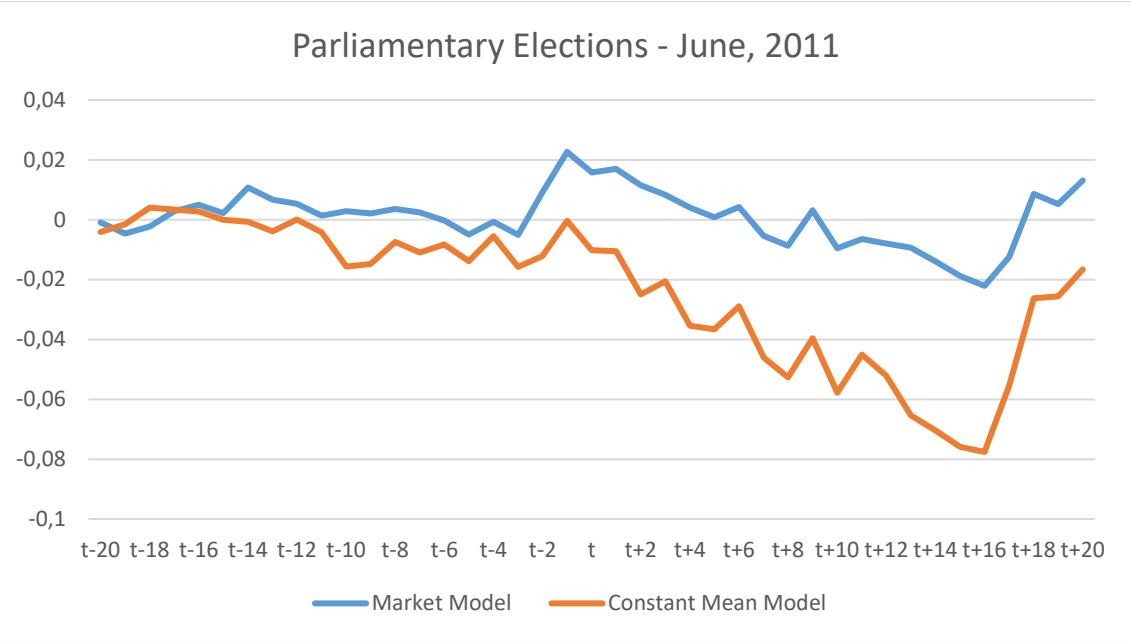
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0001328	-0,0368521	0,0079694	-0,0282598
Variance	3,9718E-05	7,3810E-05	4,1941E-05	1,1815E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,185956		0,029149	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0027012	-0,0306318	0,0092061	-0,0191706
Variance	2,8367E-05	1,2120E-05	2,0204E-05	1,0479E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,221261		0,342247	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,000000	



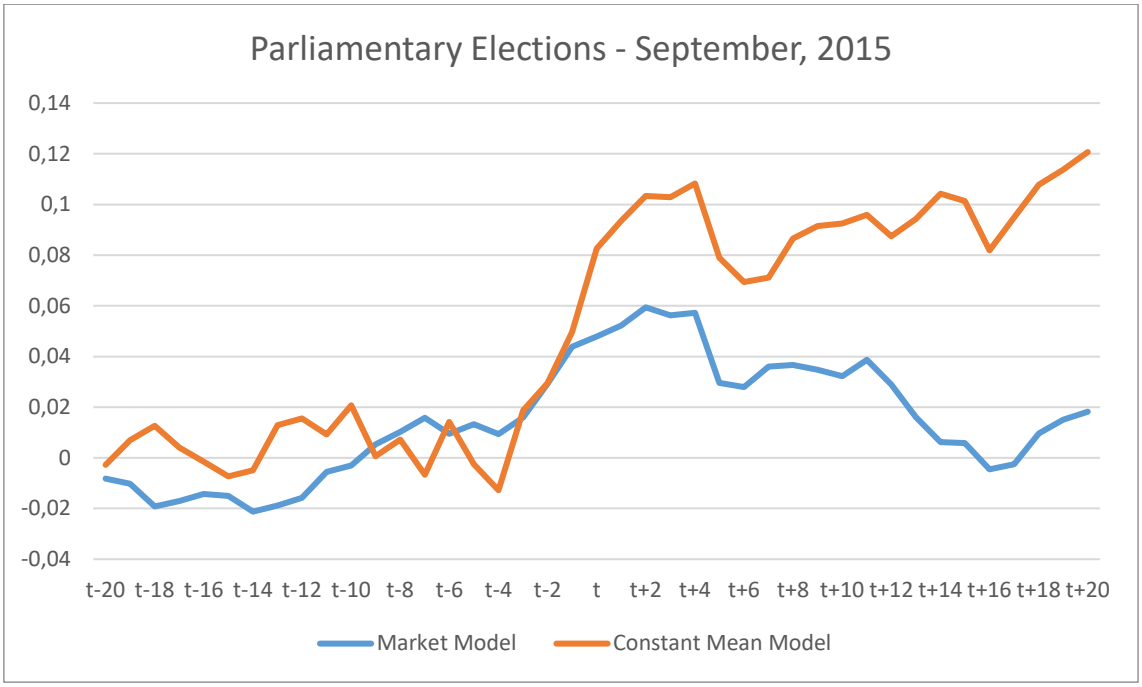
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0222657	0,0610954	0,0050093	0,0104764
Variance	3,4939E-04	1,2036E-04	3,5311E-04	2,6238E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,024967		0,523707	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,330609	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0387474	0,0633200	0,0198357	0,0135498
Variance	7,3790E-05	1,0629E-04	9,2622E-05	1,2529E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,595398		0,659988	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000017		0,329812	



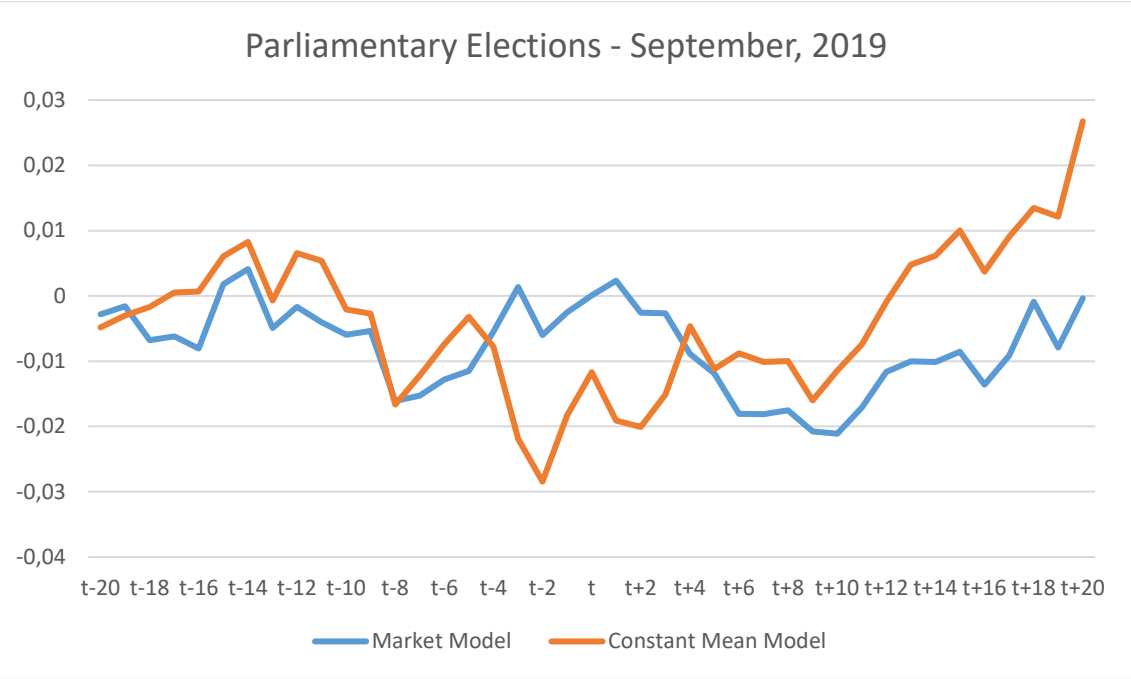
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0029284	-0,0019082	-0,0054162	-0,0431751
Variance	4,0463E-05	1,2133E-04	4,3094E-05	3,9773E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,021047		0,000011	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,099248		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0031985	0,0025724	-0,0104312	-0,0305592
Variance	6,4491E-05	7,3640E-05	2,5448E-05	2,1354E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,846579		0,004044	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,868098		0,000337	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0002299	0,0276948	0,0081754	0,0950064
Variance	3,2220E-04	3,8097E-04	2,1314E-04	1,7992E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,718716		0,715622	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000042		0,000000	

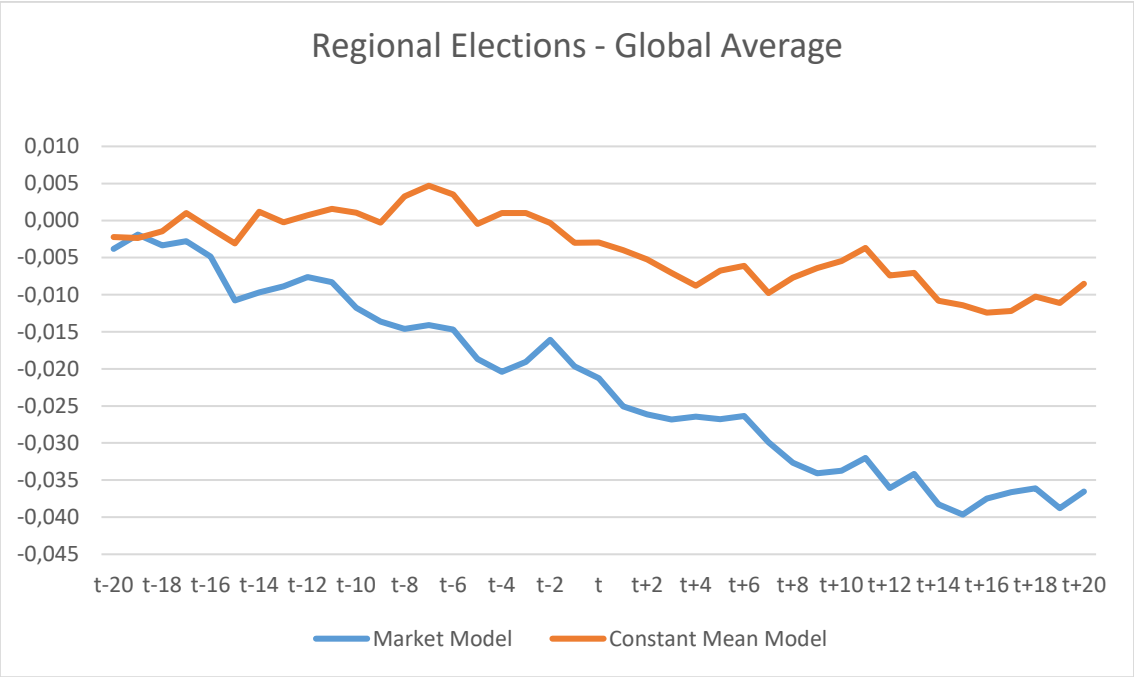
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0149736	0,0422234	0,0118677	0,0888084
Variance	1,7136E-04	1,5654E-04	3,5280E-04	1,7949E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,895031		0,328518	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000157		0,000000	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0054882	-0,0104307	-0,0051704	-0,0024334
Variance	2,8822E-05	4,9409E-05	9,8081E-05	1,6038E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,249105		0,292534	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,016893		0,451146	

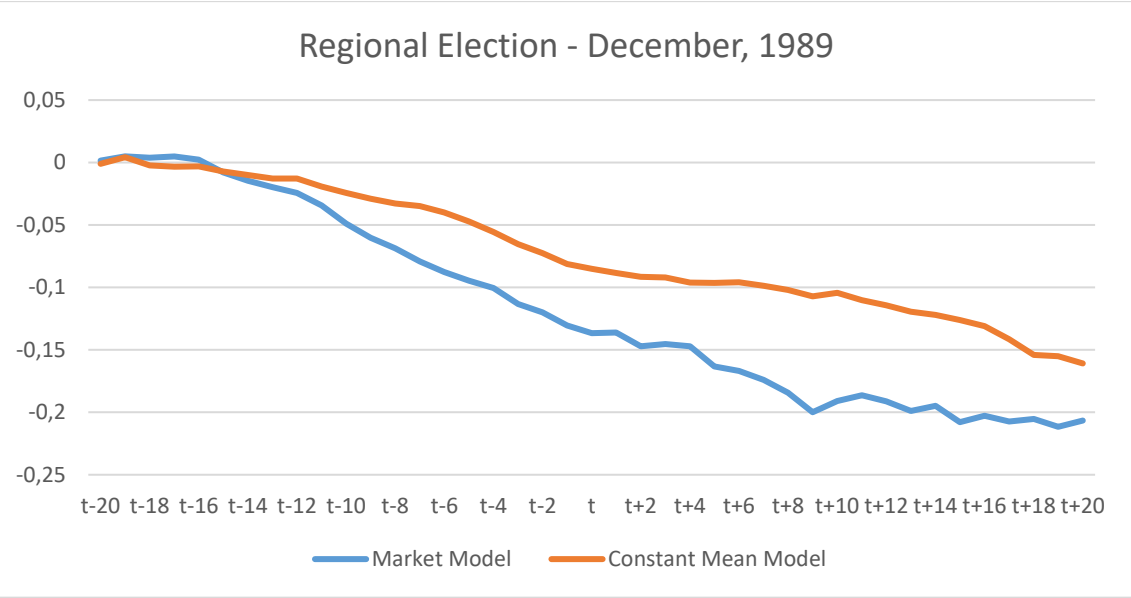
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0079622	-0,0119330	-0,0120610	-0,0126684
Variance	3,2591E-05	7,2807E-05	8,1185E-05	2,3278E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,246900		0,076790	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,237067		0,859606	

Annex F Cumulative Abnormal Returns - Regional Elections



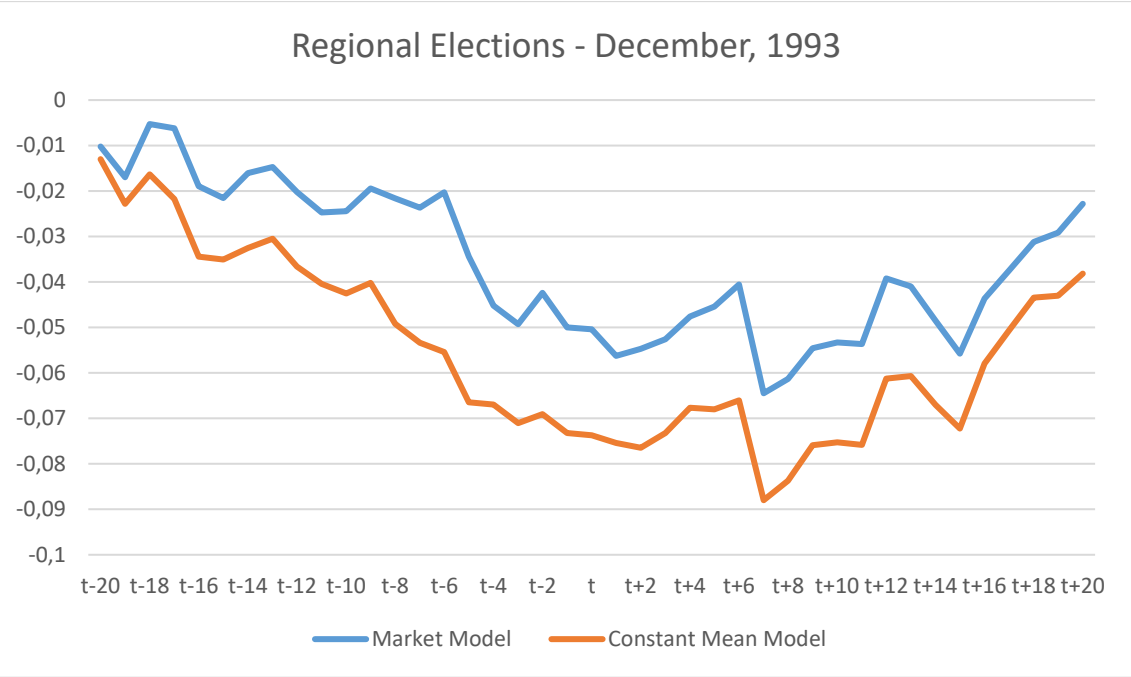
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0112285	-0,0326816	0,0002308	-0,0081059
Variance	3,5714E-05	2,4051E-05	4,4816E-06	7,0478E-06
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,396579		0,332149	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0162613	-0,0287919	0,0010519	-0,0067283
Variance	8,8471E-06	1,2114E-05	5,1872E-06	2,9321E-06
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,647236		0,408290	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,000000	



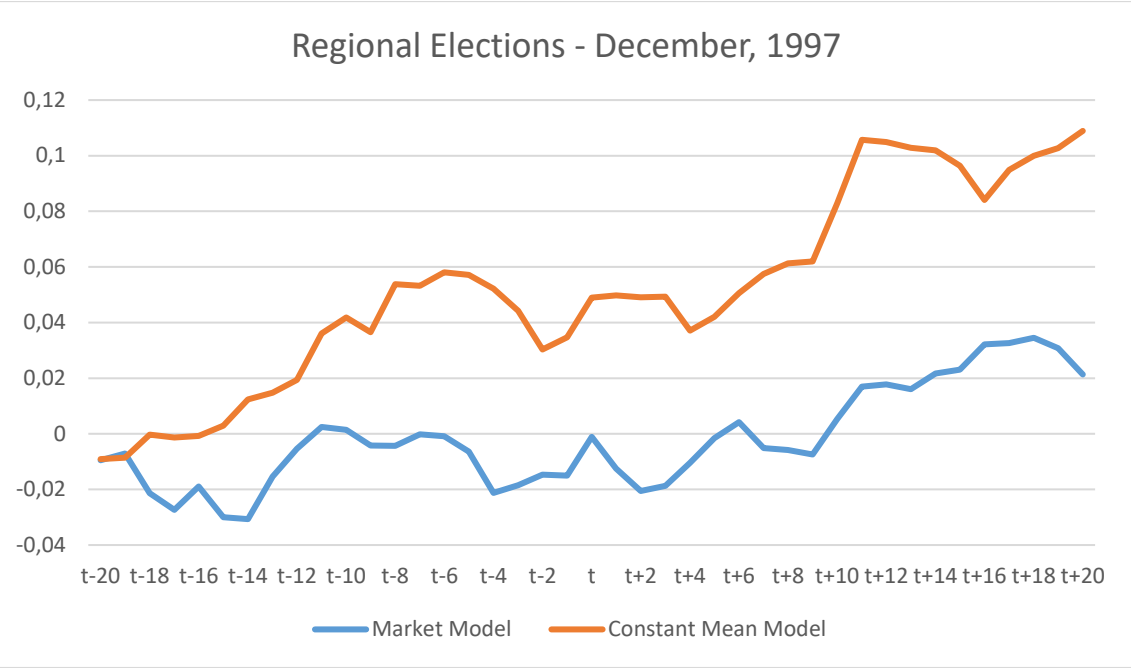
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0493527	-0,1833947	-0,0275265	-0,1153850
Variance	2,1987E-03	5,9055E-04	6,5833E-04	5,1888E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,006221		0,609062	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0903571	-0,1655181	-0,0482916	-0,0972976
Variance	7,0445E-04	4,6902E-04	3,8297E-04	3,5123E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,554176		0,001491	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000002		0,000013	



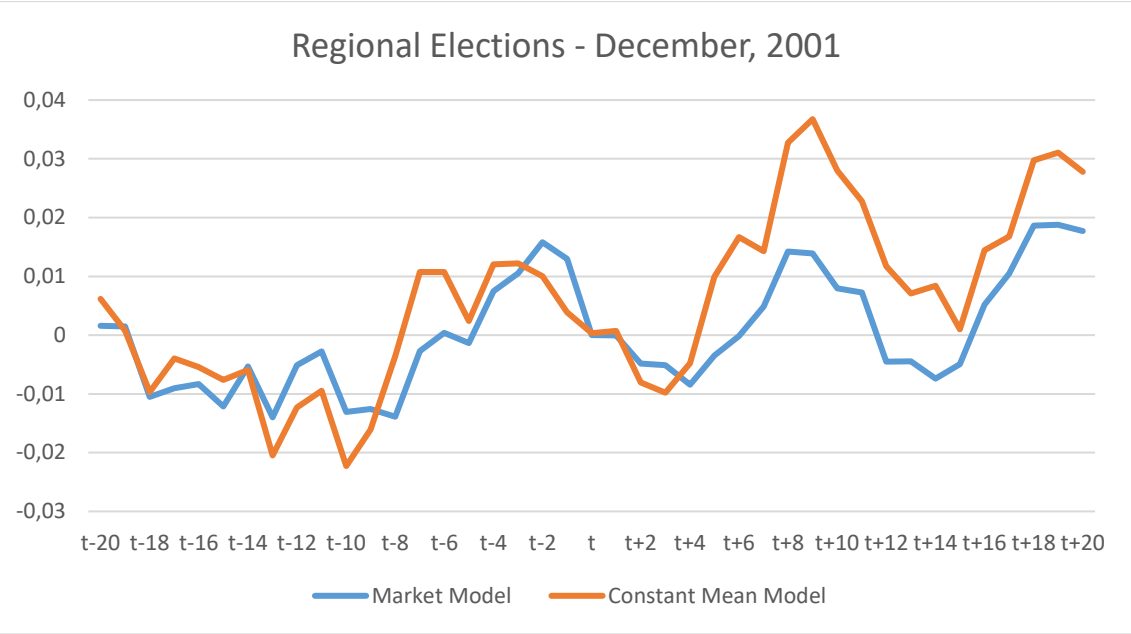
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0242891	-0,0466693	-0,0435510	-0,0659944
Variance	1,7630E-04	1,2114E-04	3,5404E-04	1,8624E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,420999		0,170586	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000001		0,000109	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0330793	-0,0530885	-0,0587503	-0,0749688
Variance	1,5845E-04	5,0905E-05	1,4823E-04	4,8159E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,106018		0,109364	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000367		0,001792	



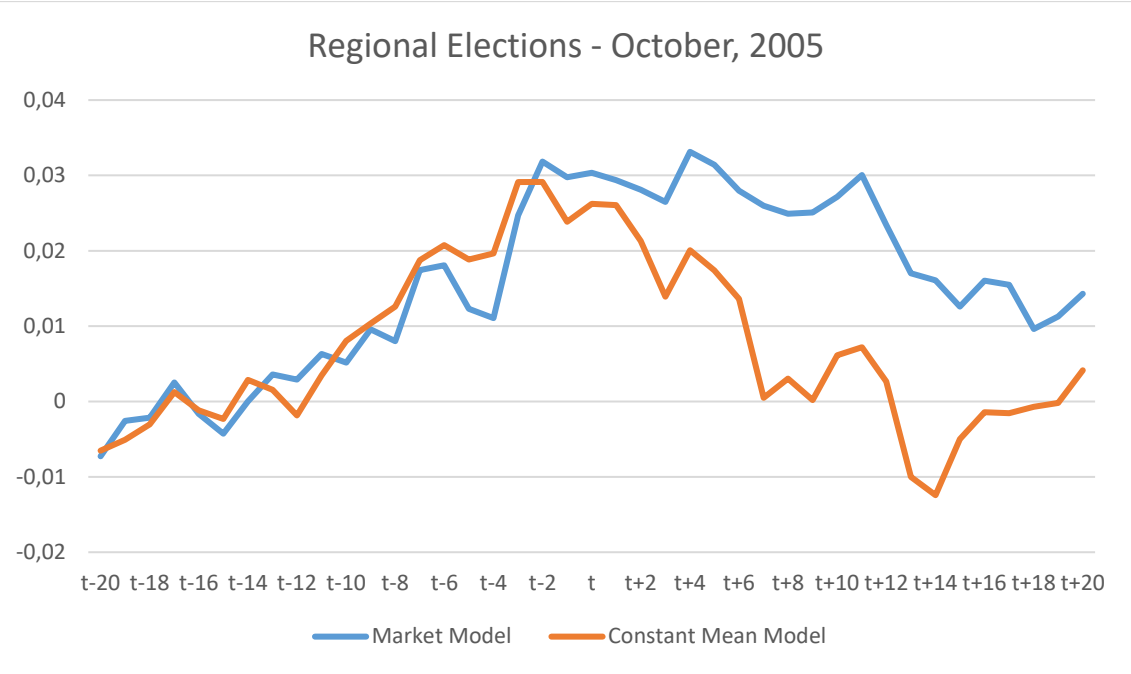
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0123606	0,0087105	0,0263835	0,0771942
Variance	1,0922E-04	3,2820E-04	5,5578E-04	6,6029E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,020813		0,711073	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000091		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0084105	-0,0072592	0,0462192	0,0541394
Variance	6,7498E-05	7,5034E-05	1,0022E-04	1,6321E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,877308		0,478911	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,763899		0,140199	



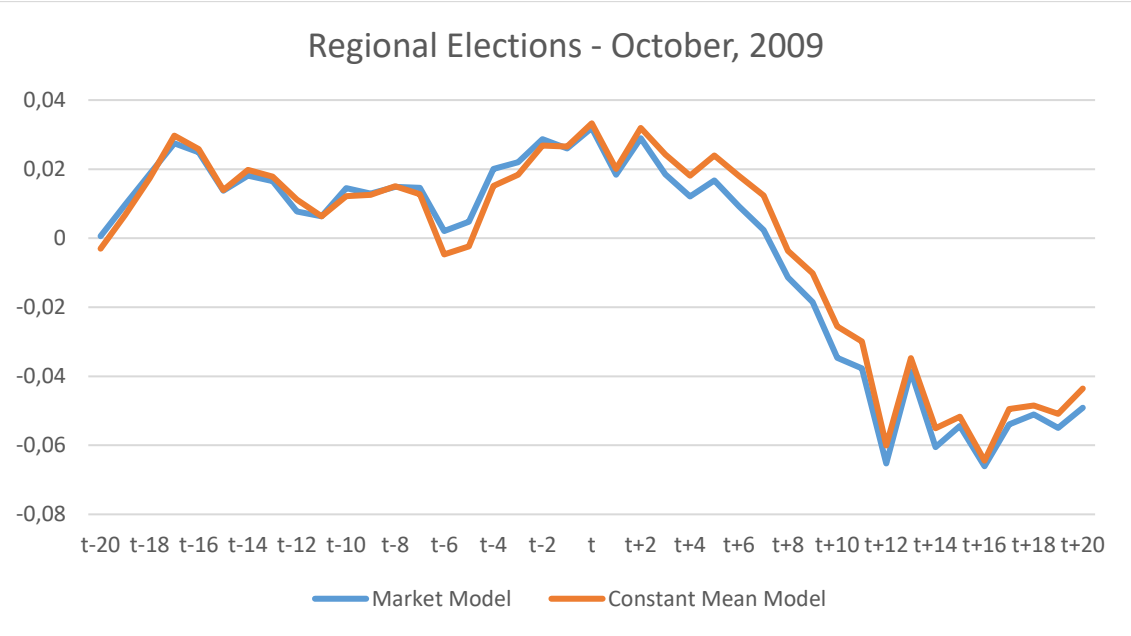
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0030312	0,0037778	-0,0023882	0,0143665
Variance	8,4416E-05	8,6809E-05	1,1742E-04	1,9673E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,952066		0,269550	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,025386		0,000143	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0003571	0,0018860	0,0020188	0,0116516
Variance	1,2385E-04	6,4346E-05	1,5257E-04	2,9082E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,343524		0,350599	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,728595		0,165189	



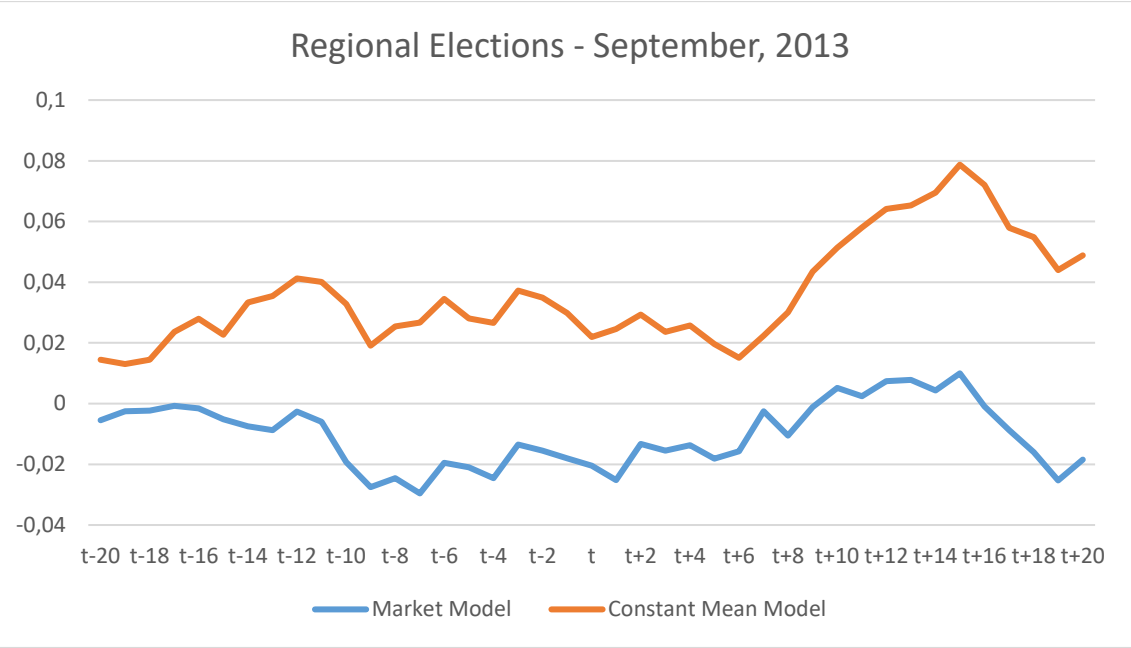
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0082725	0,0222733	0,0090112	0,0052445
Variance	1,2528E-04	5,4656E-05	1,3724E-04	1,0910E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,078414		0,622019	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000049		0,289928	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0167940	0,0279561	0,0191093	0,0122161
Variance	8,6243E-05	7,2003E-06	5,1985E-05	8,5536E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,001033		0,469704	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,004114		0,079484	



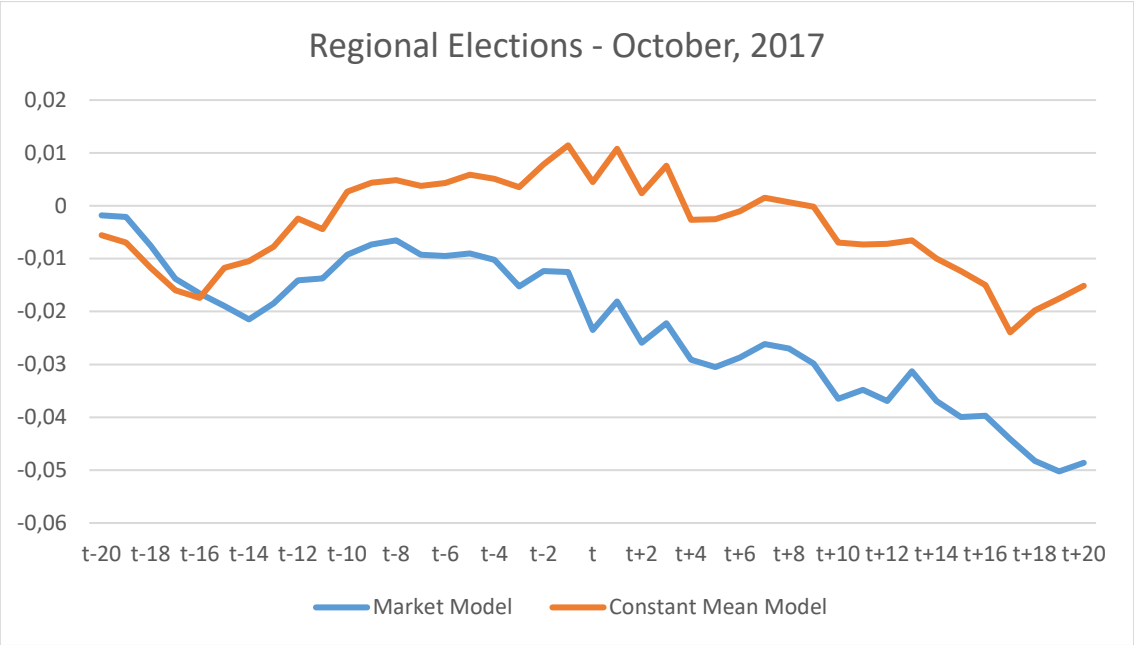
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0152009	-0,0245097	0,0138930	-0,0189539
Variance	6,8529E-05	1,0948E-03	9,5894E-05	1,1495E-03
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,000000		0,000001	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000035		0,000174	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0160368	0,0041457	0,0132321	0,0109356
Variance	7,2082E-05	3,9257E-04	1,0689E-04	3,2974E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,018849		0,108690	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,106203		0,732210	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0127814	-0,0073989	0,0280587	0,0449384
Variance	9,2782E-05	1,2719E-04	7,0260E-05	3,9494E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,498305		0,000435	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,112858		0,001727	

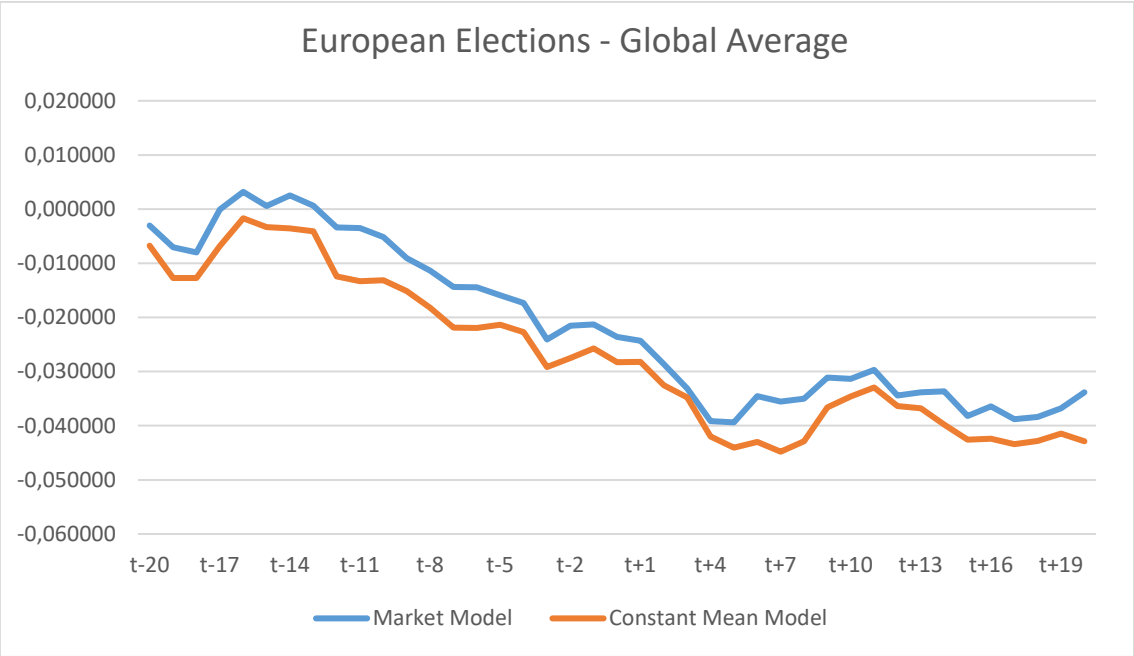
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0213135	-0,0110572	0,0295059	0,0285356
Variance	2,6918E-05	8,2032E-05	2,9861E-05	1,2150E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,112381		0,048400	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,006082		0,806903	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0114866	-0,0342422	-0,0020343	-0,0062575
Variance	2,7569E-05	8,0611E-05	7,2254E-05	8,3566E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,024035		0,754508	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,138552	

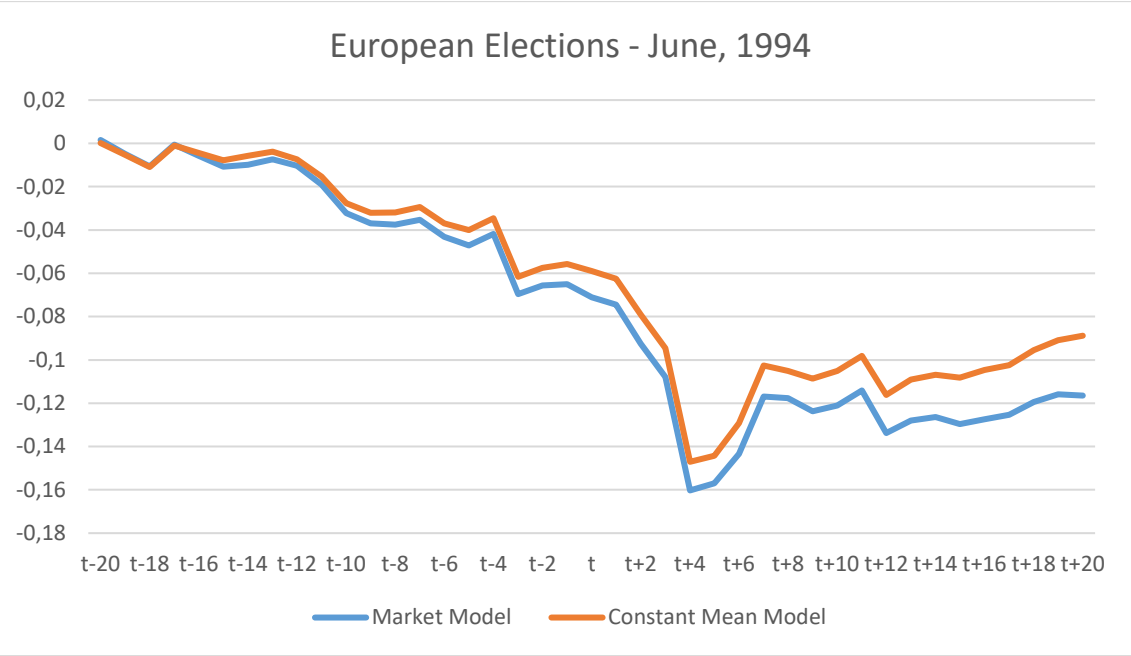
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0101182	-0,0273999	0,0053721	0,0009617
Variance	6,7509E-06	2,4495E-05	6,5571E-06	2,6157E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,068383		0,051432	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,029549	

Annex G Cumulative Abnormal Returns European Election



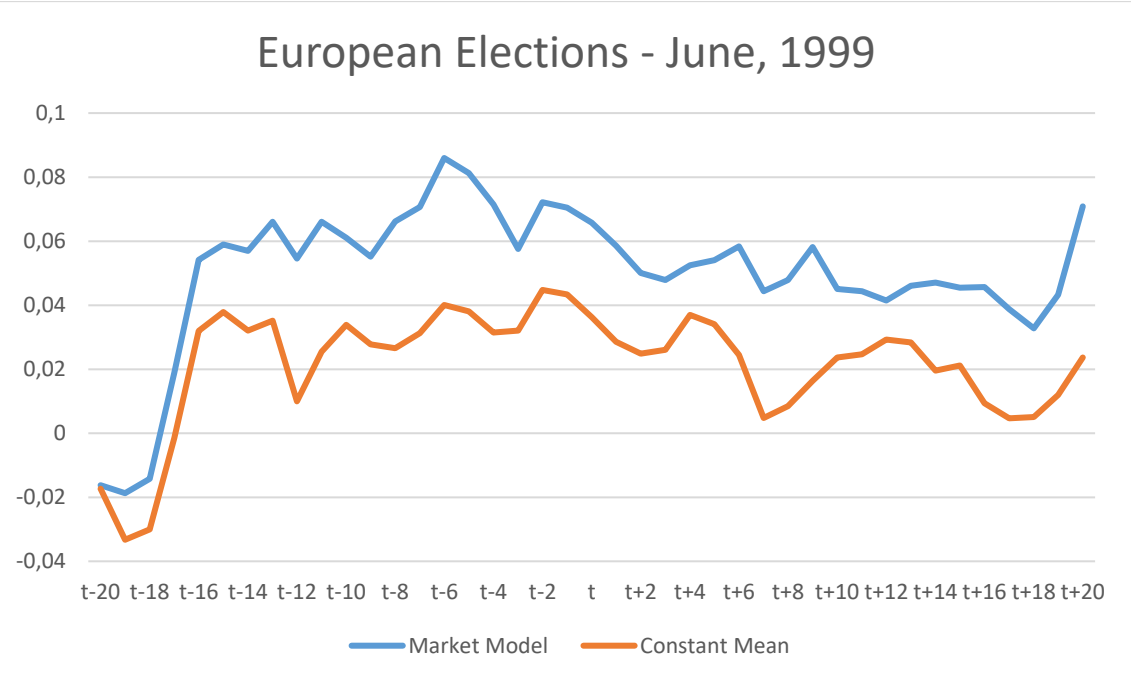
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0086335	-0,0343148	-0,0147121	-0,0392425
Variance	7,2508E-05	1,5233E-05	7,3475E-05	2,2488E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,001337		0,013189	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0154578	-0,0332160	-0,0216769	-0,0383430
Variance	3,5030E-05	2,1347E-05	2,6004E-05	3,2812E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,472100		0,734711	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000001		0,000002	



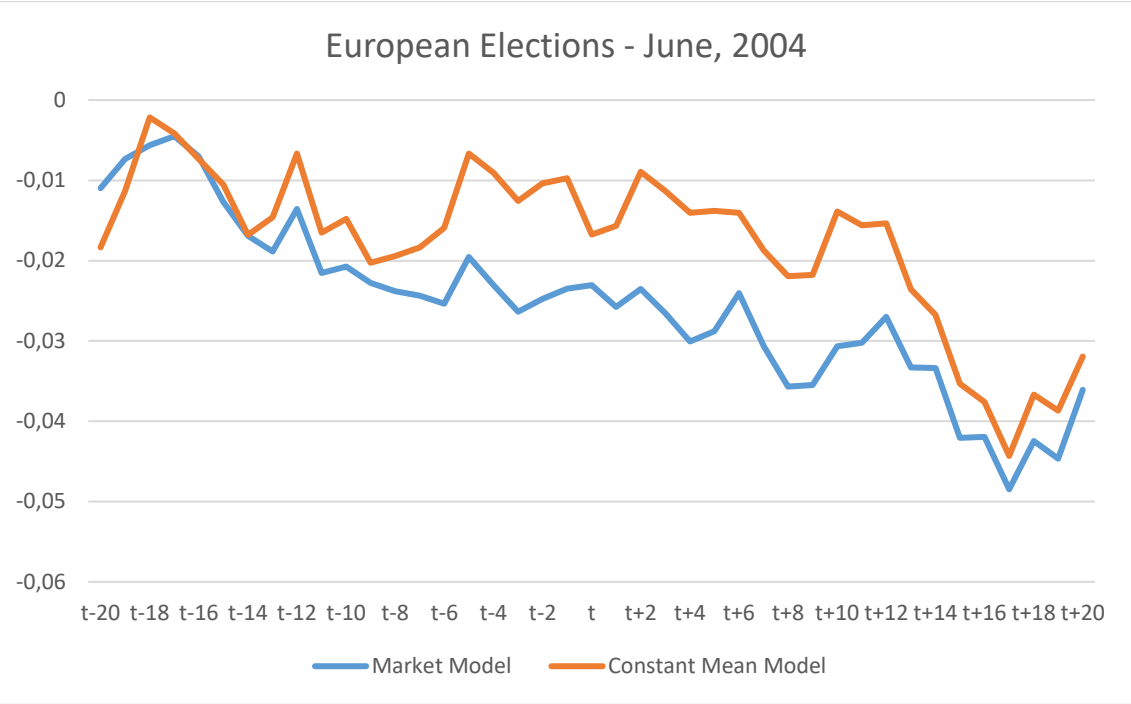
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0275919	-0,1225585	-0,0234358	-0,1049364
Variance	5,2334E-04	3,6548E-04	3,9983E-04	3,8302E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,441164		0,926377	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0474279	-0,1214725	-0,0407096	-0,1078054
Variance	1,9660E-04	7,2435E-04	1,6027E-04	7,1495E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,065355		0,036280	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000003		0,000008	



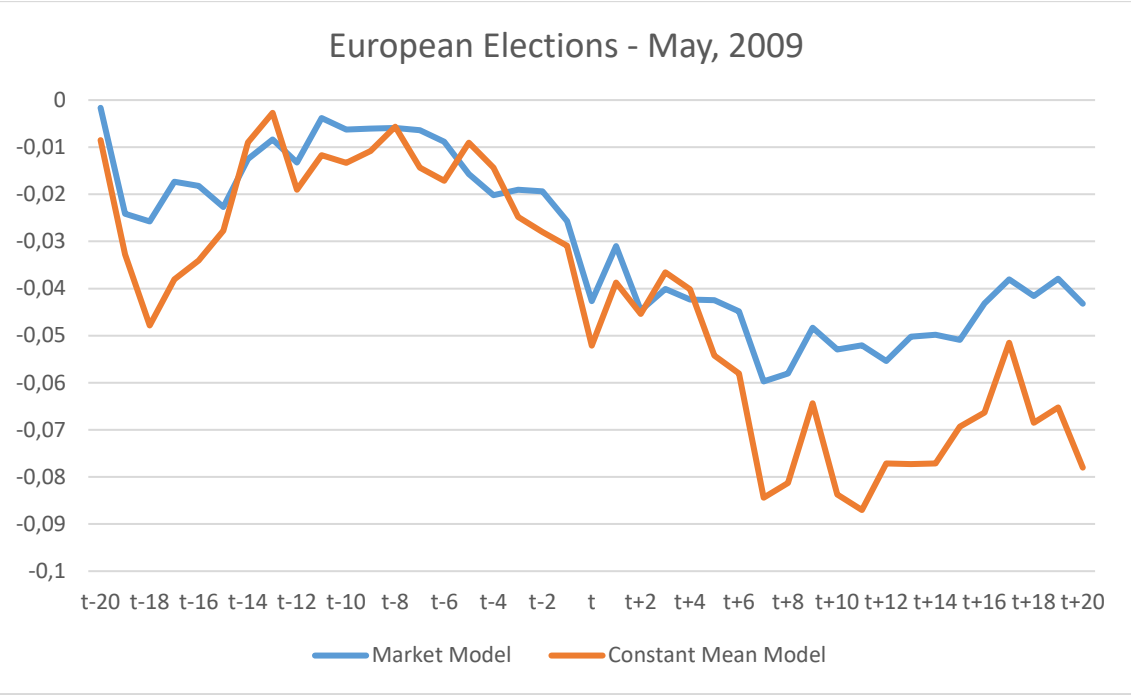
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0509239	0,0486199	0,0219812	0,0203017
Variance	1,0214E-03	7,0257E-05	5,6195E-04	9,7767E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,000000		0,000372	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,758144		0,772332	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0692059	0,0516817	0,0349203	0,0228220
Variance	9,4693E-05	2,9959E-05	4,0012E-05	1,0553E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,101611		0,164734	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000100		0,005285	



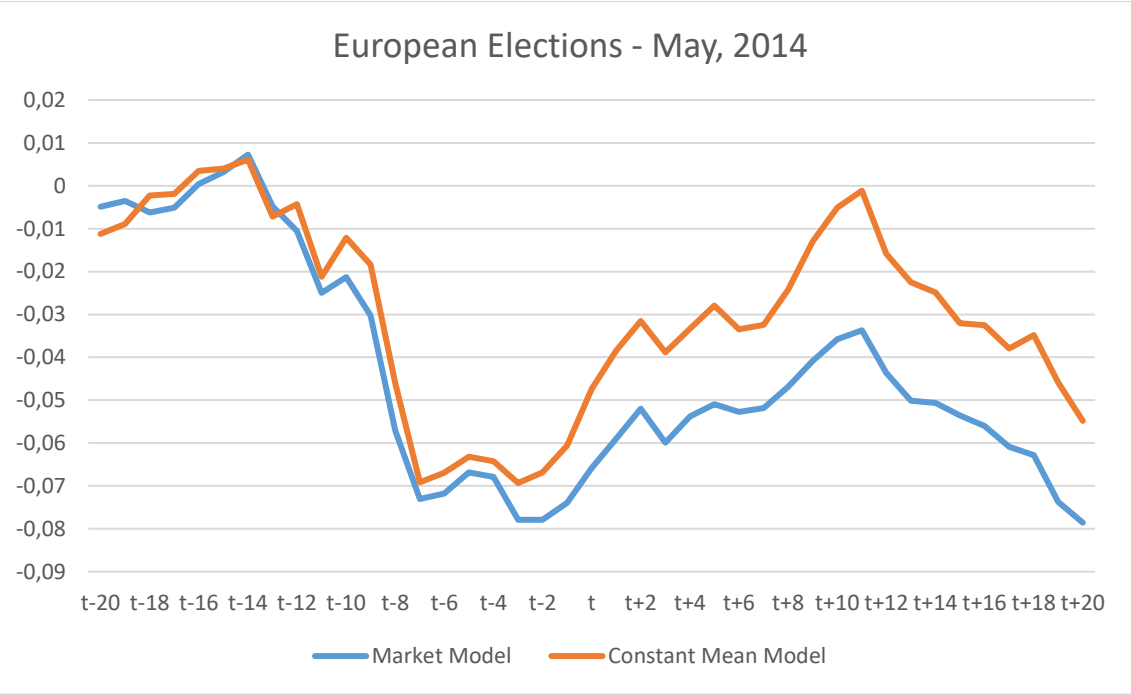
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0176613	-0,0335405	-0,0122756	-0,0229938
Variance	5,3207E-05	5,2060E-05	2,8052E-05	1,1568E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,962609		0,003344	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000429	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0234219	-0,0291195	-0,0137085	-0,0154077
Variance	4,2529E-06	1,8222E-05	2,2569E-05	1,7884E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,041211		0,734514	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,002210		0,409306	



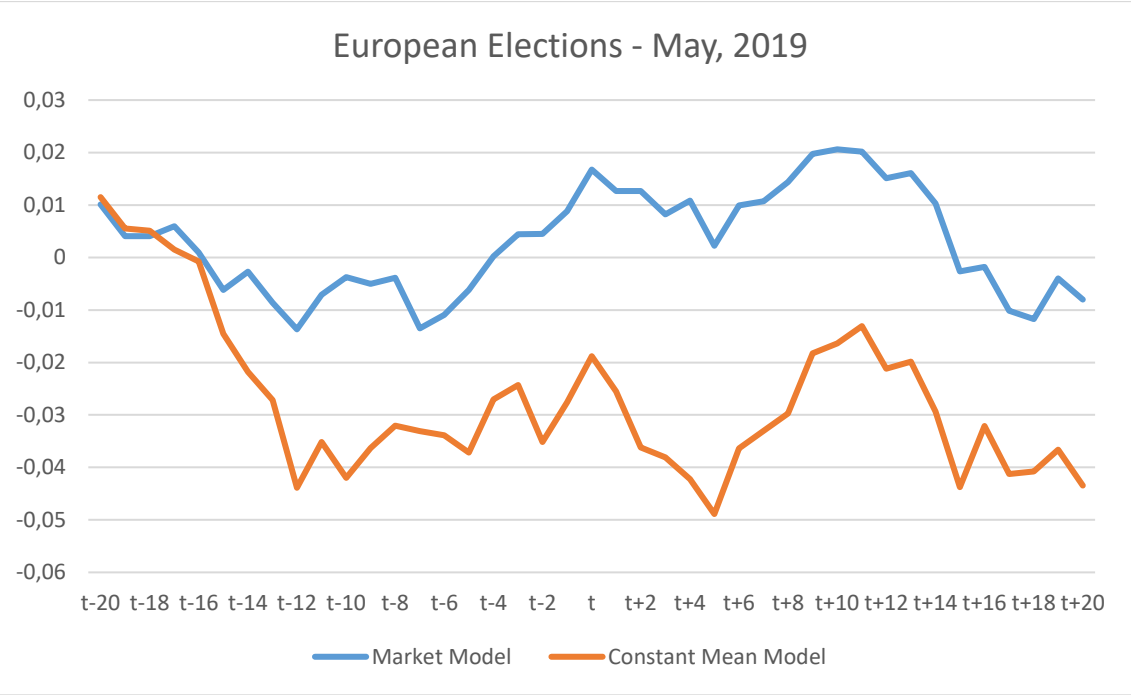
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0140570	-0,0463407	-0,0199851	-0,0652212
Variance	6,0181E-05	5,3642E-05	1,5160E-04	2,6153E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,804633		0,243664	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0133398	-0,0464516	-0,0168394	-0,0586926
Variance	5,5845E-05	7,4932E-05	7,0710E-05	3,6196E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,668510		0,023195	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000000		0,000031	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0333439	-0,0533620	-0,0290008	-0,0290310
Variance	1,0771E-03	1,2061E-04	8,8956E-04	1,6767E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,000014		0,000647	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,016425		0,996715	

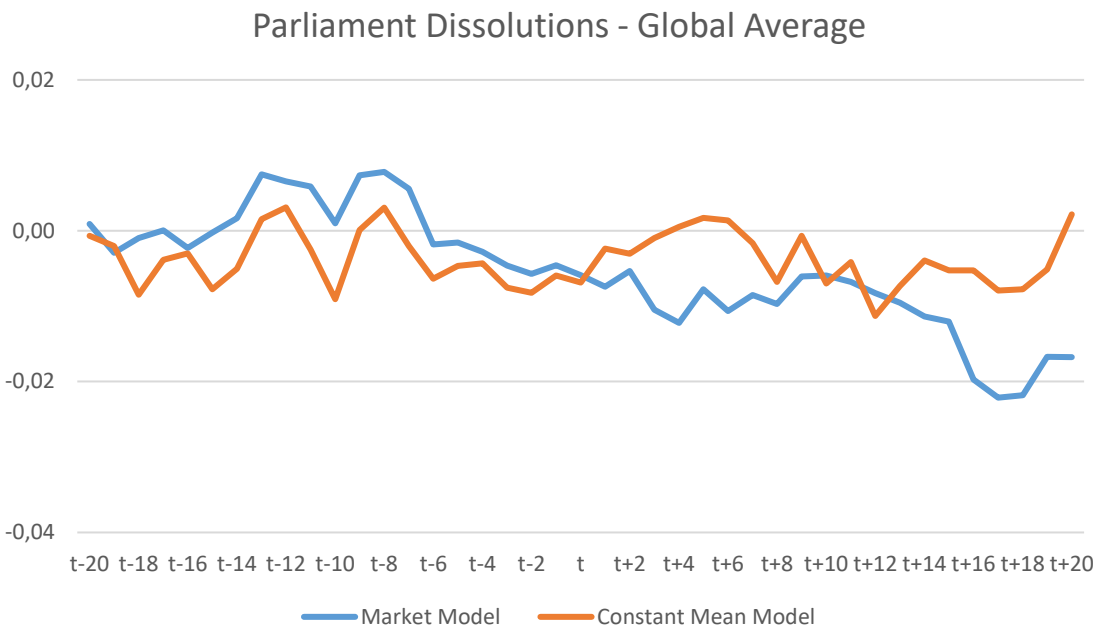
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0617830	-0,0503611	-0,0536765	-0,0278317
Variance	4,0108E-04	5,5728E-05	4,5697E-04	1,1964E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,007105		0,058678	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,118045		0,004524	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0019204	0,0072658	-0,0224078	-0,0323063
Variance	5,1001E-05	1,0626E-04	3,0428E-04	1,0674E-04
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,118281		0,027430	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,002253		0,036724	

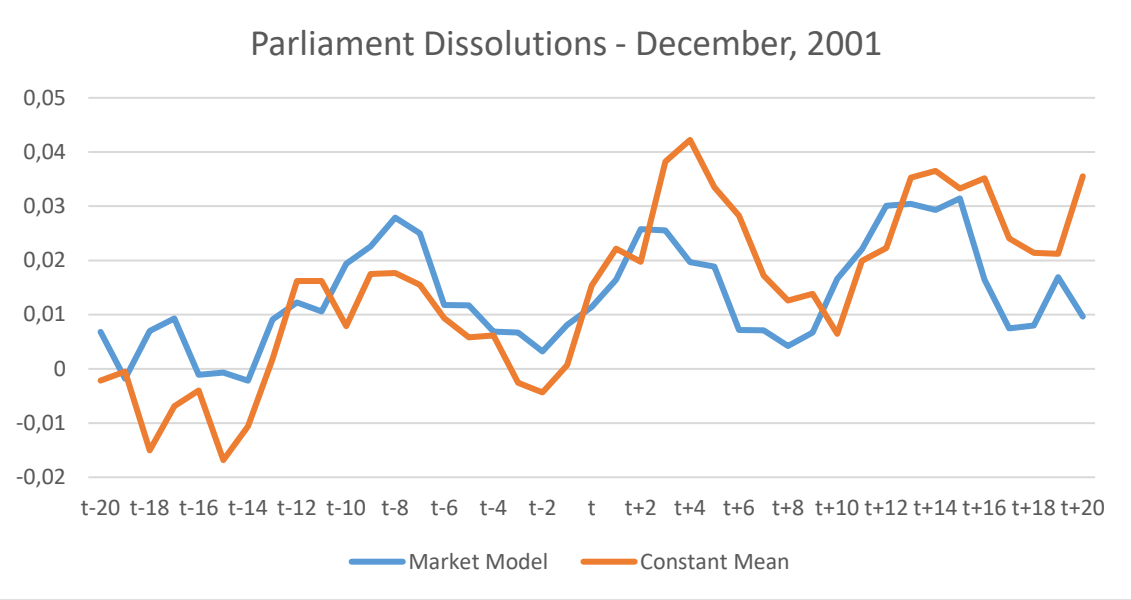
Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0025292	0,0122018	-0,0328519	-0,0324713
Variance	4,9878E-05	2,8556E-05	2,8419E-05	1,0488E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,418689		0,065040	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000053		0,918491	

Annex H Cumulative Abnormal Returns – Parliament Dissolutions



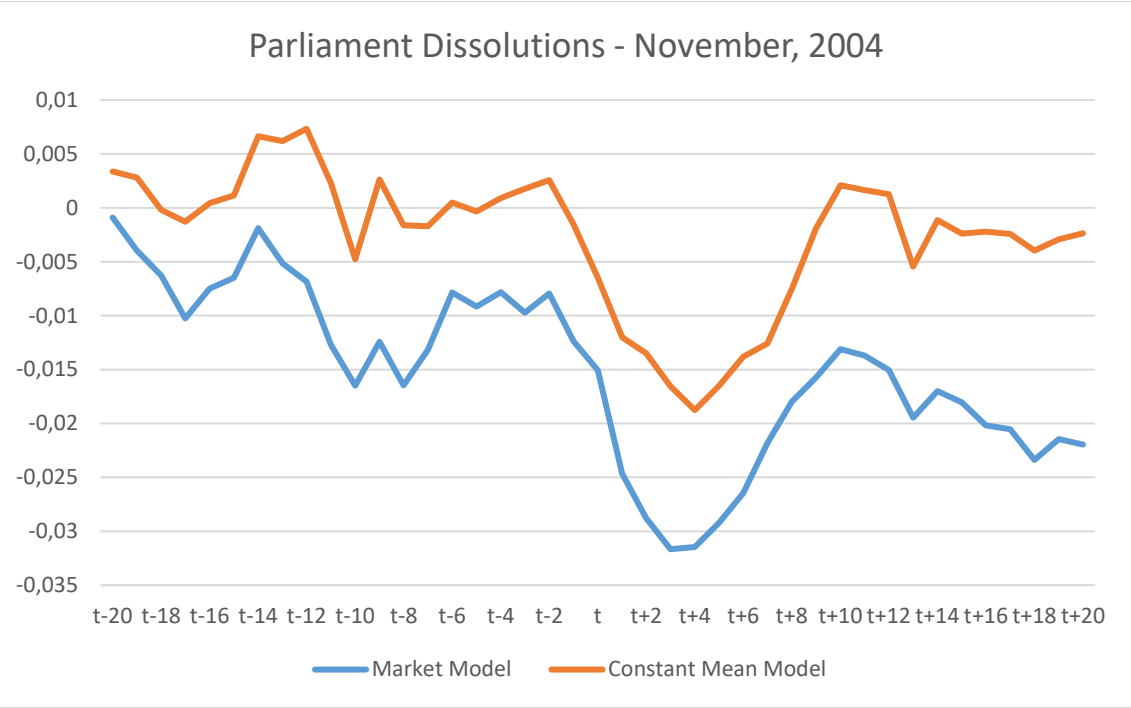
	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0008349	-0,0114582	-0,0036823	-0,0037377
Variance	1,9672E-05	2,7502E-05	1,4138E-05	1,3835E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,472146		0,962818	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,962901	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0000624	-0,0084029	-0,0044942	-0,0018874
Variance	2,6193E-05	5,3270E-06	1,4869E-05	9,2572E-06
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,026490		0,491292	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,000408		0,110569	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	0,0096293	0,0174917	0,0025995	0,0259626
Variance	7,4616E-05	8,3311E-05	1,1525E-04	9,6678E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,812642		0,705683	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	38		38	
P(T<=t) two-tail	0,008031		0,000000	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	0,0143309	0,0148006	0,0073731	0,0234405
Variance	7,5756E-05	6,4082E-05	6,2684E-05	1,3866E-04
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,807211		0,252604	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Equal Variances	
df	18		18	
P(T<=t) two-tail	0,901450		0,002137	



	Market Model		***Constant Mean***	
Panel A:	[t-20;t-1]	[t+1;t+20]	[t-20;t-1]	[t+1;t+20]
Mean	-0,0087662	-0,0215798	0,0013615	-0,0065491
Variance	1,8316E-05	3,2159E-05	9,2195E-06	4,5395E-05
Observations	20		20	
F-Test Two-Sample for Variances				
df	19		19	
P(T<=t) two-tail	0,228940		0,001070	
t-Test: Two-Sample for Mean	Assuming Equal Variances		Assuming Unequal Variances	
df	38		38	
P(T<=t) two-tail	0,000000		0,000057	

Panel B:	[t-10;t-1]	[t+1;t+10]	[t-10;t-1]	[t+1;t+10]
Mean	-0,0113391	-0,0240820	-0,0001545	-0,0111045
Variance	1,1335E-05	4,4341E-05	5,3327E-06	4,5074E-05
Observations	10		10	
F-Test Two-Sample for Variances				
df	9		9	
P(T<=t) two-tail	0,054597		0,003936	
t-Test: Two-Sample for Mean	Assuming Unequal Variances		Assuming Unequal Variances	
df	18		18	
P(T<=t) two-tail	0,000111		0,000476	