

The Impact of European Elections on their Stock Markets

The Honors Program
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ABSTRACT

This paper seeks to provide insight on changes in the European political landscape and how these changes may affect the financial markets in Europe. By analyzing market trends in eight different European countries—Belgium, Austria, France, Germany, Netherlands, Great Britain, Switzerland and Greece—since 1990, this paper attempts to identify any significant relationships between the results of an election and the performances of the major stock indices of these countries. By comparing country index returns starting one hundred days before and ending one hundred days after each election date to a global index, this paper explores the amount of risk in each country's stock index at times of a political change. It examines the difference in the volatility of stock markets before and after an election occurs both in the short term of five days around the event and over a longer term of one hundred days. It also investigates the impact of the implementation of the Euro on the country indices during a time of an election. The final aspect considered is the effect when there is a switch in political ideology from the controlling party before the election to the incumbent party post-election. By examining these effects around election dates through a regression model, insight is provided into the performances of markets and what investors can expect around upcoming elections.

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INTRODUCTION

Politicians are often concerned with the performance of the stock markets and economies of the countries and regions over which they preside. The ways to handle the economy during times of elections can be debated endlessly by candidates. With economic concerns heavily influencing politicians' agendas, it could be expected that investors take the actions of political officials into consideration when choosing where to invest.

With an increasingly global economy, investors are constantly looking for ways to diversify their portfolios and increase their gains. One way to diversify a portfolio is through geographical diversification. This involves investing in different geographical regions to protect a portfolio against certain risks. As the investors consider buying stocks and other vehicles of investment from other countries, it becomes important for them to understand how different events affect stock markets. Being able to anticipate the effect of certain events that occur can make the difference between money lost or money gained.

A political election is an event that could become important to investors. With a strong connection between politics and the performance of the economy, an election could be a turning point that changes investors' outlooks on stock indices. Having certain administrations in power may be favorable for investors compared to other political parties. If this is the case, an election could be a point where people begin drawing their money out of equity markets in these countries or increasing their investments in these countries. Given the significant impact an election can have, the question arises as to how this event could impact the stock indices of the respective country.

In the United States, many studies conducted have looked at the effect of these events. However, as the economy becomes more interconnected between countries, it becomes interesting to look at how elections may affect other countries and their stock indices. The President of the United States is often considered one of the most powerful individuals in the world, so it raises the question of whether other countries would see the same effect on stock indices during times of election despite not being considered as powerful by most investors.

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There are two main types of studies looking at the connection between political parties in power and the performance of stock markets. These types include examining returns over the entire administration or as an event study looking at the immediate impacts of an election. To date, there are many conflicting results that are mainly focused on the effects in the United States. This paper is an event study on the effects of an election and focuses on European countries.

With the fairly recent introduction of the Euro and the European Union, it adds to the factors that may impact investor reactions in this region. With a new common currency, it raises questions about how this affects equity markets. This may impact how investors react around election times as well and may change the risk involved in investing in a country that has adopted the Euro as its form of currency.

Elections may have many different results that can either be anticipated, or can come down to the wire. These are all considerable factors when studying investor reactions to outcomes of elections. Sometimes, there may be switches in political party ideology in the winning party. This case is examined in this paper, along with the overall reactions that includes both elections resulting in a switch in ideology and elections where the winning party has an unwavering ideology. Particularly, this paper looks at the difference when the party switches from a left-sided ideology to a right-sided ideology, and vice versa.

Investors must always be in search of ways to gain advantages in a market that is often considered to be at least semi-efficient. When investing in other countries, elections are one of many events to consider that could impact the performance of their investments. Different factors that occur around these election dates could have different influences on equity markets. By investing in different countries, stockholders may be able to decrease some risks, but must be aware of the risks involved as well. While elections may provide some risk, they also may provide some opportunity that may help beat the benchmarks. The effects of European elections on stock markets and the risk of the stock indices around these times are examined in this paper.

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LITERATURE REVIEW

Introduction

Politics and finance have been two subjects that have become increasingly intertwined. Often times, the fate of the parties in the government depends on how well the economy does. Due to the amount of publicity the stock market receives, it has become more and more important to how the public views the state of the economy. Often times, voters will punish parties who have control during a time of poor stock market returns. According to a study done by Leduc L., & Pammett, J.H. (2013), in 16 of 27 elections held in European Union member countries during the time of financial crisis between 2008 and 2011, incumbent government parties went down to defeat.

The purpose of this review is to examine the connections that have been made in the existing literature between politics and stock market returns. This review will also note how an increasingly global economy has effects on the financial markets. It will examine both how politics affects market returns, as well as how the stock market returns affect voters' perceptions and decisions regarding the political parties in power.

Political decisions regarding the economy perhaps are the most scrutinized by the media and the public. In certain situations, investors react to the news that comes out of the government regarding its decisions. This has become more prevalent during the past few years as the economy continues to make a slow recovery. Political decisions have become more important as investors have focused on the recovery of the global economy. This makes the importance of academic literature on the connections between political decisions and financial markets much more relevant and important as investors become more interested in how decisions will affect the returns that they are receiving.

Findings of the Review

The Economy Impacts Voter Decisions

LuDuc L., & Pammett, J.H. (2013) in particular focuses on the fact that there is a relationship between economic performance and how elections turn out. In their research, they looked at

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elections that occurred between 2008 and 2011 during the most recent financial crisis. They found substantial evidence that voters will punish governing parties during a time of economic turmoil. In the 24 countries that held national elections during the time period they looked at, 20 of the governing parties lost support; the average level of decline in their share of the vote across all of the cases being -8.1%. Sixteen of these 27 elections saw the incumbent government go down to defeat.

While this is the opposite point of view that this research paper will be looking at, it does provide support for the connection between politics and finance. It looks more at finding the impact that economic activity has on politics rather than the other way around. However, it is able to establish a significant connection between the two fields and show how important the state of the economy is to the public. It has the limitation of only looking at one particular financial crisis, but finds significant results across a sizable sample of countries.

Inaccurate View of United States Political Parties and Stock Markets

Much of the research in this review focuses more on the different impacts political parties have on the stock markets. In the United States, it is generally thought that Republican administrations provide higher market returns. This view is due to a generally held view that policies that are promoted by Republicans tend to be more favorable to stock markets and capital formation. However, studies have shown that this tends not to be the case, especially in more recent times. (Booth, J., 1998)

In a study done by Jeremy Siegel in his book *Stocks for the Long Run* (1994) he finds that in the short term investors do prefer Republican administrations. To evaluate market performance, he looked at the DJIA index which is commonly used to evaluate the performance of the U.S. stock market. When looking at short term data, he found that the DJIA fell an average of .75% on the day after a Democratic president was elected. During the same time period, the DJIA averages an average increase of .81% following the election of a Republican President. These reactions confirm the common thought that Republican administrations are better for the stock markets.

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The reality, however, is that many studies have found that in the long term, Democratic Presidents are actually provide better market returns. Siegel found that since 1948, when adjusting for inflation, the real returns for Republican administrations was 6.11% per year. For democrats, the real returns were much higher at 11.25% per year. While this data was limited by the fact that it only looked at the DJIA which is only based on 30 stocks, another study done by James R. Booth (1998) looked at the broader index, the S&P500.

The S&P 500 is generally seen as the index that better represents how the overall economy in the United States is doing since it is based on 500 stocks rather than just 30. Booth actually finds a smaller difference between annual market returns between Republican and Democratic administrations. He finds that from 1945 to 1997, the average annual return for Republican administrations is 13.1 percent while for Democratic administrations, it is 15.3 percent. While it still shows that the Democratic administrations had slightly higher returns, the differences were not found to be statistically significant.

Number of Years into Presidential Term Matters

While these previous studies looked at the overall differences between average yearly returns of the two major U.S. political parties, other studies have focused on the years within a Presidency. It has been shown that stock markets tend to go through a four year election cycle. Roger Huang (1985) presented a study that looked at this election cycle for large cap stocks. In his study, he found that for both Republican and Democratic administrations, there is a basic pattern that shows higher returns in the third and fourth years of a term. Another study by Chris R. Hensel and William T. Ziemba (1995) confirmed these results and also extended them to show that the same cycle can be seen in small cap stocks. The returns during a third and fourth term of a Presidency are consistently significantly higher whether looking at small cap returns or large cap returns in the United States.

European Results Differ

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There are substantial differences between European and American politics. According to the literature, some of these differences also cause there to be disparities in market reactions to political events. A lot of the literature tends to focus on only a few of the major economies in the European system. The literature in this review focuses on Great Britain and Germany. Döpke, J., & Pierdzioch, C. (2006) focused their research on Germany and the stock market returns under right-wing versus left-wing parties. Contrary to the findings in the United States, they found weak evidence that market returns in Germany were higher under right-wing than under left-wing administrations. In their research, they stated that they found that this difference may occur because of the political differences between the United States and Germany. In the U.S., the government is based on majoritarian electoral rules, while in Germany; they have a government based on proportional electoral rules. Since World War II, governments in Germany have often been formed by coalitions of two or more political parties. They also stated that “the political process has not only been shaped by “the Federal parliament (Bundestag), but also by the parliament of the states of the Federal Republic of Germany (Bundesrat). Very often, the Bundesrat was dominated by right-wing parties when the Bundestag was dominated by left-wing parties, and vice versa.” This makes the government in Germany less polarized than in the United States and could provide some explanation as to why Germany saw different results in the financial market returns under different parties.

Outside of Germany, more results were looked at in the United Kingdom by Mukherjee, B., & Leblang, D. (2007). This research focused on both the mean market reactions and volatility. The important takeaway from this study is that the volatility of stock markets decreased significantly when comparing it from when a left-wing party was expected to win an election to after a left-wing party was in office. While volatility usually increases during a time when a left-wing party is expected to win office, this volatility decreases significantly once that party is actually in office.

Sector Specific Returns in Europe

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When looking at market returns, there are many different aspects to consider. The previous studies all looked at general indices that showed how the overall economy was doing. Another aspect to consider is the different sectors and seeing how politics may affect the economy in more specific ways. Bechtel (2010) provided more in depth research about how governments can affect individual sectors differently while they are in office. In this analysis, the focus was on how individual sectors perform under different political parties. The results showed that there were statistically different returns under different sectors depending on the ideologies of the party in power. In particular, the defense, alternative energy, pharmaceutical, and consumer sectors were all found to be influenced by the probability of different parties winning upcoming elections.

A study done by Asal (2011) discusses the impact of the Euro on sectoral returns and portfolio risk. The results of this study showed that the volatility in sectoral indices has increased since the introduction of the Euro. The study also showed that an investor should diversify throughout sectors rather than throughout countries. Diversification over sectors creates more efficient portfolios than when investors diversify over countries.

The Euro has had an Impact

The last topic important in this review is the impact of the Euro on equity markets. Cappiello, L., Kadareja, A., & Manganelli, S. (2010) analyzed the euro and its effects on stock markets since it was implemented in 1999. They noticed an increase in the co-movement between European stock markets since the introduction of the Euro. They also looked into the sectors that were the drivers of the increase in co-movement. Their research showed that the financial, industrials, and consumer services drove the co-movement.

Another study that looked more at the average returns since the euro as opposed to the co-movements of equity markets among European countries was done by Green, C. J., & Bai, Y. (2008). They found abnormal stock returns since the implementation of the euro in their research. Their research showed that the stock markets were not fully impacted by the

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introduction of the euro before the event actually occurred. They found these abnormal returns in seven euro-zone countries along with four non-euro zone countries.

In a study by Kearney & Poti (2008), idiosyncratic risk and market risk were examined in relation to the introduction of the Euro. The results of their study showed that both idiosyncratic risk and market risk increased as a result of the implementation of the Euro. This means that it takes more a larger portfolio of stocks to diversify away risk and that the Euro has increased the risk in the overall stock markets in European Countries. In the US, the market risk has trended downwards, but the opposite is true in European countries since countries began adopting the Euro.

Discussion

Whether looking at the effects of politics on financial markets, or vice versa, it is clear that there is a strong connection between the two. While there has been extensive research on the United States' political parties and their impacts on the stock markets, there has been far less research done on Europe.

This literature review shows several important ideas that come up in the existing studies that will factor into the research in this paper. When looking at short-term reactions to political elections, it will be important to compare to these trends that have already been found. There has been a study done by Siegel (1994) showing investor reactions in the short-term to changes in political party in the United States. This will serve as an important comparison point when looking at differences between the United States and European returns.

The literature has also shown differences between European and American market trends in relation to politics. When researching the market reactions to political party changes in Europe, it will be important to consider the reasons for why the results in Europe may be different. These reasons could include some of the political differences that have been found in the literature that is in this review.

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When looking at results, it will also be important to consider some of the other findings in these studies. Since I will be looking at the 100 days before and 100 days after an election, it will be important to remember that the final years of a term generally sees higher market returns than the first years. This could have an impact on the results found in this research. Another issue that could affect results is market volatility. Market volatility describes the risk involved in investing in a certain market. Since volatility tends to be lower after an election occurs, it could affect results when comparing returns before and after the election occurs.

For future research, this literature review has shown that particular sectors may have significantly different returns when different political parties are in office. It would be interesting to extend this research to look at market reactions in the short-term to different outcomes of elections. Since the research done by Bechtel (2010) only looked at Germany, it would also be interesting to expand this research to more countries to see if there would be similar results.

METHODOLOGY AND PROCEDURES

Data Collection

Data for this study was collected for eight different European countries. The countries include Germany, France, Austria, Belgium, Netherlands, Greece, Great Britain, and Switzerland. Six of these countries were within the European Union and had adopted the Euro, and two of them (Switzerland and Great Britain) had never implemented the currency. For each of these countries, major stock indices were examined to collect information on returns around election times.

The number of elections studied before and after the Euro was implemented is shown in table 1 for each country. The Euro was implemented on 1/1/1999 for all of the countries examined other than Greece. In Greece, the Euro was not adopted until 1/1/2001.

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Country	Elections Pre-Euro	Elections Post-Euro	Total Elections
Germany	3	3	6
France	1	3	4
Austria	2	2	4
Belgium	2	4	6
Netherlands	2	5	7
Greece	4	4	8
Great Britain	2	3	5
Switzerland	2	4	6
Totals	18	28	46

Figure 1: Election Data

The major stock index in each country was used to collect the daily returns around election dates. The stock index used for each country was:

- Germany- Deutsche Boerse Ag German Stock Index (DAX)
- France- Cotation Assistée en Continu (CAC-40)
- Austria- Austrian Traded Index (ATX)
- Belgium- Belgium 20 Index (BFX)
- Netherlands- Amsterdam Exchange Index (AEX)
- Greece- Athen Index Compos (GD.AT)
- Great Britain- FTSE
- Switzerland- Swiss Market Index (SMI)

These indices were all compared to a world index. The world index used was the MSCI World Index.

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For each election date, the daily returns were computed for 100 days before the election and 100 days after the election. To calculate the daily returns, the daily adjusted closing prices of the indices were used. By dividing the adjusted closing price by the previous day's adjusted closing price and subtracting one, the daily returns were determined. These returns were then used in the study to determine the effects of elections on the stock markets in each country.

Data Analysis

To analyze the overall impact of elections, country index residuals were examined. The residuals were computed for each day by subtracting the world index daily returns from the specific country index returns. For example, the country index return for Germany (DAX) on the day of its first election examined in this study was -0.1%. On the same day, the MSCI World Index had a return of -0.301%. The residual here was calculated by subtracting the -0.301% (MSCI return) from the -0.1% (DAX return). This would result in a residual of 0.2013%.

These residuals were used to gain a general understanding of how a country's stock market reacted around an election time. The purpose of using the excess return of a country's index value over the world index value was to attempt to control for the economic condition of the time and isolate the country's reaction to the election. Residuals were calculated for all of the elections for each country. To compile the data, each election was first examined separately and each residual was assigned a day. The days were numbered from -100 to 100 depending on where it fell around the election date. For example, if the day occurred 50 days before the election date, the value assigned would be -50. The average of the residuals from all of the elections in a country was then taken for each day. On the day that occurred fifty days before the election, for instance, the residuals across all elections for day -50 would be added and divided by the number of elections for that country. This was done for each country to come up with the average residual for each day around the election from 100 days before (day -100) to 100 days after the election (day 100).

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In order to examine the effects of elections on stock markets more closely, a regression model was used. For event studies such as this, a basic regression model is often used. A basic regression helps to understand how a dependent variable changes when an independent variable is varied while other independent variables are fixed. In this case, the dependent variable is the country index's returns ($R_{I,t}$). The independent variables are the different factors considered that could affect the country index's returns.

One of the independent variables looked at was whether there was a switch in political ideology at the time of the election. Every party in power for the elections examined in this studied was put onto a political scale. The scale used is shown in Figure 2 Below.

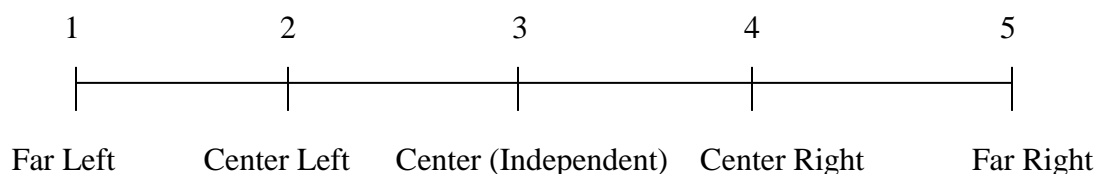


Figure 2: Political Party Scale

The ideology of each party was examined and placed onto the scale. Every party fell into the category of center left (2) or center right (4) except for one. The one exception was an independent that won the 1998 election. This party was considered a 3 on the political scale used in this study. A political switch was considered when the party that won the next election was a different number on the political scale. A switch from a party that was a 4 on the scale to a party that was considered a 2 was a left-switch. If the winning party represented a change from a 2 on the scale to a 4, it was a right-switch. Switches left or right represented two of the six independent variables in the regression model.

These independent variables include:

- $R_{G,t}$: Return to the Global Index at time t
- PREEV : An indicator variable taking on a value of 0 prior to the election and a value of 1 after the election

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- EE5 : An indicator variable taking on a value of 1 on the five days following an election and 0 otherwise.
- PREEU: An indicator variable taking on a value of 0 if the election was pre-adoption of the EURO, and 1 otherwise.
- ShiftL: An indicator variable taking on a value of 1 if the winning party represented a shift left, and a 0 otherwise
- ShiftR: An indicator variable taking on a value of 1 if the winning party represented a shift right, and a 0 otherwise

In this regression model, each of these six independent variables is examined to find the impacts they have on the return to the country index.

The other pieces to the regression model are the coefficients. There are four different coefficients involved in this regression equation. The first coefficient is beta (β). The interpretation of beta in this model is it is an estimate of the country's systematic risk relative to the global index. Appearing next in the model is gamma (γ). This coefficient can be described as an estimate to the change in the intercept and can be tested to determine if returns are significantly different around events. Another coefficient in this regression model is delta (δ). This estimates changes around the slope coefficient around events. Delta can be tested to determine if the risk of a country's index significantly changes around the election date. The last coefficient is ε , which is an error-term associated with the white-noise in the data and is assumed to be normally distributed with a mean of 0.

Combined together, the regression model used to find significant impacts on country index returns is listed below.

$$\begin{aligned} R_{I,t} = & \alpha_I + \beta_I R_{G,t} + \gamma_1 PREEV_{I,t} + \gamma_2 EE5_{I,t} + \gamma_3 PREEU_{I,t} + \\ & \gamma_4 ShiftL_{I,t} + \gamma_5 ShiftR_{I,t} + \delta_1 (R_{G,t} * PREEV_{I,t}) + \\ & \delta_2 (R_{G,t} * EE5_{I,t}) + \delta_3 (R_{G,t} * PREEU_{I,t}) + \end{aligned}$$

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$$\delta_4(R_{G,t} * ShiftL_{I,t}) + \delta_5(R_{G,t} * ShiftR_{I,t}) + \varepsilon_{I,t}$$

This regression was run for each country to determine which coefficients significantly impacted the dependent variable ($R_{I,t}$). The data used in this regression included each of the variables involved in the regression model for every election. For example, Germany had 6 total elections, so the data run through the regression included daily returns for the DAX from 100 days before to 100 days after for all 6 elections. These returns were the dependent variable, and then the independent variables were also run through the regression for each of these days. Their affect was then determined through the regression to be significant or not. The regression model output included the coefficients and the p-values to determine significance. A p-value of less than .05 was considered to be significant in this regression model.

After each country was individually tested, the data for all of the countries was stacked on top of each other to run an overall model to see if there were independent variables with significant impacts across all of the European countries. This regression included the data from all 46 elections studied.

After running the overall regression model, the results were considered along with the individual country results and country residuals to determine conclusions as to how the political elections affect the stock market markets. These were compared to find patterns in the data to see how investors view elections and what investors can consider at a time of election.

RESULTS AND CONCLUSIONS

Germany

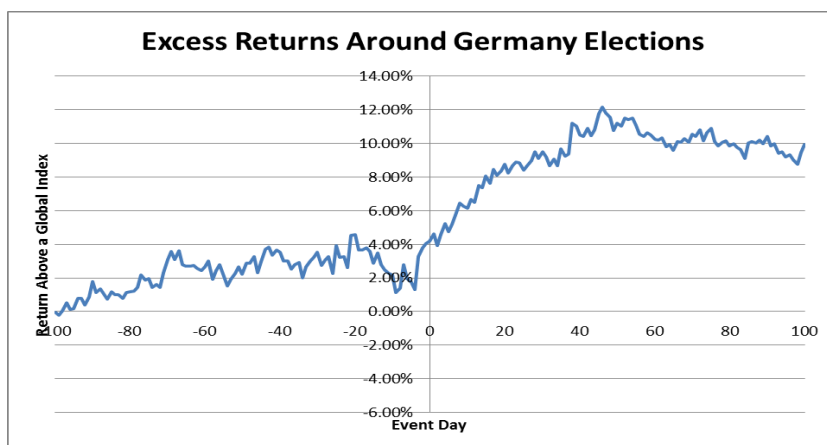


Figure 3: German Residuals around Election Event

The residuals calculated around Germany elections are shown in Figure 3. By looking at this graph, it can be seen how an election in Germany is viewed by investors. The residuals are an attempt to control for economic conditions of the time in order to show only the effects of the election. In Germany, it appears that there is a slight increase in the residuals right before the election. This increase continues until about forty days after the election and then starts to level off at about 10%.

This appears to show that election results are generally viewed positively by investors in Germany. Once the election is about to happen, investors begin becoming more confident in the performance of equities in the country and begin investing more. When the results of the election become known, German investors seem to be confident that the new incumbent parties can improve the economy.

Germany's regression results are displayed Appendix A. These results show that the variable $Glob*ShiftR$ is the only significant variable. The coefficient for the regression for $Glob*ShiftR$ is -0.3601 and the p-value is $.0319$. Since the coefficient is negative in this case, this significant variable suggests the beta for the German stock index DAX is lower after a political shift to the right. This shows that there tends to be less risk involved with investing in

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the DAX after there is a switch from a party with a left sided ideology to a party with a right sided ideology.

France

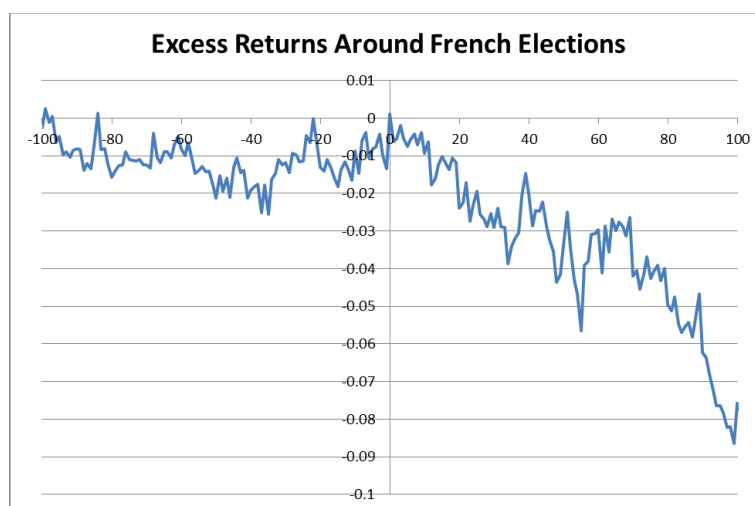


Figure 4: French Residuals around Elections

In Figure 4, the results from the residual analysis are shown. The results here are clearly different than what was viewed in Germany. The returns on the CAC-40 are relatively stable and only slightly negative before the election. However, once the election occurs and results are known, there is a significant decrease in the residual, dropping as low as 9% by 100 days after the election.

These results seem to show that investors in France appear to react negatively to the actions of voters. There are many factors that may come in to play here, but one possibility for this is that the voters in France tend to take other matters into consideration more than the economy and investors take note of this. Investors appear less confident in the French economy after the elections occur and do not believe that the winning parties will help the economy grow. These results are very different from what was seen from most countries. Immediately once the results of the election are known, the index begins to see negative returns and loses value.

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The regression model for France shown in Appendix B displays significant results for two variables: Glob*PreEv and Glob*ShiftL. The coefficient for Glob*PreEv is .2107 and the p-value is .0102. This having a significant effect on the dependent variable, the CAC-40 index returns, demonstrates that the beta of the CAC-40 is significantly higher after the election occurs. This confirms some of the results seen in the residuals as it can clearly be seen in Figure 4 that the residuals are more stable before the election occurs and significantly drop after the event.

The other significant variable, Glob*ShiftL, has a coefficient of .3204 and a p-value of .0009 in the regression model. These results show that a political shift left seems to increase the beta of the CAC-40. This demonstrates that when there is a shift from a party with a more right-sided ideology to a party with a left-sided ideology, there is more risk associated with investing in France. Investors should be aware that if a switch of this nature is expected, it could increase the riskiness associated with their investments in France.

Austria

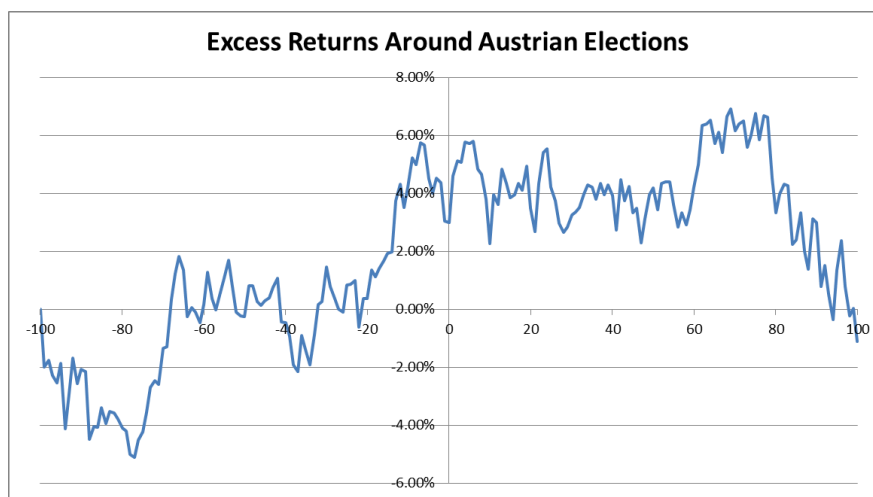


Figure 5: Austrian Residuals around Elections

The Austrian index residuals shown in Figure 5 appear quite volatile, but yield similar results to that seen in Germany. There is an increase in the value of the ATX immediately before the election occurs, and then it levels off until a decrease at around 80 days after the event occurs.

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This is slightly different than Germany and has a slightly different interpretation. Investors in the Austrian index may believe that a change in political party may help the economy. Before the results are known, Austrian investors appear more confident that the economy will improve with a new party in power. However, once the results are known, the returns on the index level off almost immediately. This may mean that investors begin to become wary that the index has reached its peak or that the election caused too much of an increase before it occurred. Once it occurs, investors may feel that the results of the election are already priced in and there may not be more increases in the ATX.

The regression results for Austria are shown in Appendix C. The only independent variable with a significant effect was PreEv. The coefficient for this variable was $-.0023$ and the p-value was $.0403$. Since this coefficient is negative, the interpretation of this significant variable is that the returns for the ATX are significantly lower after an election occurs. This may mean that investors are not confident in the winning party of elections, or may mean that the index already has a high value due to the increase in the index before the election occurs and decreases from there when the election occurs.

Belgium

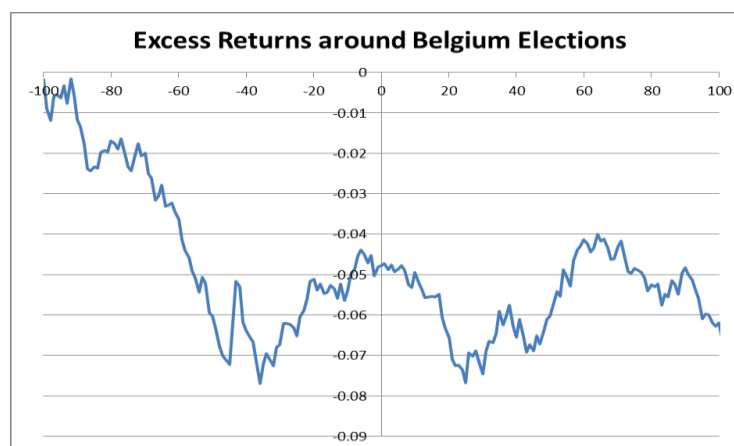


Figure 6: Belgian Residuals around Elections

The residual analysis for Belgium shown in Figure 6 shows a sharp decrease in the Belgian Index, BFX, at about 70 days before the election occurs. The residuals do rebound slightly at

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about 40 days before the election, but still end up down 5% at the time of the election. After the election occurs, the index appears to somewhat level off.

This shows that the investors may view a change in political power in Belgian as having a negative effect on its economy. It could also mean that investors view an election as a period of uncertainty associated with more risk that they may want to avoid. They may attempt to sell off their investments in Belgium before the event occurs so they can avoid this uncertainty and invest in other areas that may have less risk. The fact that the residuals level off after the election occurs may show that the uncertainty surrounding the election is now gone and investors slow their selling of Belgian investments.

The regression results for Belgium are shown in Appendix D. There were two significant variables in the regression analysis for Belgium. These variables were Glob*PreEv and Glob*PreEu. For Glob*PreEv, the coefficient was $-.2665$ and the p-value was $<.0001$. With a negative coefficient in this case, it seems that the beta of the BFX stock index in Belgium is lower after the election occurs. For Glob*PreEu, the coefficient was $.4723$ and the p-value was $<.0001$. This shows that the beta for the Belgian stock index was higher after the Euro was adopted. This shows that the stock markets have less risk after election results are in and more risk since the Euro was implemented.

Netherlands

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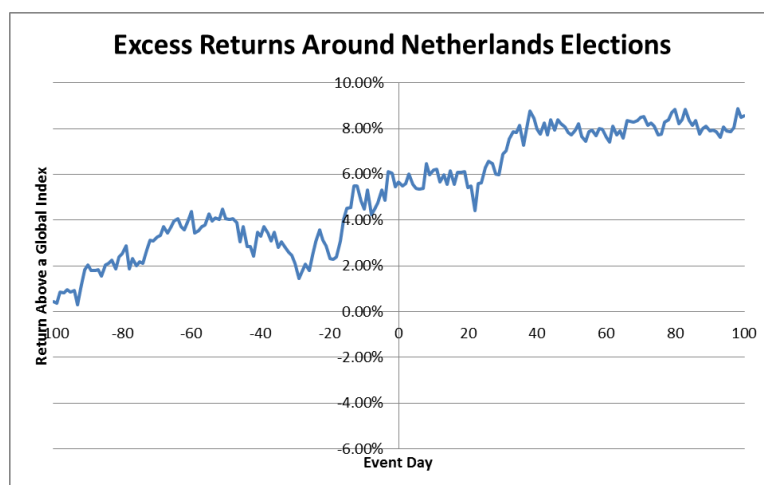


Figure 7: Netherlands Residuals around Elections

The residuals shown in Figure 7 for Netherlands show a fairly consistent rise around elections. There does appear to be a slightly higher increase from about 20 days before the election to the date of the election. It seems to level off after the election occurs which is somewhat like what was examined with other countries.

The rise in the stock index before the election could mean that investors begin to have positive expectations. They may think that a change in power could be good for the economy and that the economy will grow with the policies of the winning party of the election. The index residuals do seem to rise at a more stable rate than other countries and there may be less risk involved in investing in a country like Netherlands around election times.

In the regression shown in Appendix E, only the variable $Glob*PreEu$ was significant. The coefficient for the regression was .3153 with a p-value of .0001. The interpretation of this is that the beta for the AEX seems to be higher since the implementation of the Euro. This could mean that investors believe there is more risk associated with a currency that is connected to multiple economies and political systems.

Greece

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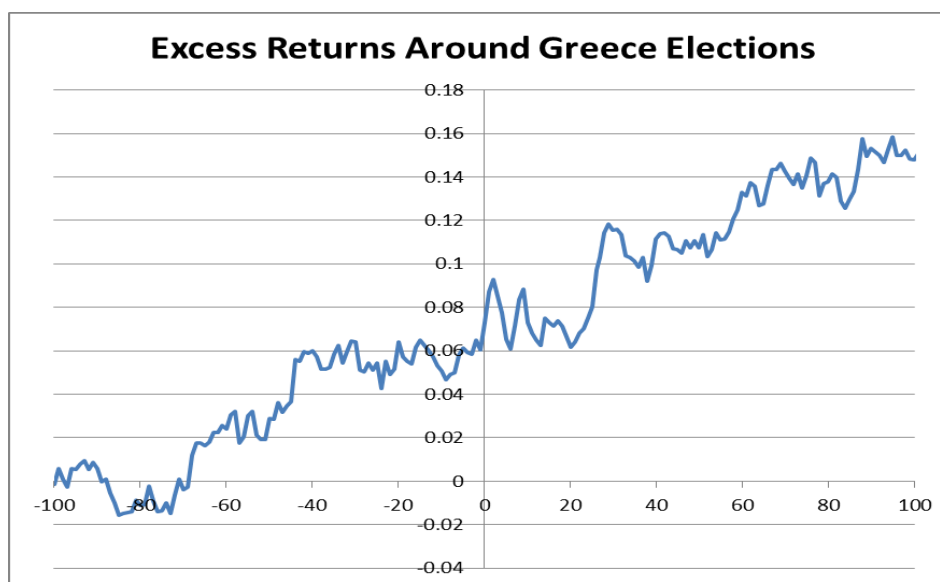


Figure 8: Greek Residuals around Elections

The residuals presented in Figure 8 show the results around Greek elections. From 100 days before to 100 days after an election, there is a steady and steep increase in returns from the Greek index. There does not seem to be too much volatility associated with the Greek index and it shows the highest returns of all countries examined in this study. It reaches a maximum return of about 16% around 100 days after the election occurs.

This could mean that around elections, investors believe that the results of the election will help grow the Greek economy. It appears that voters choose politicians that they believe will implement policies to improve the markets in Greece. Out of the eight countries discussed in this research, it appears that the Greek markets act the most favorably for investors around the time of an election according to the results of the residual analysis.

In the regression analysis, there were three significant variables. The regression results are shown in Appendix F. The significant variables include PreEu, Glob*EE5, and Glob*PreEu. The coefficient for PreEu was -0.0024 and the p-value was $.0336$. This means that the returns for the Greek index, GD.AT, were lower after the introduction of the Euro. Since there are limited results before and after the Euro for Greece, it is possible that this could be the result

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of having limited data if a certain election had a more significant impact on the markets than others.

The next significant variable, $Glob*EE5$, had a coefficient of .6728 and a p-value of .024. This can be interpreted as the beta of the GD.AT being higher immediately after (5 days) the election occurs. This indicates that the riskiness of the stock market is higher in Greece right after the election occurs. A reason for this could be that the investors are reacting to the result of the election, thus causing sharp increases or decreases in the index value immediately after the event occurs.

The last significant variable for the regression on the Greek index is $Glob*PreEu$. This variable had a coefficient of .8002 and a p-value of $<.0001$. This signifies that the beta of the Greek stock market increased after the introduction of the Euro. After the Euro was introduced, the risk associated with investing in Greek equity markets increased.

Great Britain

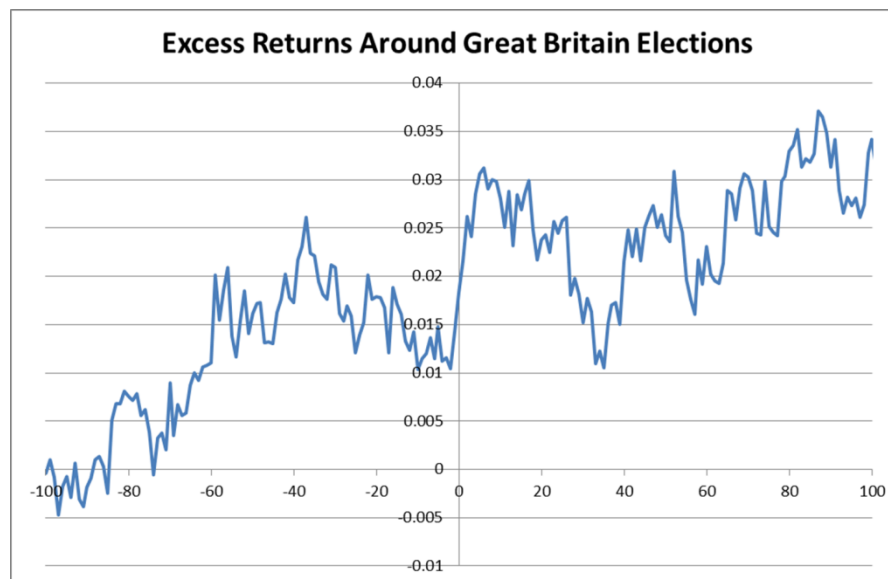


Figure 8: British Residuals around Elections

The excess returns over the global index for Great Britain, shown in Figure 8 above, shows that the residuals are fairly volatile and increasing around the election date. It also shows a

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sharp increase in return right before the election up until a couple of days after the event occurs. This could show that investors generally tend to react positively to British election results. Knowing this, investors could gain an advantage by investing in the FTSE index immediately before the election so they can see a sharp increase in their returns.

The regression in Great Britain resulted in only one significant variable impacting the dependent variable. The significant variable was EE5 and the regression results are shown in Appendix G. The coefficient for this variable was .238 and the p-value was .0275. The regression in this case confirms what is seen in the residual analysis. Investors tend to react positively to the results of the election, and it shows positive returns within five days after the election occurs.

Switzerland

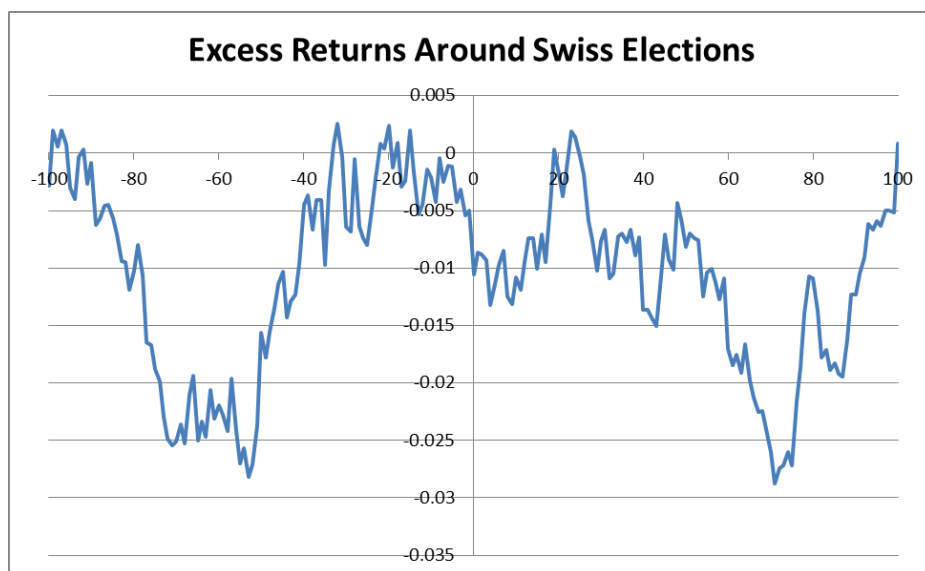


Figure 9: Swiss Residuals around Elections

The graph in Figure 9 above demonstrates the residuals for each day around Swiss elections. According to the graph, there is a sharp recovery from a large drop of the stock index beginning about 60 days before the election and lasting up until right before the election occurs. Once the election occurs, the stock index tends to recover until about 20 days after the

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election when it sees another large drop occur. The drop only goes down to at most 3%, so it is not too dramatic when looking at it in terms of the index returns.

The regression analysis indicated only one significant result and the model is shown in Appendix H. The variable Glob*ShiftL was significant with a coefficient of $-.3787$ and a p-value of $.0055$. This result shows that there is a significantly lower beta when there is a political switch to a party with a left-sided ideology from a right-sided party.

Overall Model

The regression analysis for the overall model is shown in Appendix I. The significant variables shown in the model were Glob*PreEv and Glob*PreEu. The coefficient for Glob*PreEv was $.7393$ and the p-value was $.0599$. The cutoff for p-values in this study to determine significance was $.05$. However, in this case, Glob*PreEv was still considered significant since it was close to the cutoff value. This is due to the fact that there is no significant meaning behind using exactly $.05$ as a cutoff for significance. Since this variable is significant in the overall model, it shows that systematic risk across these European markets seems to be higher after an election occurs. Investors attempting to lower their risk, may want to avoid countries that are about to have an election. This could prevent exposure to the risks associated with elections.

The more significant variable in this overall regression model was Glob*PreEu. The p-value for this variable was $<.0001$ and the coefficient was $.4147$. According to this model, there is more systematic risk associated with the European markets with the implementation of the Euro. Investors may want to take this into consideration when building a portfolio because it may be less risky to invest in a country such as Switzerland or Great Britain that has not adopted the Euro as a currency. This result also confirms what was seen in the literature. Kearney and Poti also had found that systematic risk had increased in European countries since the introduction of the Euro.

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DISCUSSION

Individual Countries

Countries	Independent Variables									
	Pre Ev	Pre Eu	E E 5	Shift Left	Shift Right	Glob *Pre Ev	Glob *EE5	Glob* PreEu	Glob*Shift Left	Glob*Shift Right
Germany										X
France						X			X	
Netherlands								X		
Belgium						X		X		
Austria	X									
Greece		X					X	X		
Switzerland									X	
Great Britain			X							

Figure 10: Regression Results by Country

The results for each country are summarized in Figure 10. As can be seen by this table, there are no particular patterns across all countries. The regression results showed different significant variables for each individual country and there were no variables that were significant for every country. The variables that showed significance most often were Glob*PreEu, Glob*PreEv, and Glob*Shift Left.

Glob*PreEu occurred the most often across countries. This variable was significant in 3 of the 8 regression models and was also significant in the overall model as well. Also, considering two of the countries examined did not adopt the Euro, Glob*PreEu was significant in 3 of the 6 countries that had adopted the Euro as their currency. This means that the risk associated with investing in countries that have adopted the Euro has increased and this could be important for investors to consider.

There are many reasons why the country indices may be exposed to more risk with the Euro as a common currency. With so many countries tied to the same currency, this results in many different political systems that could have an effect on the Euro's value. The main factor to consider with this is that there are many different political systems tied together economically

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by a single currency. Poor decisions by politicians in any one of these countries could have a devastating effect on the value of the currency. Also, since the Euro was introduced fairly recently and was the first common currency across multiple countries, it could be associated with more risk since there was more uncertainty as to how this would affect the economies of the countries involved. As the impacts of a single currency for all of these countries becomes more understood, it is possible that the risk will start to trend downwards as time moves on. These countries may start to see their betas decrease more as investors begin to comprehend how the Euro affects economies and as it becomes a more stable currency.

The next most frequently significant variable across these 8 countries was Glob*PreEv. This variable is significant in 2 of the 8 countries involved in this study and is also significant in the overall model. France and Belgium were the two countries that this variable was significant in. The interpretation of this variable being significant is that the risk of stock indices is higher after an election occurs. This may be counterintuitive at first since it would appear that the uncertainty around the results of the election may be reduced once the event occurs. However, when looking at it from a different perspective, there is still a lot of uncertainty after the election occurs as well. Investors may begin speculating about whether the winning party can implement policies to help the economy grow. The risk may also be higher because of the immediate reaction to the election by investors. This may have an impact as investors sometimes have drastic reactions to the outcomes of elections depending on how they view the winning party. Investors may want to consider that there could be more risk associated with holding investments after an election occurs.

The last variable that is significant in more than one country is Glob*ShiftL. This shows that there is a significant impact on betas for stock indices in countries that have a shift from a right-sided party to a left-sided party in an election. This variable was significant in France and Switzerland. However, each of these had opposite signs for their coefficients. In France, the coefficient was negative, while in Switzerland, the coefficient was positive. This means France saw a lower beta and less risk associated with its stock index when there was a switch left while Switzerland saw more risk associated with a switch left. While this may be

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important for investors to consider if investing in one of these countries, no general results can be concluded as to how a shift left will impact stock indices in other countries.

Overall Model

There are many different factors when considering the two different variables that were concluded to be significant in the regression model for all 8 countries combined. Again, these two significant values were Glob*PreEv and Glob*PreEu. While this concludes that systematic risk is higher after an election and after the Euro was implemented, it may be more important for investors to consider countries individually rather than looking at this overall model.

Investors are often concerned with the amount of risk in their portfolio. In this case, the systematic risk increases after an election happens and since the Euro was implemented. Since this is based on a limited amount of past data, it is possible that this could change in the future. This is especially true for the risk associated with the Euro. As stated earlier, the Euro was a fairly recent innovation in the European economy and a lot of the effects were not completely understood by investors. Now that investors are beginning to gain more data about the Euro, it may be possible that the risk associated with the currency will decrease.

Looking at countries individually rather than the whole systematic risk may help investors choose better which countries to avoid during times of elections and which ones may provide opportunities to make gains. This is especially true in this study and in these eight countries. The variables that were significant in the regressions were fairly sporadic. There were only 3 variables that were statistically significant in at least 2 countries.

The differences in the political systems could be considered another reason why it may be better for investors to consider each individual country separately. European countries have very different political systems than the United States and they are very different from each other. This could have a significant impact on how elections influence the stock indices in these countries. For example, some countries have a representative parliament where the winner of the election gains a majority of chairs in the parliament. This is very different than a system such as France's where there is a single President being voted into office. This is a

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factor that could certainly influence investor reactions. Investors might consider a President to have more power since he represents only one party. If investors consider this party favorable towards the economy, the stock index may show a large increase when the outcome is announced. If investors view the policies of the winning party as a hinder towards the economy, then they may show it more significantly since they believe this President has more power. A government that has representatives from multiple parties may not see as significant of effects on their stock markets when an election occurs.

One last factor that could influence the results of this study is that the elections may occur after a set amount of time, or they may be called randomly when there is a need for a change in power. It is clear when looking at the data that some countries have elections that are called at random times and some have them after a set time has passed. This could impact the results of this study, especially if elections are called for within 100 days of when the election actually occurs.

There are many different factors to take into consideration when looking at elections and how they impact the stock markets. While the results of this study have confirmed another study's findings in the fact that the Euro has seemed to increase systematic risk, it is clear that there are many different reasons as to why this could be. This research has also shown that the individual country is more important to look at than a broader market risk. Reactions to elections do appear to occur and it does appear that different variables around election times can have significant impacts on a country's stock index. However, these reactions seem to vary from country to country and there were no real trends across all countries. This is most likely due to the various political systems in place in these countries.

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APPENDICES

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Appendix A – Germany Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.80428							
R Square	0.646867							
Adjusted R Square	0.642975							
Standard Error	0.010954							
Observations	1010							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>gnificance F</i>			
Regression	11	0.21937	0.019943	166.1936	1E-216			
Residual	998	0.119757	0.00012					
Total	1009	0.339127						
	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	0.000245	0.000825	0.29674	0.766727	-0.00137	0.001865	-0.00137	0.001865
Glob	1.470087	0.136467	10.77249	1.12E-25	1.202292	1.737881	1.202292	1.737881
PreEv	-2E-05	0.0007	-0.02907	0.976813	-0.00139	0.001354	-0.00139	0.001354
E-E+5	9.51E-05	0.002543	0.037423	0.970155	-0.00489	0.005084	-0.00489	0.005084
PreEu	0.000648	0.000858	0.754792	0.450552	-0.00104	0.002331	-0.00104	0.002331
Shift Left	0.000496	0.000983	0.504391	0.614098	-0.00143	0.002426	-0.00143	0.002426
Shift Right	-0.0014	0.000945	-1.47701	0.139988	-0.00325	0.000459	-0.00325	0.000459
Glob*PreEv	-0.11693	0.070171	-1.66637	0.095955	-0.25463	0.020769	-0.25463	0.020769
Glob*E-E+5	0.429945	0.233347	1.842514	0.065696	-0.02796	0.887851	-0.02796	0.887851
Glob*PreEu	0.126962	0.127518	0.995637	0.319668	-0.12327	0.377196	-0.12327	0.377196
Glob*Shift Left	-0.13229	0.127589	-1.03681	0.300078	-0.38266	0.118089	-0.38266	0.118089
Glob*Shift Right	-0.36011	0.167554	-2.1492	0.031859	-0.68891	-0.03131	-0.68891	-0.03131

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Appendix B – France Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.791367							
R Square	0.626262							
Adjusted R Square	0.622047							
Standard Error	0.00929							
Observations	808							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	9	0.1154	0.012822	148.57597	6.2E-164			
Residual	798	0.068868	8.63E-05					
Total	807	0.184268						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.00077	0.000735	-1.05101	0.293574068	-0.00222	0.00067	-0.00222	0.00067
Glob	1.158602	0.074672	15.51578	1.20099E-47	1.012024	1.305179	1.012024	1.305179
PreEv	-0.00062	0.000661	-0.93261	0.351305507	-0.00191	0.000681	-0.00191	0.000681
E-E+5	0.000209	0.002456	0.08526	0.932076243	-0.00461	0.00503	-0.00461	0.00503
PreEu	0.001056	0.000805	1.311504	0.19006481	-0.00052	0.002637	-0.00052	0.002637
Shift Left	-0.00038	0.000802	-0.47308	0.63628818	-0.00195	0.001195	-0.00195	0.001195
Glob*PreEv	0.210694	0.081827	2.574879	0.010206596	0.050073	0.371315	0.050073	0.371315
Glob*E-E+5	-0.39236	0.253729	-1.54638	0.122410339	-0.89041	0.105695	-0.89041	0.105695
Glob*Shift Left	0.320391	0.096274	3.327903	0.000915106	0.131411	0.509372	0.131411	0.509372
Glob*Shift Right	-0.16748	0.139538	-1.20023	0.230405907	-0.44138	0.106427	-0.44138	0.106427

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Appendix C – Austria Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.15673							
R Square	0.024564							
Adjusted R Square	0.009835							
Standard Error	0.013625							
Observations	606							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	9	0.002786245	0.00031	1.66767	0.093441			
Residual	596	0.110640181	0.000186					
Total	605	0.113426426						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.00118	0.00176288	-0.67104	0.502456	-0.00465	0.002279252	-0.00465	0.002279
GLOB	0.134717	0.244348186	0.551334	0.581612	-0.34517	0.614605581	-0.34517	0.614606
Pre-Ev	-0.00232	0.001128825	-2.05491	0.040323	-0.00454	-0.00010268	-0.00454	-0.0001
E-E+5	-0.00125	0.004905124	-0.25532	0.798565	-0.01089	0.008381062	-0.01089	0.008381
PreEu	0.002137	0.001360817	1.570145	0.116912	-0.00054	0.004809258	-0.00054	0.004809
Shift Left	0.001787	0.001357628	1.315898	0.188714	-0.00088	0.004452817	-0.00088	0.004453
Glob*Pre-EV	-0.05377	0.134474185	-0.39984	0.689418	-0.31787	0.210332865	-0.31787	0.210333
Glob*E-E+5	-0.84939	0.541354416	-1.56901	0.117177	-1.91258	0.213805588	-1.91258	0.213806
Glob*PreEu	0.067338	0.18973306	0.354911	0.722782	-0.30529	0.439965027	-0.30529	0.439965
ShiftLeft*Glo	-0.01093	0.192600769	-0.05673	0.954776	-0.38919	0.367331681	-0.38919	0.367332

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Appendix D – Belgium Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.721751588							
R Square	0.520925354							
Adjusted R Square	0.518140036							
Standard Error	0.007816178							
Observations	1212							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>gnificance F</i>			
Regression	7	0.079981148	0.011426	187.0254703	2.1E-187			
Residual	1204	0.073555529	6.11E-05					
Total	1211	0.153536677						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>lower 95.0%</i>	<i>pper 95.0%</i>
Intercept	-0.000133639	0.000448799	-0.29777	0.765929138	-0.00101	0.000747	-0.00101	0.000747
GLOB	0.675913681	0.069112598	9.779891	8.67142E-22	0.540319	0.811508	0.540319	0.811508
Pre-Ev	0.000461495	0.000454187	1.016089	0.309791101	-0.00043	0.001353	-0.00043	0.001353
E-E+5	-0.000388552	0.001677999	-0.23156	0.816921679	-0.00368	0.002904	-0.00368	0.002904
PreEu	-0.000547449	0.000476984	-1.14773	0.251308467	-0.00148	0.000388	-0.00148	0.000388
Glob*Preev	-0.266540469	0.054897968	-4.8552	1.36068E-06	-0.37425	-0.15883	-0.37425	-0.15883
Glob*E-E+5	0.074299462	0.258538006	0.287383	0.773868427	-0.43294	0.581535	-0.43294	0.581535
Glob*Preeu	0.472289895	0.070029061	6.744199	2.38304E-11	0.334897	0.609682	0.334897	0.609682

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Appendix E – Netherlands Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.7909							
R Square	0.625523							
Adjusted R Squa	0.622585							
Standard Error	0.010727							
Observations	1414							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	11	0.269502	0.0245	212.8989	1.4E-289			
Residual	1402	0.161341	0.000115					
Total	1413	0.430843						
	<i>Coefficients</i>	<i>Standard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.000291	0.000809	0.359966	0.718926	-0.0013	0.001878	-0.0013	0.001878
Glob	1.130243	0.072051	15.68667	3.23E-51	0.988903	1.271583	0.988903	1.271583
PreEv	-0.00062	0.000578	-1.06897	0.285266	-0.00175	0.000516	-0.00175	0.000516
E-E+5	-0.00153	0.002215	-0.69255	0.488704	-0.00588	0.002811	-0.00588	0.002811
PreEu	0.000555	0.000847	0.654663	0.512792	-0.00111	0.002216	-0.00111	0.002216
Shift Left	-4.6E-05	0.001068	-0.04281	0.96586	-0.00214	0.00205	-0.00214	0.00205
Shift Right	0.000303	0.000849	0.357482	0.720785	-0.00136	0.001968	-0.00136	0.001968
Glob*PreEv	-0.0625	0.058606	-1.06647	0.286393	-0.17747	0.052463	-0.17747	0.052463
Glob*E-E+5	0.129504	0.197098	0.657051	0.511256	-0.25714	0.516143	-0.25714	0.516143
Glob*PreEu	0.315347	0.082641	3.815851	0.000142	0.153233	0.477461	0.153233	0.477461
Glob*Shift Left	-0.01328	0.169665	-0.07829	0.937607	-0.34611	0.319542	-0.34611	0.319542
Glob*Shift Right	0.018443	0.065264	0.282587	0.777535	-0.10958	0.146468	-0.10958	0.146468

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Appendix F – Greece Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.309804							
R Square	0.095979							
Adjusted R Square	0.089779							
Standard Error	0.017638							
Observations	1616							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	11	0.052981	0.004816	15.48129	4.52E-29			
Residual	1604	0.499029	0.000311					
Total	1615	0.55201						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.002028	0.00081	2.503525	0.012395	0.000439	0.003617	0.000439	0.003617
Glob	0.114055	0.111482	1.023079	0.306425	-0.10461	0.332722	-0.10461	0.332722
PreEv	-4.2E-05	0.000888	-0.04776	0.961915	-0.00178	0.001699	-0.00178	0.001699
E-E+5	-0.00073	0.003222	-0.22794	0.819721	-0.00706	0.005586	-0.00706	0.005586
PreEu	-0.00237	0.001113	-2.12643	0.03362	-0.00455	-0.00018	-0.00455	-0.00018
Shift Left	-0.00042	0.001113	-0.37381	0.708592	-0.0026	0.001768	-0.0026	0.001768
Shift Right	0.000821	0.001363	0.602546	0.546896	-0.00185	0.003495	-0.00185	0.003495
Glob*PreE	0.120553	0.117128	1.029243	0.303521	-0.10919	0.350294	-0.10919	0.350294
Glob*E-E+	0.672753	0.297774	2.259279	0.024	0.088687	1.25682	0.088687	1.25682
Glob*PreE	0.800154	0.138789	5.76524	9.76E-09	0.527927	1.072382	0.527927	1.072382
Glob*Shif	0.015154	0.151945	0.099735	0.920567	-0.28288	0.313185	-0.28288	0.313185
Glob*Shif	-0.22713	0.176456	-1.2872	0.198209	-0.57324	0.118974	-0.57324	0.118974

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Appendix G – Great Britain Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.756139							
R Square	0.571746							
Adjusted R Square	0.567026							
Standard Error	0.00656							
Observations	1010							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>gnificance F</i>			
Regression	11	0.057341	0.005213	121.1268	3.7E-175			
Residual	998	0.04295	4.3E-05					
Total	1009	0.100291						
	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	-0.00013	0.000508	-0.2501	0.802561	-0.00112	0.000869	-0.00112	0.000869
GLOB	0.786509	0.073536	10.69555	2.37E-25	0.642206	0.930812	0.642206	0.930812
PreEv	-0.00012	0.000417	-0.29461	0.768354	-0.00094	0.000696	-0.00094	0.000696
E-E+5	0.002062	0.001542	1.337481	0.18137	-0.00096	0.005088	-0.00096	0.005088
PreEu	0.00031	0.000568	0.546306	0.584977	-0.0008	0.001424	-0.0008	0.001424
ShiftLeft	0.000621	0.000657	0.944748	0.345016	-0.00067	0.001911	-0.00067	0.001911
ShiftRight	-3.1E-05	0.000566	-0.05535	0.955868	-0.00114	0.001079	-0.00114	0.001079
GLOB*PreEv	0.074011	0.051653	1.432847	0.152215	-0.02735	0.175372	-0.02735	0.175372
Glob*E-E+5	0.238045	0.107823	2.207742	0.027489	0.02646	0.44963	0.02646	0.44963
Glob*PreEu	0.035665	0.078297	0.455512	0.64884	-0.11798	0.189312	-0.11798	0.189312
Glob*ShiftLeft	-0.03019	0.095465	-0.3162	0.751919	-0.21752	0.157149	-0.21752	0.157149
Glob*ShiftRight	0.087785	0.061201	1.434373	0.151779	-0.03231	0.207882	-0.03231	0.207882

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Appendix H – Switzerland Regression Results

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.745216							
R Square	0.555347							
Adjusted R Square	0.551271							
Standard Error	0.007372							
Observations	1212							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>gnificance F</i>			
Regression	11	0.081457	0.007405	136.2485	2.9E-202			
Residual	1200	0.065221	5.44E-05					
Total	1211	0.146678						
	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	0.000432	0.000561	0.770068	0.441411	-0.00067	0.001532	-0.00067	0.001532
Glob	1.083691	0.0817	13.26431	1.43E-37	0.9234	1.243981	0.9234	1.243981
PreEv	0.000283	0.000429	0.660778	0.508882	-0.00056	0.001124	-0.00056	0.001124
E-E+5	-0.00084	0.001542	-0.54425	0.586372	-0.00386	0.002186	-0.00386	0.002186
PreEu	-0.00069	0.000599	-1.14883	0.250854	-0.00186	0.000487	-0.00186	0.000487
Shift Left	0.000196	0.000741	0.264562	0.791392	-0.00126	0.00165	-0.00126	0.00165
Shift Right	-0.00038	0.000602	-0.62529	0.531898	-0.00156	0.000805	-0.00156	0.000805
Glob*PreEv	-0.03166	0.048465	-0.65331	0.513684	-0.12675	0.063423	-0.12675	0.063423
Glob*E-E+5	-0.00833	0.137378	-0.0606	0.951686	-0.27785	0.261202	-0.27785	0.261202
Glob*PreEu	-0.14946	0.084219	-1.77464	0.07621	-0.31469	0.015774	-0.31469	0.015774
Glob*Shift Left	-0.37875	0.136308	-2.77862	0.005544	-0.64618	-0.11132	-0.64618	-0.11132
Glob*Shift Right	-0.05502	0.064682	-0.8506	0.395159	-0.18192	0.071883	-0.18192	0.071883

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Appendix I – Overall Regression Results

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.6182				
R Square	0.3821				
Adjusted R Square	0.3814				
Standard Error	0.0119				
Observations	8,888				
<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	11	0.7725	0.0702	499.0741	0.0000
Residual	8876	1.2490	0.0001		
Total	8887	2.0215			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	0.0006	0.0003	2.1251	0.0336	
Glob	0.7393	0.0366	20.2123	0.0000	
PreEv	-0.0001	0.0003	-0.4701	0.6383	
E-E+5	0.0007	0.0009	0.7341	0.4629	
PreEu	-0.0004	0.0003	-1.5273	0.1267	
Shift Left	-0.0001	0.0003	-0.2710	0.7864	
Shift Right	-0.0002	0.0004	-0.6874	0.4919	
Glob*PreEv	-0.0540	0.0287	-1.8821	0.0599	
Glob*E-E+5	0.1490	0.0847	1.7586	0.0787	
Glob*PreEu	0.4147	0.0360	11.5076	0.0000	
Glob*Shift Left	-0.0136	0.0423	-0.3210	0.7482	
Glob*Shift Right	0.0223	0.0402	0.5555	0.5786	

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