A study of correlation between stock market fluctuations and political orientation of incumbent parties

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ABSTRACT

This bachelor thesis investigates whether there are any correlation between the political orientation of the incumbent party of a country and the performance of the stock market, i.e. will the stock market behave bullish or bearish depending on whether the political party is located on the right-wing or the left-wing? The study is performed with multiple linear regressions of 13 OECD countries to find out whether there are correlation or not. The dependent variable of the regression is share prices and dummy variables have been used to indicate whether the government is right-wing, center or left-wing. Oil price, GDP, interest rates and US share price are used as independent variables. The result show that there are no significant correlation between the political orientation of the incumbent party and the stock market performance in most of the countries. However, it appears as though the political orientation matters in the US, and in its turn, the US market has got an effect on the movement of other stock markets.

Keywords: Finance, Economics, Politics, Stock Market, Election, Political Orientation

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1. INTRODUCTION

This introduction explains the objective of this bachelor thesis. The background, targeted group and disposition is being described to give the reader an understanding of how the paper is structured. Encountered problems and exclusions that had to be made will also be discussed in this chapter.

1.1 - BACKGROUND

2016 was a year filled with discussions and attention surrounding the american presidential campaign, which was due to the fact that the two candidates have been seen as quite controversial. The attention surrounding the political climate has been great for other countries during later years as well. For example, in Sweden, England and Denmark, populist right-wing parties have been receiving enhanced support, which by many is seen as rather frightening. Politicians and their decision making has got a considerable impact on many parts of society, which makes politics a subject that is constantly attracting attention.

Politics, which means "statecraft" is an important ingredient in a functional community. Without taxation, adjustment of interest rates, legislations, etc., we would have a hard time to get the society and its economy to develop. Does the exchange of politicians and their different policies have any significant impact on the financial markets? This is what is going to be investigated in this thesis.

The objective of the thesis is to find out whether there are any significant correlation between the political orientation of the incumbent party in a country and the fluctuations of the stock market. The study will be carried out for 13 OECD countries from all around the world, including the United States among others. The US is not only the largest economy in the world, the New York Stock Exchange (NYSE), which is the largest stock exchange in the world is located in the US[1]. This makes it particularly interesting to investigate the situation in this country. Will there be any specific difference in how the stock market performs now when the republican Donald Trump

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[1] http://www.relbanks.com/stock-exchanges/largest-stock-exchanges

will take over the roll as president of the United States, compared to if the democratic candidate Hillary Clinton would have been the victor? Or is it simply not possible for the politicians to push the stock markets in a certain direction?

The study that this essay is based on consists of data from the OECD and the World Bank databases. The data that we have used consists of information concerning the stock market of the 13 countries that we are using in the study, as well as GDP, interest rates and oil prices.

1.2 - PURPOSE & QUESTION OF THESIS

Our main purpose of the thesis is to find out whether there is any significant correlation between what type of policies, left-wing or right-wing, is being exercised in a specific country and the performance of the stock market in that specific country.

Question of the thesis:
- Is there any correlation between the political orientation of the incumbent party and the performance of stock market?

1.3 - TARGET GROUP

This thesis is targeting people with interest in both financial economics and politics. It is prefered to have an education in, or certain knowledge of, economics.
Since the thesis is based on a study performed with econometric theories it would also be prefered to have knowledge about econometrics to some extent. Some relevant statistical and econometric theories and definitions will be presented and explained in the 3rd chapter, which is the chapter regarding theory.

1.4 - DISPOSITION

- Chapter 1 (Introduction): *provides a comprehensive introduction of the thesis. We discuss the background, objective, problems and exclusions.*

- Chapter 2 (Previous Research): *gives information about what has been done within the area previously, such as old research that we are aiming to improve and develop by performing more in-depth studies.*
- Chapter 3 (Theory): *provides the reader with necessary knowledge for better understanding the results, analyses and discussions throughout the essay.*
- Chapter 4 (Method): *describes the procedure of how the study was performed.*
- Chapter 5 (Result): *provides the reader with presentations of the results that we got.*
- Chapter 6 (Analysis): *we discuss our results and connects them with different theories that we believe are relevant.*
- Chapter 7 (Discussion): *consists of our own thoughts and reflections based on both our results and results of previous research.*
- Chapter 8 (Conclusion & Future Research): *we present our conclusions and discuss possible future research within the area.*
- Chapter 9 (List of Reference): *the references that we have used throughout the thesis is listed.*

1.5 - DISCUSSION OF PROBLEMS

Studying a correlation between politics and the stock market performance can be quite difficult. The political orientation of parties are not always easy to determine, and different parties can be more or less biased to either side of the political scale. While some parties might only be a little biased towards the right-wing or left-wing, others may be considerably more biased.
Since some of the incumbent parties might be positioned in the center of the political scale we will use a dummy not only for right-wing and left-wing, but also for those in the "middle". An example of middle-parties is coalitions, where parties from both sides of the political scale co-operates.

Another problem that we encountered was that some of the incumbent governments did not have majority. Denmark, for example, has had minority coalition governments for long periods of time. A minority government lacks majority, and therefore has to seek support among other

parties[2] which adherents might not have the same political objectives. We placed these governments in the same category as the coalitions and the parties that appeared to be in the center of the political scale.

Many stock markets are huge with hundreds of billions of dollars in circulation. This might make it hard for politicians to have an significant impact. Also, the main objective of the politicians are seldom to make the stock market perform as good as possible. They are more focused on issues regarding the school system, immigration, the labor market, etc., since these are the areas that the voters cares about, and therefore it is what gets the politicians elected.

Further issues with the study are that domestic policies may not have any effect on foreign investors, which will prevent the stock market performance to change when there are changes of the political party in the domestic country. For example, the US stock market consists of many foreign investors.

1.6 - EXCLUSIONS

There have been some exclusions made regarding which countries have been used in the study. To get a result as reliable as possible, it is important to use countries where it is clearly portrayed what kind of political orientation the incumbent parties have had. This made us exclude some countries. Austria was, among others, excluded due to this reason.

When choosing which countries to include in the study, we began by observing the countries that was used in a previous article (Bialkowski et al, 2004), where the authors had performed a similar study. They had been observing 24 OECD countries over the time period 1980-2005. We excluded 11 countries to end up with the 13 that we were to use. The reason for the exclusions was mostly due to the one stated above, but also because there was some lack of data among a couple of countries.

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[2] http://www.ne.se/uppslagsverk/encyklopedi/l%C3%A5ng/minoritetsregering

We decided to set the time period of the study to begin just over a decade after the world war II and reach to December 2015. The reason for this is that it could be difficult to find reliable data during the war, and also because we did not want the reconstruction years to give us deceptive results. It was not possible to set the same time duration for all countries because the data did not stretch as far as we would have hoped for. It was particularly hard to find historical data for interest rates.

Aside from the exclusions listed above, we had to exclude France, which we initially planned to use in our study. This was due to the fact that there was something wrong with the share price data that we exported from the OECD database. It seemed like there were two months of data missing, which would give misleading results if we were to use that data.

2. PREVIOUS RESEARCH

This chapter will cover some previous research made within the area politics and stock market correlation. The reader will be given an overview of statements made in older articles concerning the subject.

2.1 - POLITICAL ORIENTATION OF GOVERNMENT AND STOCK MARKET RETURNS - *Bialkowski et al (2006)*

This article by Jedrzej Bialkowski et al (2006) includes a study much similar to the one made in our thesis. They are studying the performance of the stock market in relation to the political orientation of the incumbent government during 1980-2005. The authors based this article on the paper "the Presidential Puzzle", which will be presented below, but they extended the study so that not only the US was observed. They gathered data from the stock markets of 24 different OECD countries and 173 governments to get a broader picture than the authors of the Presidential Puzzle. The result that they came up with was that it would not matter whether the government was left-wing or right-wing, the performance of the stock market would not differ depending on the political orientation.

Although the article is covering a lot of countries over quite a long duration of time, it is hard to fully trust the result because the authors does not describe how they proceeded to perform the study. It would have been useful with some kind of method were they showed that they have used econometric theories to come up with the results.

When we were to choose which countries we were going to include in our study, we emanated from this article and ended up with the final 13 countries that we have observed. We also performed a study similar to this one, but we did use, among other econometric tools, independent variables to explain a bit of the correlation so that we would get a more trustworthy result. We also performed some statistical tests to verify that we could trust our regression analysis.

2.2 - PRESIDENTIAL PUZZLE: POLITICAL CYCLES AND THE STOCK MARKET - *Pedro Santa-Clara & Rossen Valkanov (2003)*

This article was published in 2003 by Pedro Santa-Clara and Rossen Valkanov. The authors are studying the relationship between the stock market performance and political orientation of the incumbent president of the United States. Santa-Clara and Valkanov are observing data between 1927 and 1998 to find out that the stock market returns appears to be significantly higher when the democrats sits as the incumbent presidential party. They are arguing whether the difference in stock returns could be explained by higher risk premium during democratic incumbencies, based on their assumption that investors might be more worried about left-wing policies when it comes to the performance of firms, and therefore requires higher risk premiums. This Theory is quickly rejected though, since the market actually appears to be more volatile during republican presidencies according to their observations.

Another possible theory of explanation that they reject is the theory of political business cycles (Nordhaus, 1975). They study the correlation between political business cycles, stock market returns and presidential parties to find out that there are no correlation with business cycles.

They are also discussing whether the policies of the two different presidential parties could have an impact on the stock market, but it is believed to be improbable since the policies must impact the stock market directly and not indirectly through their effect on the economic state.

Santa-Clara & Valkanov ends their paper with a fundamental question regarding the possibility of that it might be the other way around, that the stock market performance has influence on which political party will be chosen. We will discuss this question later on in the thesis as well. They do not come to a firm conclusion about the reason to why democrats seem to give higher returns. Instead they are addressing the matter as a "presidential puzzle".

2.3 - POLITICS AND THE STOCK MARKET - EVIDENCE FROM GERMANY - *Döpke & Pierdzioch (2004)*

The authors of this article studied how the stock market movements and German politics interacted. Unlike the results from the article by Santa-Clara and Valkanov (2003), Doepke & Pierdzioch found no sign of stock market returns being higher during liberal rather than during conservative governments.

The authors found that in Germany, instead of the case of political orientation affecting the performance of the stock market, it appeared to be the other way around, just as Santa-Clara and Valkanov suggested in the end of their article. The stock market affected the approval of a sitting political party. The approval rate went up when the markets were doing well. They also found that stock market returns were not higher when there were liberal governments, compared to when there were conservative governments. According to the authors, while the stock market performance will have an effect on the result of an election in Germany, the government will not be able to affect the stock market performance. This proves that there are no political business cycles in Germany (Döpke & Pierdzioch, 2004).

3. THEORY

In this chapter we will go through some theories that will be relevant for our thesis. It is theories that we believe that the reader should have a certain knowledge about since we will mention it later in the essay, when we discuss the method and our results.

3.1 - POLITICAL BUSINESS CYCLES

This is a theory that states that there is a relation between the stock market and the political incumbent party in the sense that the incumbent party will or will not be re-elected depending on how well the economy, and therefore also the stock market, is performing. This is the opposite way around of what we are studying in this thesis, since we want to see whether the political parties can have an impact on the stock market movements. Although this is the case, we want to write a bit about political business cycles since it will be relevant in the discussion part of the essay if the result of our study proves to be that there are no correlation between political party in the stock market performance.

William D. Nordhaus (1975) writes about how the inflation and unemployment rates affects investments. When unemployment rate is high, the investments will decrease due to the fact that households will not have as much money to spend. Nordhaus also states that individuals has got rational taste towards stable prices, in other words, they are averse towards high inflation. The individuals will choose the party that satisfies their needs. Since the knowledge of the voters often are negligible, the voters form expectations depending on the usual behavior of political parties. This is based on how the parties have been behaving in the past. If the economy is doing worse under the incumbent party's governing than during the past incumbencies, it will make the people vote for the opposition party. Due to this, it is not uncommon that parties, as election dates are approaching, tries to lift the economy by decreasing the unemployment rate and letting the inflation rise. The article also states that democrats tend to care more about unemployment, while republicans care more about the inflation.

Nordhaus describes the typical business cycle in the following way; immediately after an election, the incumbent party will raise the unemployment rate to fight inflation. When an election is approaching, the incumbent party will lower the unemployment rate. This is how Nordhaus visually presents the cyclic movement in his article:
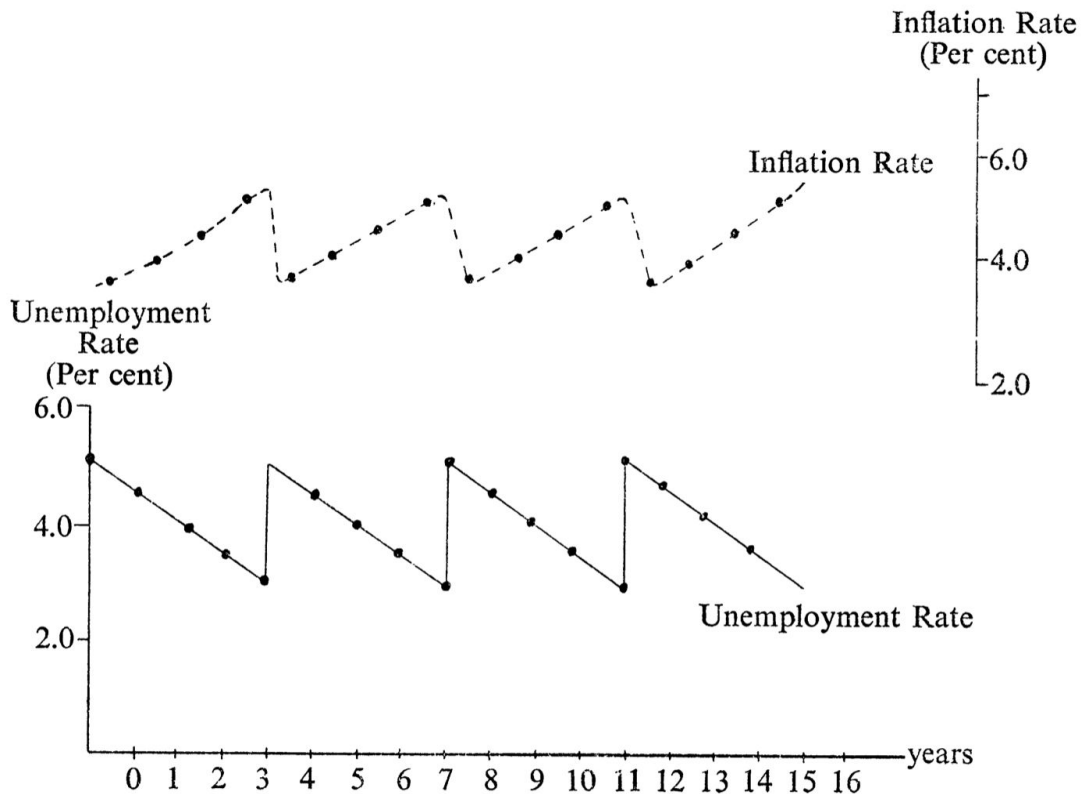
The graphs above is taken from William D. Nordhaus article "Political Business Cycles" (page. 185)

Douglas Hibbs (1977) is also discussing the matter of how inflation and the unemployment rate are changed depending on if the government is right-wing or left-wing. As well as Nordhaus, he means that low inflation and relatively high unemployment rate will be preferred by the upper income class, while the lower income class will want to have lower unemployment rate and therefore higher inflation. The right-wing parties will therefore be prefered by the upper income class, and the left-wing parties will be supported by the lower income class. Hibbs finds evidence

for these statements when performing a study where he observes the inflation and unemployment rates in relation to different political parties.

3.2 - EFFICIENT MARKET HYPOTHESIS (EMH)

This is a theory which discusses different types of power on the market. The EMH means that it would be impossible to "beat the market", since the stock prices will fully reflect all available information on the market at any given time. According to Byström (2014, p. 195) there are three different types of efficiencies; strong, semi-strong and weak. Strong efficiency says that the price of a certain stock will reflect all of the available information concerning the stock immediately, it does not matter whether the information is public or private. This means that not even insider trade can be lucrative. Semi-strong efficiency says that all public information is being reflected in the price of the stock. In this case, a trader with insider information can make a profit. The weak efficiency states that the price of a stock fluctuates randomly and does not reflect any historic data. The market efficiency is said to vary between different stock markets, depending on, for example, size.

3.3 - STATISTICAL DEFINITIONS

3.3.1 Time Series Data & Time Series Analysis

Time series data is data that is collected and analyzed during a specific time period (Körner & Wahlgren, 2013, p. 179). The spaces between the observations in the time series data is often equal, for example, collecting data for every month over the duration of a year. Time series data is for example used when studying the closing value of a stock market index. When observing data at the same time for a period, this will culminate into a data sample consisting of time series. The observations in a time series may cover the change under a given period, or the ratio at a certain time. In this thesis, the percentual change under a given period is used, and the measures are means for monthly data.

3.3.2 P-value

In the early years of hypothesis testing, the level of significance was determined prior to the execution of the study. Today, the significance level is tested by observing the p-value. That is the probability of obtaining a result equal to, or larger than what was observed in the study when the null hypothesis is true (Körner & Wahlgren, 2006, p. 207). If the p-value is small, the null hypothesis will be rejected and the smaller the P-value is, the more probable it is that the alternative hypothesis is true.

Most often, the limit for when to reject or accept a null hypothesis goes at 5 percent. But this can vary depending on what kind of study is being performed, for example if the researcher is going to study the risk of dysfunctional car brakes, then the researcher might want to use a low limit for the p-value to really make sure that the brakes are working. If the p-value would be over the 5 percent level, there are no significance, in this case it is not possible to reject the null-hypothesis.

3.3.3 Hypothesis Testing

The hypothesis testing is performed with the aim to figure out whether there are enough evidence in a data sample to apply a certain assumption on an entire population (Körner & Wahlgren, 2006, p. 182). There are two assumptions of a hypothesis test, one assumption will be true, while the other will be rejected by the researcher. The two sides of the test are called "null-hypothesis" and "alternative hypothesis". If the null-hypothesis is being rejected, this often means that what you are studying is true, i.e. that there "is effect". The result of the hypothesis tests is being decided with the help of the p-value described above. The null-hypothesis in our thesis is that there are no correlation between political orientation and stock market performance.

3.3.4 Multiple Linear Regression Analysis

The objective when performing regression analysis is to investigate whether there is any relation between a dependent variable and an explanatory variable. The simplest regression analysis is the "simple linear regression analysis", where only two variables are used. The multiple linear regression is an extension of the simple linear regression analysis. Instead of only investigating

the relationship between one dependent and one independent variable, the multiple linear regression contains two or more explanatory variables (Körner & Wahlgren, 2006, p. 386).

This is how the multiple regression analysis looks when typed out:

$$[Y = \beta0 + \beta1 * x1 + \beta2 * x2 + \beta3 * dv1 + \beta4 * dv2 + ... + \beta n * xn + \beta(n+1) * dvn + \varepsilon]$$

Y is the dependent variable that the researcher want to study. $\beta0$ is the intercept that is received when performing the regression analysis. The other β values are the coefficients for the independent variables, *x1+...+xn*, and the dummy variables, *dv1+...+dvn* (*n* denotes the last number of the sequence, and in our version of the general model above, *n* can take a different number for different variables). ε represents the error terms, which is the sum of all residuals, i.e. the difference between the estimated price and the observed price at a certain time.

4. METHOD

In this chapter we will guide the reader through the process of how we performed the study which this thesis is based on. We will perform hypothesis testing by making a regression analysis. Our null hypothesis is that there is no correlation between the political orientation of the incumbent party and how the stock market performs. The null hypothesis will be denied if our p-value will be lower than our significance level, which will be 5 percent (0,05). The result of our multiple linear regression analysis will be presented in chapter 6.1.

4.1 - ORIGIN OF METHOD

Quantitative and qualitative methods are two of the approaches of which one can choose between prior to performing scientific studies (Jacobsen, 2002, p. 57). The choice of method depends on what type of study is to be performed. To fulfil the purpose of this essay, we needed to use large amounts of financial and economic data. Therefore, we have used the quantitative method, which is based on collecting large amounts of quantifiable data. The data is compiled and analyzed to give a result that will either deny or accept a certain hypothesis (NE.se, 2016). The qualitative method is based on collection of data by the scientists themselves at the same time as the analysis is performed. Qualitative methods are used, for example, when studying behavior of people in certain situations.

4.2 - CHOICE OF COUNTRIES

The study consists of regressions of the following countries: *Australia, Belgium, Canada, Denmark, Germany, Italy, Japan, Netherlands, Norway, Spain, Sweden, United Kingdom, United States.*

The reason to why these are the countries chosen is mainly because they were the ones that had the most number of different governments (Bialkowski et al, 2006) during 1980-2005, and there were also a lot of easy accessible data for these countries. We wanted to use a wider time span so that we could base our results on more data, therefore we extended the time span from 1980 till the beginning of the 1960s for some countries, until 2015 for every country.

4.3 - COLLECTION OF DATA

The purpose of this thesis is, as previously stated, to find out whether there are any significant correlation between what type of politics, left-wing or right-wing, are being implemented in a specific country and the performance of that country's stock market. To achieve a more reliable result as well as to minimize the error term, the variables listed in chapter 4.4 was used in the calculations, in addition to share prices of the stock market and the political orientation of the ruling party. Data for all of the variables was gathered at a monthly rate. There had to be some adjustments done regarding GDP, since that variable is most commonly measured quarterly or yearly. Details on how we proceeded to transform yearly GDP into monthly GDP will be also be explained in chapter 4.4.2 *Independent Variables*. GDP, interest rates and share prices were downloaded from the OECD database[3], while the oil prices were downloaded from the World Bank database[4]. The data was imported into Microsoft Excel. To find out about the political orientation of the ruling parties throughout the years, Wikipedia was used[5]. An explanation on how we controlled the credibility of the data that we received through Wikipedia will follow in chapter 4.6 *Information Evaluation*.

The amount of data available for the different countries varied a lot. While the US and Canada had a lot of data to be found throughout our chosen time period (1964-2015), other countries lacked data for certain periods. Due to this, the regressions had to be done during various periods of time for various countries. Though all of the regressions extends to December 2015.

4.4 - VARIABLES

4.4.1 Dependent variable

In econometrics, a dependent variable is one which movements are determined by the movements of other variables, namely independent and/or dummy variables (Körner & Wahlgren, 2006, p. 400).

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[3] https://data.oecd.org/
[4] http://www.worldbank.org/en/research/commodity-markets
[5] https://en.wikipedia.org/

Share prices:

Share price will be the dependent variable used in this study. The share prices that we are using comes from the OECD database and they show the stock exchange fluctuations of the different countries that we have studied[6]. Instead of using the index data value, we converted this dataset into percentual change of one month compared to the previous month [P2/P1-1]. By doing this, we get the monthly return on the stock market. The reason to why we use monthly returns instead of index data value is that it produces more trustworthy regressions results, due to the fact that the variables otherwise could correlate because of trend. This method was applied on the oil price and GDP aswell, while the interest variables were kept unchanged. Interest rates are not being measured in money, and thereby they are more resistant to changes in trend.

4.4.2 Independent variables

The independent variable is used in a regression analysis as a variable that, together with other independent variables, might have an effect on the dependent variable (Körner & Wahlgren, 2006, p. 103). In this case, all independent variables are therefore believed to affect share price.

Short-term interest rate:

The first independent variable used is the short-term interest rate, which applies for three months [7]. This variable would explain the share prices in the sense that when the short-term interest rate falls, it will be more favorable for people and companies to lend money and invest. Also, it will be less profitable to deposit money in the banks which should lead to a more liquid stock market. The opposite effect should occur with an increased short-term interest rate.

Long-term interest rate:

The long-term interest rate applies for ten years[8]. When this variable is low, the country could be seen as safe and stable, which could lead to an increase of the investments in country in question.

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[6] https://data.oecd.org/price/share-prices.htm
[7] https://data.oecd.org/interest/short-term-interest-rates.htm
[8] https://data.oecd.org/interest/long-term-interest-rates.htm

The opposite should be true with a high rate, which thereby should inhibit the willingness to invest.

Oil price:

The reason to why we are using oil price as an independent variable is that it can be used to explain many economic movements. Oil is something that is used in many industries and the price of oil should therefore have a considerable impact on the performance of businesses. If a company's account show signs of reduced profits, it would naturally inhibit the willingness to investment in that company.

GDP:

The gross-domestic product can be seen as an indicator of how a country is doing economically. The GDP reflects all of the economic activities during a certain time period, most often yearly or quarterly. While the variables listed above was quite straightforward to download and import to Excel, the GDP was a bit of an issue. Since it is most commonly measured yearly, it was quite problematic to get the monthly GDP that we needed for the study. Luckily, we could find monthly GDP data for US from December 1992 til December 2015[9]. With the help of this data, we calculated the mean percentual increase/decrease for every month during this period of time. We merged the monthly means during the period, which resulted in an estimation of how influential every month is for the yearly GDP change. We later applied this for every country so that we got the variable "Monthly GDP". Although this might not give the most accurate measure of monthly GDP, it is more realistic than to simply divide the yearly change equally between every month.

US Share prices:

Since the largest stock market in the world is located in the US, it would not be surprising if the fluctuation of this market had a considerable impact on the rest of the world's stock markets.

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[9] https://ycharts.com/indicators/us_monthly_gdp

Therefore, we used US share prices as an independent variable for all other countries, except for the United States.

4.4.3 Dummy variable

A dummy variable is a variable that does not consist of numbers in its natural state, whereby its different parts has to be rearranged in order to fit an econometric model. The dummy variable makes it possible to fit qualitative variables into an analysis (Dougherty, 2011). This is done by encoding its parts to 0 or 1. For a specific year, the dummy variable receive the value 1 if the encoded part for 1 complies with the natural variable part this year, otherwise it receive the value 0, and another part is assigned the value 1.

Political situation:

The variable that we convert into a dummy is the political situation of the countries. The variable is divided into three parts: "Left", "Center", and "Right". Each dummy represents governments on the political scale. In the middle category we placed coalitions, minority governments and parties with "center policies".

4.5 - COURSE OF ACTION

We began by downloading and importing the data into excel. It turned out that the data available at the OECD-database was merged into one cell for every month when downloaded. Because of this we had to separate the desired data from the other information, such as the date. We also replaced the dots interpreted in the desired values with commas to make them fit for our purpose.

With all necessary data established in Excel we could now prepare the regressions. The ruling governments was coded as explained in part 4.4.3 and the regressions was ready to be made. When running the regression, the "Y Range" is our dependant variable (share prices) and the "X Range" is our independent variables. We ran it with a confidence level of 95%, and, at first, with all variables as nominal values. We noticed that the adjusted R-square values became too high to

be realistic, and therefore we converted all variables except for interest rates into values of percentual change. The reason for the unrealistically high R-values was due to trend in the data.

The estimated multiple linear regression looked like this:

[Share prices (%-change) = β0 + β1 * Short-term interest rate + β2 * Long-term interest rate + β3 * GDP (%-change) + β4 * Oil price (%-change) + β5 * Dummy variable (for right) + β6 * Dummy variable (for eventual left)]

Now instead, the R-adjusted value became very low, which we thought was a bit odd. This was when we decided to add another independent variable. The variable that we added to the analysis was the stock market returns for the US. The reason to why we chose this stock market was, as stated previously, because the US has got the largest market in the world, and it would be natural for that market to affect the rest of the world. We now got the following estimation of our multiple linear regression (for every country except the US):

[Share prices (%-change) = β0 + β1 * Short-term interest rate + β2 * Long-term interest rate + β3 * GDP (%-change) + β4 * Oil price (%-change) + β5 * US Share prices (%-change) + β6 * Dummy variable (for right) + β7 * Dummy variable (for eventual left)]

To find out just how much impact the US stock market has had on the other markets, we made a correlation matrix where the correlation between all stock markets used in the study are being observed. The result of the correlation matrix is being carried out in chapter 5.3

Lastly, to give the reader a more clear picture of how the stock market has performed in the United States under the different presidencies, we put together a table that shows the market fluctuations as well as the incumbent presidential party at given periods. This table is presented in part 5.4.

4.6 - STATISTICAL TESTS

To make sure that we could trust our data, we performed two different tests, one of which was the robustness test. We performed this test for the US, Sweden, Germany and Spain. We divided our time period for these countries into two equally large parts to check if the results were different for the different periods. We divided;

- Sweden into period 1: January 1987 - June 2001 and period 2: July 2001 - December 2015.
- Germany into period 1: February 1971 - July 1993 and period 2: August 1993 - December 2015.
- USA into period 1: July 1964 - Mars 1990 and period 2: April 1990 - December 2015.
- Spain into period 1: February 1985 - July 2000 and period 2: August 2000 - December 2015.

The other test that we performed was a unit root test, which is used to check and verify if there are any trends in the data, since trends would lead to unwanted correlation. We performed the unit root test by moving our data into Eviews. The dependent variable data went through the "Unit Root Test", and later analyzed to accept or reject the existence of trend. The result is interpreted as such that when the t-statistic value of the variable has a higher absolute value than the absolute t-statistic value at the 5% level, assertion of trend can be rejected. Otherwise there is trend in the data. The t-statistic value at the 5% level is determined by the number of data-observations.

4.7 - INFORMATION EVALUATION

It is not simple to find out whether the ruling parties of 13 countries between approximately 1960-2015 has been biased towards the right-wing or left-wing. We were able to find information about the political orientation on governmental ruled pages on some countries. For other countries we had to go through Wikipedia. Although this page can be trusted in most cases, we wanted to test the credibility since this was an important part of our study. It would have taken up too much time to check and verify every single reference listed at the Wikipedia pages,

so we performed a sample test where we randomly picked out a couple of references for a number of countries to verify them, or we checked other web pages to control that the information was correct. The following countries were controlled:

Canada:

- http://www.lop.parl.gc.ca/ParlInfo/Compilations/FederalGovernment/PrimeMinisters/Gallery.aspx
- http://www.pco-bcp.gc.ca/mgm/dtail.asp?lang=eng&mstyid=2&mbtpid=1#FTNote1

Norway:

- https://www.regjeringen.no/en/the-government/previous-governments/governments/modern-times/governments-since-1945/id438715/

Sweden:

- https://sweden.se/society/history-of-sweden/

United Kingdom:

- https://www.gov.uk/government/history/past-prime-ministers

For every country that we checked, the ruling parties matched what was listed on Wikipedia, so we proceeded with our study.

The databases of where the data for our variables were collected are all trustworthy and globally recognized; OECD, The World Bank and Ycharts.com.

5. RESULT

5.1 - MULTIPLE LINEAR REGRESSION RESULTS

The regression results are compiled in table 1 and 2. We are especially interested in the p-values of our dummy-variables, since they tell us if there are significant correlation between the movements of the stock markets and the operating politics. If we find this p-value significant for any country, we also like to know how big the effect is between the different governments. This is found by studying the coefficients. We can see that there actually is a significant correlation between the US government and their share prices, while the rest of the countries seems to be unaffected by the political party. In table 1, we can also see the results for the US share prices, as well as for the adjusted R-square. The US share price is amply significant for every country, except the US of course. The adjusted R-square is quite high for these countries as well.

Table 1 shows the achieved result when including the US Share Price as an independent variable. The result is very different compared to table 2.

	Variables:	Government (Right)*		Government (Left)*		US Share Price		R-adjusted
	Statistics:	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	
	Australia	0,9046	0,0004	X	X	$1*10^{-49}$	0,7194	0,3516
	Belgium	0,8625	0,0008	0,7439	0,0023	$7*10^{-55}$	0,8654	0,4878
C	Canada	0,9041	-0,0003	X	X	$6*10^{-104}$	0,7630	0,5238
O	Denmark	0,2032	0,0053	X	X	$9*10^{-40}$	0,7645	0,4407
U	Germany	0,3722	0,0029	X	X	$1*10^{-54}$	0,7285	0,3797
N	Italy	0,2668	-0,0113	0,5224	-0,0061	$9*10^{-36}$	1,0113	0,4389
T	Japan	0,2921	0,0077	X	X	$4*10^{-21}$	0,8158	0,5045
R	Netherlands	0,5330	-0,0032	0,9668	0,0002	$3*10^{-83}$	1,0139	0,6678
I	Norway	0,9810	-0,0002	0,8461	-0,0013	$1*10^{-35}$	1,0090	0,4258
E	Spain	0,5791	0,0028	X	X	$2*10^{-54}$	1,0812	0,4781
S	Sweden	0,5862	0,0025	X	X	$3*10^{-52}$	1,0055	0,5113
	United Kingdom	0,7393	-0,0009	X	X	$2*10^{-77}$	0,7782	0,5370
	United States	0,0153	-0,0077	X	X	NONE	NONE	0,0296

Table 1 - Main Regression Result with US Share Prices

Table 2 shows the results that we received prior to including US Share Prices in the regressions of all other countries but the US.

	Variables:	Government (Right)*		Government (Left)*		US Share Price		R-adjusted
	Statistics:	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	
	Australia	0,5509	0,0024	X	X	NONE	NONE	0,0352
	Belgium	0,7855	-0,0018	0,4646	0,0073	NONE	NONE	-0,0056
C	Canada	0,6727	0,0014	X	X	NONE	NONE	0,0237
O	Denmark	0,4675	0,0039	X	X	NONE	NONE	0,0686
U	Germany	0,1171	0,0064	X	X	NONE	NONE	0,0234
N	Italy	0,0904	-0,0226	0,5659	-0,0072	NONE	NONE	0,4389
T	Japan	0,6773	0,004	X	X	NONE	NONE	0,1315
R	Netherlands	0,7409	-0,0029	0,2523	-0,0075	NONE	NONE	0,0383
I	Norway	0,4747	-0,0087	0,809	-0,002	NONE	NONE	0,1083
E	Spain	0,4946	0,0048	X	X	NONE	NONE	-0,0099
S	Sweden	0,8885	0,0009	X	X	NONE	NONE	0,0379
	United Kingdom	0,6544	0,0019	X	X	NONE	NONE	-0,0028
	United States	0,0153	-0,0077	X	X	NONE	NONE	0,0296

Table 2 - Main Regression Results without US Share Prices

Since some countries have had governments containing coalitions between right-wing and left-wing parties, we had to use three dummy variables for government. The result in the columns "Government (Right)" and "Government (Left)" should be interpreted in the following way; if, for example, a country has got a "Government (Right)"-coefficient value of 0,05 and the "Government (Left)"-coefficient has the sign "X" it means that when a right-wing party is incumbent, the stock market performs 0,05 units better per month, compared with the left-wing party. If a country on the other hand has got values for both "Government (Right)" and "Government (Left)", it means that the country has had a period(s) of coalitions or center parties. So if, for example, the "Government (Right)"-coefficient value is 0,05 and the "Government (Left)"-coefficient value is -0,03, it implies on that when a right-wing party is incumbent, the stock market performs 0,05 units better per month, compared to the center party. While, during left-wing incumbency, the stock market performs on average 0,03 units worse per month,

compared to the center party.

5.2 - STATISTICAL TEST RESULTS

5.2.1 Robustness Test

When we performed the robustness test for the US, we found that the p-value showed a nonsignificant result for the dummy variable (political party) during period 1, July 1964 - Mars 1990. For Germany, we see that the US stock market affects the German market more during period 2, July 1993 - December 2015, than during period 1, February 1971 - July 1993. The value of the coefficient and the R-adjusted have increased at the same time as the p-value has decreased, which implies on stronger correlation toward the US stock market.

For Sweden, the case was similar to Germany, during the second and more present period, June 2001 - December 2015, the US stock market had a bigger impact on the swedish stock market. For Spain, the same result as Sweden and Germany was noticed, but the coefficient of the US stock market variable decreased instead of increased.

	United States			
	Period 1		Period 2	
Variables	P-value	Coefficient	P-value	Coefficient
Short Interest Rate	3*10^(-6)	-0,6040	0,6514	-0,0735
Long Interest Rate	0,0001	0,6152	0,2202	0,2637
GDP	0,6473	-0,3354	0,1833	-1,4880
Oil Price	0,1678	0,0201	0,0685	0,0432
Government	0,1287	-0,0074	0,0175	-0,0100
R-adjusted	0,0583		0,0198	

Table 3 - Robustness Test

	Germany			
	Period 1		Period 2	
Variables	P-value	Coefficient	P-value	Coefficient
US Share Price	5*10^(-11)	0,4200	5*10^(-54)	1,0591
Government	0,6434	0,0023	0,5758	0,0023
R-adjusted	0,1767		0,6140	

Table 4 - Robustness Test

	Spain			
	Period 1		Period 2	
Variables	P-value	Coefficient	P-value	Coefficient
US Share Price	1*10^(-19)	1,1661	1*10^(-36)	1,0059
Government	0,6470	-0,0073	0,9780	-0,0001
R-adjusted	0,3760		0,6164	

Table 5 - Robustness Test

	Sweden			
	Period 1		Period 2	
Variables	P-value	Coefficient	P-value	Coefficient
US Share Price	9*10^(-18)	1,0630	1*10^(-45)	1,0233
Government	0,3156	0,0108	0,3486	-0,0038
R-adjusted	0,3717		0,7281	

Table 6 - Robustness Test

5.2.2 Unit Root Test

The unit root test was performed in Eviews. We examined whether there were any trends in our data for the following countries: the United States, Germany, Spain and Sweden. The test was done on the dependent variable. We present the results in the table below, followed by an interpretation of the result. If the T-stat shows a value smaller than the test critical values, it is possible to deny the null hypothesis, which says that there are trends to find in the data.

	T-stat	Test Critical Values
United States	-18,8599	-3,4171
Germany	-17,0445	-3,4182
Spain	-12,9534	-3,4220
Sweden	-13,1547	-3,4228

Table 7 - Unit Root Test

In the table above we have performed the unit root test on the dependent variable share prices. We found that all of the countries have got share price series which are stationary, i.e. there is no trends to be found in the data. This excludes the risk of misleading results due to correlation caused by trend.

5.3 CORRELATION MATRIX

The correlation matrix covers the share prices from May 2002 until December 2015, and it shows the correlation between the stock market performance among all the countries in our analysis. Studying the matrix below, it is quite clear that the US market have had high correlation with all of the other markets. The highlighted cells shows the cases were a country has had higher correlation towards a market other than the US market. The US market is, in almost every case, among the top three correlated markets. The stock markets that are higher correlated toward each other than the US is in most cases neighbour countries, for example, Denmark has got higher correlation with the stock market of Germany, Netherlands, Norway and Sweden. These are all countries located geographically close to Denmark, which would be a natural explanation since these countries probably trade a lot.

	AUS	BEL	CAN	DEN	GER	ITA	JPN	NLD	NOR	SPA	SWE	UK	USA
AUS	1												
BEL	0,790	1											
CAN	0,784	0,802	1										
DEN	0,740	0,842	0,781	1									
GER	0,775	0,864	0,762	0,817	1								
ITA	0,765	0,852	0,757	0,800	0,865	1							
JPN	0,655	0,618	0,653	0,639	0,671	0,606	1						
NLD	0,807	0,923	0,828	0,864	0,920	0,868	0,692	1					
NOR	0,768	0,812	0,891	0,816	0,789	0,746	0,654	0,854	1				
SPA	0,720	0,767	0,675	0,657	0,800	0,875	0,537	0,791	0,670	1			
SWE	0,749	0,841	0,770	0,814	0,890	0,812	0,660	0,887	0,773	0,749	1		
UK	0,809	0,846	0,798	0,768	0,851	0,827	0,655	0,905	0,817	0,759	0,839	1	
USA	0,831	0,845	0,880	0,808	0,866	0,842	0,700	0,890	0,842	0,783	0,833	0,906	1

Table 8 - Correlation Matrix

5.4 US SHARE PRICE & INCUMBENT GOVERNMENT

In table 9 we see that the US stock market performs better overall when the democrats are incumbent in comparison to the republican incumbency. The average movement of the US stock market during a year with the democrats as the incumbent party is an increase of 9,02%, while it is only an increase of 3,13% when the republicans are in power.

Year	Share Prices (%)	Government	
1965	9,01%	Left	
1966	-8,62%	Left	Gov. Per. Ave.
1967	14,85%	Left	6,06%
1968	9,01%	Left	
1969	-12,89%	Right	
1970	3,10%	Right	
1971	11,61%	Right	
1972	12,14%	Right	Gov. Per. Ave.
1973	-21,46%	Right	0,75%
1974	-26,38%	Right	
1975	30,30%	Right	
1976	9,55%	Right	
1977	-11,85%	Left	
1978	12,00%	Left	Gov. Per. Ave.
1979	14,08%	Left	8,30%
1980	18,96%	Left	
1981	-10,72%	Right	
1982	21,90%	Right	
1983	14,86%	Right	
1984	3,58%	Right	
1985	19,82%	Right	
1986	23,64%	Right	Gov. Per. Ave.
1987	-4,95%	Right	10,34%
1988	13,67%	Right	
1989	15,99%	Right	
1990	-4,49%	Right	
1991	26,28%	Right	
1992	4,55%	Right	
1993	9,04%	Left	
1994	-3,14%	Left	
1995	26,47%	Left	
1996	20,83%	Left	Gov. Per. Ave.
1997	23,05%	Left	13,00%
1998	18,14%	Left	
1999	6,88%	Left	
2000	2,77%	Left	
2001	-10,17%	Right	
2002	-18,42%	Right	
2003	27,09%	Right	
2004	7,61%	Right	Gov. Per. Ave.
2005	12,77%	Right	-1,69%
2006	13,57%	Right	
2007	1,27%	Right	
2008	-47,26%	Right	
2009	30,23%	Left	
2010	11,92%	Left	
2011	-3,69%	Left	
2012	13,01%	Left	Gov. Per. Ave.
2013	16,08%	Left	8,73%
2014	4,46%	Left	
2015	-10,90%	Left	
Left Average		Right Average	
9,02%		3,13%	

Table 9 - Yearly %-change in US share prices during different governments.

6. ANALYSIS

In this chapter we will analyze and discuss the results that we achieved from our study.

Main question of the thesis:

- *Is there any correlation between the political orientation of the incumbent party and the performance of stock market?*

When we were finished with the study and had analyzed our results, it was pretty obvious that there appeared to be no significant correlation at all for any of the countries except the United States. In the US it appears as though the stock market performs worse when the republicans are incumbent, than when the democrats are incumbent. The results shows that, with a p-value of 1,53%, the monthly impact on the stock market is a decrease by 0,0077 units of the returns when the president belongs to the right-wing. That gives a yearly impact of minus 0,0924 units (-0,0077*12). The p-value of 1,53% shows that the result is significant at the chosen level of significance at 5%. There are many possible reasons to why the stock market would be performing better under democratic presidencies. We will discuss possible reasons in chapter 7, *Discussion*.

We might not have managed to find any correlation between political orientation and the stock market for any other country than the US, but what we did find out was that the US stock market performance had a significant impact on the stock markets of other countries. The US stock market might be seen, by many investors around the world, as some kind of indicator for how the rest of the stock markets will perform, and therefore the US stock market will have a large impact on the rest of the world. The correlation matrix shows proof of that the US stock market is highly correlated with all other markets that we have studied.

If this assumption, as well as the efficient market hypothesis holds, the US stock market fluctuations would be implemented into other stock markets around the world pretty much immediately.

An interesting observation that we made when looking at our robustness-tests was that some independent variables seemed to have bigger influence on the stock market during the first period than during the second, and some the other way around. In the US, for example, during the first period, short-and long-term interest rates were significant, while the political situation was not. During the second period, it was the opposite way around, which implies that the political situation has become more decisive for the US stock market in recent years. The GDP-variable nor the oil price was significant for any period. The adjusted R-square has decreased over time, which probably is due to the fact that the interest rates was being quite significant at first, but later on became non-significant.

| Variables | United States | | | |
| | Period 1 | | Period 2 | |
	P-value	Coefficient	P-value	Coefficient
Short Interest Rate	3*10^(-6)	-0,6040	0,6514	-0,0735
Long Interest Rate	0,0001	0,6152	0,2202	0,2637
GDP	0,6473	-0,3354	0,1833	-1,4880
Oil Price	0,1678	0,0201	0,0685	0,0432
Government	0,1287	-0,0074	0,0175	0,0100
R-adjusted	0,0583		0,0198	

Table 3 - Robustness Test

Regarding the government variable, we believe that a reason to why there was no significance during period 1, on the opposite to period 2 where there was significance, could be that during those early years it was more difficult to find information about the political parties, and also how this information should be interpreted. The interpretation part might have been difficult due to the lack of research made regarding how political decisions affect the economy, positively or negatively. These are reasons which might have made it harder for individuals to behave as rational as today. Therefore, the result is significant during period 2, April 1990 - December 2015, but not during period 1.

A reason to why the interest rates have become less influential could be because they have not fluctuated as much during the second period compared to the first, which might have led to that people does not find it as important to track them any longer to get a sense of how it can affect the stock market.

For the other tested countries, Germany, Spain and Sweden, the independent variables does not show any unambiguous pattern of increased or decreased levels of significance, except for the variable US share prices. The significance level has drastically improved for all countries regarding the US share price. This implies that the US stock market has become more and more influential on the other markets over time. The adjusted R-square has also increased for all three of them, which supports the statement above.

7. DISCUSSION

In this chapter we will discuss older research and compare it to ours, as well as theories for the results that we have achieved.

The results have varied a lot regarding the previous work done within the area. Among the scientific articles that we have read, some have shown evidence of better performing stock markets during left-wing governance (Santa-Clara & Valkanov, 2003), while others show no significant correlation between politics and stock markets at all (Bialkowski et al, 2006). None of the previous articles that we have read provides results where a right-wing governance has had a better effect on the stock market than the left-wing. Neither have we found any evidence of a better performing stock market during right-wing incumbency.

In our study, we achieved the same result as Santa-Clara and Valkanov for the United States, namely that there is a significant correlation between the political orientation of the incumbent president in the US and the stock market performance. Just as in their Presidential Puzzle article, we found that the US stock market performed better during a left-wing (democratic) governance than during a right-wing (republican). We conclude that in the US, the stock market performs on average 9,24% (0,0077*12) better per year when the democrats are incumbent in comparison to a right-wing party. So what could the reason for this finding be? Santa-Clara and Valkanov argues whether it would have to do with political business cycles, with risk-premiums being higher during left-wing incumbency or with the difference of the policies between left-wing and right-wing parties. They reject all of their theories by studying and analyzing the possible scenarios, which leaves them with a question that they address as a "political puzzle".
It is difficult to come up with a simple theory which explains this phenomenon. Politics affect the society on many different levels, and therefore, it is likely to affect the stock market to some extent as well. Surely, the politicians and their policies themselves might be able to affect the market, if only by tiny amount.

A theory that, according to us, could explain parts of the reason to why democrats seems to be better for the stock market lies in the political parties general perception of economic integration. We believe that in general, democrats have a partially hostile perception toward free trade agreements, while republicans usually have a more friendly attitude regarding free trade. The implementation of tariffs and other trade barriers on import goods is commonly good for most domestic firms and industries in the country. Overall, consumers will lose welfare, while producers and the government will earn, and the welfare effect of the whole country will be inconclusive. Although if the other countries furthermore decide to retaliate, the welfare effect of the US, and the world, will become unambiguously worse (Baldwin & Wyplosz, 2015). If this theory holds, the US stock market should get a boost the following four years, since Donald Trump, although being a republican, appears to have a more hostile posture towards free trade (Granville, K., 2016)[10].

As for all of the other countries that we studied, we did not manage to find any correlation at all between the stock market and political orientation of the incumbent party, which is the same result that Bialkowski et al (2006) received in their article. As we mentioned in chapter 6, we believe that one of the possible reasons for this might have to do with the size and importance of the US stock market. Both Bialkowski's article and "Evidence from Germany" by Döpke & Pierdzioch shows no sign of correlation between government and stock market performance. We believe that it is the US stock market that has the most influence on the other markets, and therefore the government in the domestic countries does not play such an important role. Since the political orientation of the incumbent party proved to have an impact on the stock market in the US, it means that whether the president is democrat or republican will actually have an indirect effect on the rest of the world's stock markets as well.

Even if politics might not have the most considerable impact on the stock market fluctuations, it surely can have other important effects on the markets. Regulations on capital requirements among banks and other financial institutes could have significant consequences on the stock

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[10] http://www.nytimes.com/interactive/2016/business/tpp-explained-what-is-trans-pacific-partnership.html?_r=0

market. The financial crisis during 2007-2008 is a good example of this. The banks had low capital requirements which caused many of them to really fall apart when customers started to withdraw their deposits. This is evidence of that policies really could have huge effects on stock markets in other ways than that of which is being discussed in this thesis.

One interesting idea that has been discussed in previous articles is whether it could be the opposite way around, namely that the stock market performance will determine who wins the election in a country. According to Döpke & Pierdzioch (2004), if the stock market performs well prior to an election, it will increase the chances for the incumbent party to be re-elected. It might actually be more likely that this opposite correlation exists. This theory also goes hand in hand with the discussions of political business cycles. The PBC-theory states that the incumbent political party will try to inflate the economy, to reduce unemployment rates, etc. This could suggest that politicians tries to develop the economy and stock market prior to an election because they know that depending on the condition of the stock market movements, it will increase or decrease their chances of being re-elected.

8. CONCLUSION & FUTURE RESEARCH

In this chapter we will end our essay by presenting our conclusion and also reflect on what could be interesting to study in future research regarding the subject.

The stock market of the United States appears to be affected by political orientation of the incumbent presidential party. This implies, in theory, that the stock market would perform better if Hillary Clinton had been chosen as the new president. This does not hold for any other country though. The conclusion that we make, is that the US stock market performance is affecting the stock markets of the rest of the world to a much wider extent than what the political orientation of the incumbent parties in those other countries are affecting the domestic stock markets.

A future study could be carried out to see if there is any significant correlation between the political situation in the US and other countries stock markets, since we have only studied the correlation between the own country's political situation and their own stock market in this thesis.

Another thing that might be worth studying is whether it is the actual political party in the US or the policies pursued by the party that is affecting the government. If it depends purely on the political party, the reason could be based on theories of behavioral science.

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