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The link the market refuses to accept

Political variables and the excess returns on the Swedish stock market

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Abstract

Excess returns in the Swedish stock market are higher under left-winged than right-winged governments. The differences in excess returns between the governments are neither explained by a higher risk nor a higher interest rate. This is concluded by applying an OLS regression approach to Swedish data from 1901 through 2012, and the findings are both significant and robust. Swedish excess returns are also compared to multiple control variables, leading to the conclusion that internal factors have a great impact on the variations in excess returns. Thus, making the found link between left-winged governments and higher excess returns even more important to both investors and Swedish voters. The market does not incorporate this positive relationship, and is consequently not working in an efficient manner. Instead, both investors and voters still believe the link to be the opposite, i.e. that right-winged governments will create higher returns. This thesis shows that political variables have an impact on excess returns and that the left-winged government has a substantially higher reward-to-volatility. Further, this relationship contradicts the random walk theory, the efficient market hypothesis and CAPM.

Keywords: Excess return, stock market, government, politics, Sweden

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1 Introduction

In the months leading up to every Swedish election media is filled with analyses concerning which side on the political spectrum that will be best for the Swedish economy. In this thesis, we have found a clear link between left-winged governments in charge and higher excess returns on the stock market. This contradicts what is often seen as common knowledge; that the right-winged side's political agenda benefits financial markets and the economy the most. By looking at more than 100 years of Swedish stock data, with and without outliers, we can also state that these differences in excess returns with regard to political variables are not created by higher risk during these periods. The differences imply that there is some mechanism on the Swedish market that is not included in the stock market prices today, which contradicts theories as fundamental as the efficient market hypothesis.

In October 2003 the study "The Presidential Puzzle: Political Cycles and the Stock Market", written by Pedro Santa-Clara & Rossen Valkanov, was first published in the Journal of Finance. Santa-Clara & Valkanov found that the excess return on the US stock market was substantially higher under Democratic presidencies. This finding generated a lot of interest from both the actors on the market and the general public in the US. Santa-Clara & Valkanov did not find a factor that could explain the substantial differences in excess returns and therefore labelled the relationship a puzzle.

Prior to our study, there were indications that similar results could be identified on the Swedish market. Söderberg & Partners, one of the leading providers of insurance and financial products in Sweden, conducted a study of the political impact on the Swedish stock exchange in their strategy report for May 2014. They found that in 1970-2010 the left-winged government in Sweden had an average yearly return of 15,2 % while the right-winged side only had an average yearly return of 8,3 % during their term of office. However, they address that there are several outliers that might bias their results (Söderberg & Partners, 2014).

The findings in the studies conducted by Santa-Clara & Valkanov and the report from Söderberg & Partners are of great interest. Considering that no academic follow-up study has been done on the Swedish market before this, our thesis aims to fill an academic gap.

Our study should be expected to have a different outcome from the one conducted by Santa-Clara & Valkanov, due to the large differences in the economies of the US and Sweden. The fact that Sweden is a small, trade dependent economy should make Sweden less

dependent on its own political settings and more dependent on the economic situation of its trading partners. To take this into account we compare Sweden with three control groups with different economic conditions. In the comparisons we found that contrary to our initial thoughts, Sweden's returns are not clearly correlated to any of the given regions; meaning that internal variables do matter and thus making our findings of greater interest to the Swedish voters.

Following the study by Santa-Clara and Valkanov was a German study published in 2006 titled "Politics and the stock market: Evidence from Germany" by Jörg Döpke & Christian Pierdzioch. They only found weak evidence that the political process had any relationship to the movements on the stock market (Döpke & Pierdzioch, 2006). Their findings were in almost all instances different from the ones in the US, making it even more likely that our study on the Swedish market would differ from the American study. However, our findings were surprising again, suggesting that Sweden is more similar to the US when it comes to the link between politics and excess returns.

A study illustrating why our findings are of public interest is PWC's report on risk premium published in March 2014. In this report 32 risk capitalists, brokers and corporate finance advisors have been interviewed and questioned about both their required rate of return and views on which political side they think will benefit the stock market the most. The later question is of great interest to us. It turns out that 66% of the respondents thought a right-winged majority government would have a positive effect on the stock market[3]. At the same time 66% expected a negative development on the stock market if a left-winged minority government was elected[4] (PWC, 2014). Our results show the opposite is to be true, so why do the actors on the financial market still believe this?

Procedure wise, we compare monthly excess returns over the different governments. The historical governments have been defined according to the Swedish government's official definitions and the monthly excess returns are calculated based on the AFGX index. We use a regression model to confirm our models robustness. We ask if the market expected the differences and try to find alternative explanatory factors. Lastly, we suggest future studies that should be conducted to develop this research further.

[3] The question concerned how the respondents thought the Stockholm OMX would develop during the first 100 days after the coming election given four different political situations; left-winged majority, left-winged minority, right-winged majority and right-winged minority.For all answers see Specification 4.

[4] As would be expected, based on our study, the excess returns on the Swedish stock market have increased since a minority left-winged government was elected in September, a result only 4 % of the interviewed actors in the PWC study expected.

Conducting descriptive statistics as a first analysis of our data we can see a clear difference in excess returns under the two governments, see Table 1. Our data set covers observations of returns for 1335 months, 512 months under the right-winged governments and 823 months under the left-winged governments. During this time frame there has been a total of 41 different governments, 24 right-winged and 17 left-winged.

The average monthly nominal return under the right-winged parties is 0,2 %, corresponding to 2,0 % per year. The same numbers are 0,8 % respective 9,6 % for the left-winged side. These results are clear and distinct; the differences in returns between the two governments are large even at first sight. The same follows when calculating and comparing the returns in real terms – once again the left-winged side have distinguishable better returns. The descriptive statistics also show that the excess returns, nominal returns subtracted by the proxy for risk-free rate, clearly is higher for the left-winged side. At first sight, it is also obvious that these differences are not driven by a difference in risk-free rate. The average risk-free rate under the two governments is nearly equal.

The initial differences were confirmed by our regressions, making it possible for us to state; the Swedish stock market's excess returns are, contrary to popular belief, greater when a left-winged government is in charge.

After this introduction follows a brief description of the theories used in this thesis. This study is not suggested by any particular model, yet we have incorporated some theories in the assessment of our findings. Following the theories, our hypotheses are presented. These hypotheses lead to our next sections, the method and main findings. As stated in this introduction, a clear link between political variables and excess returns is established. Next, follows an analysis of the markets incorporation and knowledge of this link where we study the election months. To question our findings even further we propose a number of alternative explanatory factors in the following section. Lastly, we present our conclusion.

2 Theory

Below a selection of financial theories essential for this thesis is presented. These theories have acted as a guideline in the interpretation of our results and will be disputed by some of our hypotheses.

2.1 Efficient Market Hypothesis (EMH)

The idea that stock prices reflect *all available information* is referred to as the Efficient Market Hypothesis (EMH). There are different views regarding what *all available information* implies and there are therefore three different versions of the EMH. According to Bodie, Kane & Marcus the different versions reads as follows.

In the weak-form hypothesis *all available information* denotes all information that can be derived by examining historical stock prices, trading volumes and/or short interests. In short, the weak-form hypothesis states that stock prices reflect all information that can be derived by analysing market trading data. If the weak-form hypothesis is true, technical analysis is fruitless for beating the market.

In the semistrong-form hypothesis *all available information* is defined as, in addition to historical prices, all publicly available information. This information can be fundamental data on the firm's financial statement, quality of management, product lines and earnings forecast. In short, all publicly available information should be reflected in stock prices, meaning that both fundamental and technical analyses are fruitless.

In the strong-form hypothesis *all available information* relevant to the firm is reflected in the stock prices. In this case, all information also includes insider information meaning that you cannot beat the market even if you have insider information (Bodie, Kane & Marcus, 2014).

This theory implies that the market should expect the differences in excess returns between the two governments. Anyone could do the same initial tests that we conducted and find the differences in means. The historical stock data and the differences associated with the political variables should be known by all players in the market according to all three forms of the EMH. Yet, many actors on the market seem to think that a more liberal agenda is better for performance and therefore also excess returns.

2.2 Random Walk Theory

According to the aforementioned EMH, asset prices reflect all available information. Assuming that EMH holds, stock prices that change in response to previously unpredicted information must also move unpredictably. According to Malkiel, the random walk theory

claims that changes in stock prices are random and unpredictable. This means that you cannot analyse historical prices and movement patterns in order to predict future development of prices. Stock prices follow a random and unpredictable walk (Malkiel, 1973).

In this case, our results imply that the stock market does not move in a random manner. We establish a relationship between political variables and the movements on the market, which implies that this theory does not hold.

2.3 Sharpe Ratio

The Sharpe ratio measures the relationship between portfolio excess return and volatility, also called the reward-to-volatility ratio. The higher the Sharpe ratio, the more return for any given level of risk. By compiling data for portfolio excess return, characterized by expected return subtracted by the risk-free rate, and divide this by the standard deviation we can calculate the Sharpe ratio (Sharpe, 1966).

$$Sharpe\ Ratio = \frac{Portfolio\ Excess\ Return}{Portfolio\ Volatility} = \frac{E[R_P] - r_f}{SD(R_P)}$$

It is easy to assume that the portfolio with the highest return is the best performing one. We have chosen to add the Sharpe ratio as a measure because it gauges the relationship between both risk and return. If one party is associated with higher returns, the explanation could lie in higher risk. The Sharpe ratio helps us reject the idea that the differences in excess returns are driven by differences in risk.

2.4 Capital Asset Pricing Model (CAPM)

In order to understand how the required rate of return on equity (r_E) is determined, we will use the framework of the Capital Asset Pricing Model (CAPM).

$$r_E = r_f + \beta_i * (E[R_{Mkt}] - r_f)$$

where

$$Risk\ premium\ for\ security\ i = \beta_i * (E[R_{Mkt}] - r_f)$$

This equation will be fundamental in our analysis. Since we compare the excess return between the two different political parties we will with this equation be able to divide the data into different variables hence helping us to explain differences. If a political party is linked to

higher excess returns, r_E subtracted by r_f, this should be explained by the risk premium for the security. By rearranging the aforementioned equation for CAPM, we derive the following equation:

$$r_E - r_f = \beta_i * (E[R_{Mkt}] - r_f)$$

Hence, the excess return equals the risk premium for a security. In our thesis we will use the term *excess return* to define this risk premium.

3 Hypotheses

With the previous research and theories in mind, we have set the following hypotheses:

H1a: There are differences in excess returns created by political variables.

Null hypothesis: The political variables do not affect the differences in excess returns.

H1b: Having a left-winged government in charge equals higher reward-to-volatility.

Null hypothesis: The Sharpe ratio is equal for the two political sides.

H2: The correlation between political variables and returns contradict the random walk theory.

H3: Because of macroeconomic differences, the results found in Sweden will differ from the ones found in the US[5].

H4: CAPM holds and the differences in excess returns can be explained by differences in required rate of return based on different levels of risk.

H5: This information is easily available to the market, thus the market should know and incorporate this relationship.

[5] The US is essentially a right-winged economy whereas Sweden is a left-winged economy. According to Hall & Soskice, left-winged economies have less diverse financial markets, which should make them behave differently. Further, companies and their strategies are the leading compounds in the economy, and different varieties of capitalism should facilitate different kinds of companies and strategies. Therefore, the way an economy and stock market behaves is affected by the general political stance of the country (Hall & Soskice, 2001). In this case the US has embraced the political theory of capitalism to a much greater extent than Sweden, leading to the conclusion that the two countries should move in different manners. Moreover, there are great differences in size, trading patterns and production.

4 Data

In this section we will go into greater depth regarding the data used in this thesis. To clarify we will divide our variables into three different categories; financial, political and control variables. This divide is structured in the same way as in the Santa-Clara & Valkanov paper to make it obvious where the difference between the two studies lay.

Firstly, our time frame is set from October 1901 through December 2012. According to Aktiespararna, on the 1st of October 1901 the Swedish stock exchange was reopened with a new system in place. Before this, two dominant traders were controlling the stock exchange in a monopoly like manner. In 1901, the new system was introduced and the stock exchange started working in a manner that is within the realms of comparability to todays Nasdaq OMX Stockholm (Aktiespararna, 2004). This time frame incorporates as many months as possible within reason.

4.1 Financial variables

Santa-Clara & Valkanov investigates the excess return between Republican and Democratic presidencies by taking the value-weighted CRSP index over the tree-month Treasury bill rate. The CRSP is a total market index, containing nearly 100 % of the US investable equity market (CRSP, n.d.). In order to be able to compare our results to this study, we have chose to use the capitalization-weighted OMX Affärsvärldens Generalindex (AFGX). AFGX covers all listed shares in Sweden and is the closest Swedish equivalent to the CRSP. Affärsvärlden has reported the AFGX index since 1937 (Affärsvärlden, n.d.).

However, in a study suggested by the Swedish Central Bank professor Daniel Waldenström has adjusted the AFGX back to 1856. Waldenström has also adjusted the already existing data, creating a series that is comparable over longer periods of time. For detailed adjustments see Specification 1.

This thesis will be based on the data series created by Waldenström. In addition to the adjusted AFGX, we will use the 30-day Swedish Treasury bill, see Specification 1 for adjustments. The short-term bill will be used as a proxy for risk-free rate and Waldenström's study also provides these bond yields (Waldenström, 2006).

In this thesis we focus on excess returns, mirroring the Santa-Clara & Valkanov study. Excess returns are found by subtracting the proxy for monthly risk-free rate from the monthly return of the adjusted AFGX. We have discounted the annual bond yields to make them comparable over monthly periods. This adjustment is not ideal, since there is no sign that the

actual risk-free rate would be equal each month during a given year. Yet, it is a method that gives us a solid comparable basis over the entire time frame of our study.

In short, the adjusted AFGX and the discounted Swedish short-term government bill are the main financial data series for this study. The series are constructed and the closest to the Swedish markets development that one can come with the data available today.

To develop our findings further, we introduce additional variables. A great deal of the movements in the stock market will be affected by how the Swedish economy develops as a whole. To track these movements one of the explanatory variables in our extended regression framework will be the development of the Swedish GDP. There are no official reports of the Swedish GDP for the years 1901 through 1950. However, in a 2005 dissertation Rodney Edvinsson constructed historical data for the Swedish GDP for hundreds of year prior to 1950, see Specification 2. Edvinsson states that the reliability is quite low for many data points prior to 1950 in the study (Edvinsson, 2005). However, his approach is widely used in other studies and generally accepted as a good replacement, since there is no other data available. This is why we run our regressions both with and without this variable.

The GDP data includes annual development of the GDP. The data has been discounted so that all months of a certain year gets an equal part of the development assigned to them. This distribution is not ideal. Nevertheless, it is the least misleading way to split the data. By including the GDP data one can filter away the movements on the stock market associated with economic cycles. If a certain government always gets elected during specific economic conditions, this will be visualised by this data.

The GDP data series provided by Edvinsson ends at the year 2000. Therefore, we have also included the official quarterly GDP measures from Statistics Sweden from 2000 through 2012. In the same manner, this quarterly data is discounted to be used on a monthly basis.

In the section concerning alternative explanatory factors, the inflation will also be added as a variable in our regression. The inflation data has been retrieved from Statistics Sweden and is also discounted to be used on a monthly basis.

In order to obtain as veracious results as possible we use the log monthly nominal excess returns, log interest rates, log GDP growth and log inflation. We use logarithmic returns because they are time consistent, so we can attribute the correct fraction of the development to each period considered. Moreover, our variables are now normally distributed, making it easier for us to conduct a number of tests. Summary statistics for the financial variables used are also included in Table 1.

4.2 Political Variables

The political landscape in Sweden can be illustrated as two major camps - the left-winged and right-winged parties. Generally, the political camps have kept their distance and stayed within the same separate ideological boundaries throughout our time frame.

In brief, the right-winged parties are known for advocating for lower taxes, less social benefits and a more liberal approach to the states relationship with the economy and private companies. The left-winged parties are instead known for campaigning for higher taxes, more substantial social benefits and a tighter relationship between the state and the economy. The right-winged parties have historically portrayed that the opponent's ideas would result in lower profits and spending, and in its turn lower returns. This view is generally accepted by the public and is proven untrue by the results presented in this thesis.

Definition of the two governments can be found in Table 2. During the most recent years, we classify the governments based on this definition. However, if one goes back further, one will find a different form of government consisting of officers instead of politicians. These governments were historically appointed to run the state for short periods of time of uncertainty[6]. Since these shorter governments do not have the same definitive political affiliation as governments today it is harder to classify them. The Swedish Government themselves has classified all these shorter governments as right-winged (Swedish Government, n.d.) and we will therefore do the same. Given the classifications provided by the Swedish Government, we can classify all governments in our time frame.

Based on this two camp approach we define the following political dummy variables:

LW_t = 1 if the government is left-winged at time *t*; $LW_t = 0$ otherwise

RW_t = 1 if the government is right-winged at time *t*; $RW_t = 0$ otherwise

As seen in Table 1, during the given time frame of our study Sweden has had 41 different governments. 24 have been right-winged and 17 have been left-winged. Even though there have been more governments of the right-winged kind, the left-winged side have been in charge for a greater number of months. The right-winged have been in charge for a total of

[6] One example is the Hammarskjöld government appointed in February 1914. According to Hadenius, this government was appointed after previous Prime Minister Karl Staaff had created conflict with the Swedish king Gustav V. The parties were at odds regarding how the political power should be divided. This constitutional conflict resulted in Staaff's government being dissolved, creating a political crisis in Sweden. In this crisis, officials were appointed to run the government and Hjalmar Hammarskjöld, who was politically unattached, became prime minister (Hadenius, 2003).

512 months, approximately 43 years, and the left-winged side have been in charge for 823 months, approximately 69 years. Amounting to a total of 1335 months.

4.3 Control Variables

In order to control for the Swedish stock market's dependency on other closely linked stock markets, we compare the adjusted AFGX to three indices; STOXX Global 1800, STOXX Europe 600 and OSEAX.

The STOXX Global 1800 contains 1800 stocks representing the world's developed markets. These 1800 stocks are divided into three indices; STOXX North America 600 Index, STOXX Asia/Pacific 600 Index and STOXX Europe 600 Index. The global index provides a broad and liquid representation of these regions (STOXX A, n.d.).

STOXX Europe 600 contains 600 stocks from 18 European countries, representing small, mid and large capitalization companies (STOXX B, n.d.). This index represents how the European market moves as a whole.

OSEAX , the Oslo Børs All Share Index, contains all firms listed on the Norwegian stock exchange. The index follows the same logic as the AFGX. This leads up to us comparing the monthly returns from all listed shares on the Nasdaq OMX Stockholm and monthly returns on all listed shares on the Oslo Børs, which will give us a comparable basis. Oslo Børs was founded in 1819 and is the only exchange in Norway that offers regulated markets for securities trading today (Oslo Børs, n.d.). Norway is chosen as the third control group based on the country's similar geographical location, size and trade dependency.

When comparing these indices to AFGX we focus on the movements. The goal was to find if Sweden moved in a similar manner as any other market, making it possible for us to state that a given link to another economy was stronger than any internal factors. If this was the case, one could conclude that the impact of Swedish politics must be quite small.

5 Methodology

Our empirical strategy involves conducting a t-test, developing our main regression and testing for robustness. In this section we also mention some possible selection biases.

5.1 Welch's t-test

We conduct a two-sample t-test to determine whether the means of left-winged and right-winged monthly excess returns are equal. For this test we assume;

Normal distribution: We use the logarithmic monthly nominal excess returns, and therefore can be sure that our data series follow a normal distribution.

Unequal Variances: The standard Student's t-test assumes equal variances. In our samples, we see a clear difference in variances. To tackle this problem, Welch introduced Welch's t-test. This test instead assumes unequal unpaired variances. This test is more robust than the traditional Student's t-test and comes close to Student's t-test power wise (Welch, 1947).

Unequal sample sizes: As aforementioned, the number of months each government has been in charge are not equal. Therefore, we assume unequal sample sizes, another basic assumption for Welch's t-test.

According to Ruxton, apart from delivering more robust results Welch's t-test also results in minimal type 1 errors (Ruxton, 2006). In other words, using this version of the t-test decreases the risk of rejecting a true null hypothesis.

5.2 OLS Regression

We run the following OLS regressions:

(1) $$r_{t+1} = \alpha + \beta\pi_t + u_{t+1}$$

where excess returns are denoted by r and the political variable by π. Under the first null hypothesis, that political variables have no effect on the excess returns, we should find that $\beta = 0$ in this regression. To run this regression we use our two political dummy variables, left-winged (LW) and right-winged (RW). The developed regression reads:

(1.2) $$r_{t+1} = \alpha_1 LW_t + \alpha_2 RW_t + u_{t+1}$$

where the first null hypothesis being true would result in no difference between the coefficients, $\alpha_1 = \alpha_2$, instead of $\beta = 0$. Subsequently, we add a variable tracking the development of the Swedish GDP. Our hypothesis stands and our regression reads:

$$r_{t+1} = \alpha_1 LW_t + \alpha_2 RW_t + \beta_t GDP_{t+1} + u_{t+1} \quad (2)$$

where GDP_{t+1} denotes the development of the Swedish GDP. For these regressions we assume;

***Normal distribution**:* We assume the data series to be normally distributed. We know that this is true, considering that we are using logarithmic returns for all variables. This adjustment does not strengthen our regression results. However, it makes it easier to conduct tests such as the t-test, which also assumes normal distribution.

Collinearity within our dummies: Our two dummy variables have a perfect negative correlation, meaning that one of them will always be omitted from the OLS regression. Apart from this, we assume no multicollinearity. After testing for this we also know this to be true, see VIF-test in Table 3.

***Negligible errors in the independent variable**:* This assumption is of great importance to the OLS regression, since this approach only seeks to minimize the errors in the dependent variables. Our independent variable is the log monthly nominal excess returns. We do know that this data series originates from the AFGX, an index that incorporates all listed shares and therefore is an almost perfect representation of how the actual stock market moved as a whole. Also, this data has been adjusted by professor Waldenström with the goal to create a homogeneous and consistent data series (Waldenström, 2007), see Specification 1. Due to these systematic adjustments we do concluded that the errors in this variable are negligible.

Later, in our discussion about alternative explanatory factor, we construct a new regression. This time we use nominal returns as the independent variable and add inflation as a dependent variable. This regression reads:

(3) $$R_{t+1} = \alpha_1 LW_t + \alpha_2 RW_t + \beta_t GDP_{t+1} + i_{t+1} + u_{t+1}$$

where R_{t+1} denotes log monthly nominal return and i_{t+1} denotes log monthly inflation.

5.3 Robustness checks

To make sure our data is robust we test for multicollinearity and heteroscedasticity. Multicollinearity is tested with a VIF-test, see Table 3, and no troubling multicollinearity was found. In the search for heteroscedasticity we use the Breusch-Pagan method in combination with the plotting of our residuals. This approach was suggested by the Institute for Digital Research and Education at UCLA (IDRE). They state that the Breusch-Pagan test is very sensitive to model assumptions and therefore it is within common practice to combine the results from this test with an analysis of the possible skewedness of the plotted residuals (IDRE, n.d.). The results from these tests are presented in Table 4 and Figure 1 respectively. In short, there are strong indications of heteroskedacity in Table 4, yet we do not see a need to correct based on weak indications of a bias created by this heteroskedacity in Figure 1.

In addition, we conduct a robust version of regression 2, using Huber and Biweight iterations. According to IDRE, Huber weighting follows the rule; the larger the residual, the smaller the weight. This method is used to make sure that a few outliers do not bias our findings. The Biweights follow a similar logic and is used to complement the Huber iterations (IDRE, n.d.). The results from this robust regression are found in Table 5.

To examine our models sensitivity to outliers further we run a regression after dropping 72 observations. We defined these observations as outliers based on their studentized residuals (r). Following the approach suggested by IDRE, we defined all observations with an absolute r exceeding 2 to be outliers (IDRE, n.d.). The outliers are presented in Table 6 and the results from this regression stripped from outliers is shown in Table 7.

5.4 Possible selection biases

In Waldenström's reconstruction of the AFGX certain industries has been added to the historical reports of the index during specified periods to make it more consistent (Waldenström, 2007), see full reconstruction in Specification 1. The reconstructed AFGX is the foundation for our log monthly excess returns, i.e. our independent variable. These chosen industries have been added with the best intentions in mind, to actually make the index a superior representation of how the stock market moved during a specified period. Nevertheless, with these reconstructions comes a possible sample selection bias. Was there an

industry Waldenström wanted to add that was not added due to lack of data? Unfortunately we do not know this. However, we trust that the Swedish Central Bank, who suggested this study, have reviewed it and would not have proposed anything that included an obvious bias.

Our discounting process for GDP and inflation data introduces another possible bias. Because we study such an extensive time frame we can only obtain annual data for a majority of the years considered. We have discounted these series to be comparable on a monthly basis and assigned an equal share of the total development to every month of a year. Of course, in reality the development of the GDP or the inflation is not perfectly equal for all months during a year. This bias might therefore skew our data. However, considering the governments are almost always in place for several consecutive full years, this bias is not considered to be crucial.

In the processes of choosing which control groups to use, we evaluated many different economies. At first sight, we thought the ideal comparison was to be made with Denmark. However, we could not identify any Danish index that would be comparable to AFGX. Therefore, we chose to compare Sweden with Norway instead. Norway is an almost perfect choice for comparison, yet Denmark shares even more characteristics with Sweden and would have been a superior control group. Here we face a sample selection bias. We have chosen Norway based on the fact that there is a Norwegian index we can compare to AFGX, and not because the country is superior as a control group. Nevertheless, we think the comparison with the Norwegian index is essential to this thesis if one studies it with this potential bias in mind.

Further, when studying election shocks, we only include elections held after the 1910. The reason behind this is that we find the elections held before this to be conducted in such a different manner that they are not comparable. Thus, we exclude some important data points and our findings in this section must be seen as marginally weaker.

With these biases in mind, we would like to state that the findings in this thesis cannot be seen as an absolute truth and may possibly be deemed as weak. However, even if the findings are merely an indication they should still be of great interest to both investors and voters.

6 Main Findings

This section focuses on establishing the empirical link between our political variables and the excess returns on the Swedish stock market, as well as with the Swedish GDP.

Figure 2 shows the average nominal monthly return during each Swedish government in our time frame. The governments that are defined as right-winged are represented by the black bars and the left-winged by the grey bars. The plotted line illustrates the average nominal monthly return for the whole sample. From the graph one can tell that historically right-winged governments are associated with lower returns. Out of the 41 governments displayed 17 are left-winged and 24 are right-winged. 65 % of the left-winged governments are associated with returns exceeding the average return of the whole sample. The mean of average returns under left-winged politicians is 0,62 % per month, that is 0,26 percentage points over the sample average of 0,36 %. In comparison, only 42 % of the right-winged governments are associated with returns surpassing the total average. The mean of all right-winged governments is 0,17 % and that is 0,18 percentage points under the sample average.

It also becomes obvious that we have two extreme outliers. Branting (1) was a left-winged government and is simultaneously associated with the second lowest average returns of the whole period, with a return of -3,31 % per month. That is 3,93 percentage points away from the average of the left-winged governments. There is also an extreme outlier on the right-winged side. The Hamrin government is the period in which the average monthly return is the greatest with a 4,63 % return per month. That is 4,46 percentage points away from the right-winged average.

In Figure 2 the difference in returns is clearly visible, motivating additional testing of the suggested link between government and returns.

Thus, we conduct a Welch's t-test to establish if the two different types of governments are associated with the same level of excess returns on a monthly basis. The results are presented in Table 8. Here our first null hypothesis is that the mean of the monthly log nominal excess returns under the left-winged governments equals the mean of equivalent returns under the right-winged governments. We find a difference between the means of approximately 0,65 percentage points, with a mean of 0,25 % under left-winged governments and a mean of -0,40 % under right-winged governments. Moreover, the probability of a negative difference is 99,21 % and the probability of the means actually being equal is only 1,57 %. This initial test further implies that what type of government is in charge actually has

an effect on the excess returns of the Swedish stock market on a monthly basis, since the means under the two different government types are wide apart.

In Table 1 it also becomes clear that the right-winged governments are associated with a higher standard deviation. From a risk-return perspective, this tells us that the market actually would require excess returns to be higher during their months in charge, ergo higher risk premiums. The difference in standard deviation is subtle. However, we think is it noticeable since it is actually, according to CAPM, suggesting that the market would expect the right-winged governments to be the ones related to higher excess returns. Yet, the opposite is true.

Further, the Sharpe ratio for the months under left-winged and right-winged governments respectively illustrates the magnitude of the differences. In Table 9 the average of all Sharpe ratios for monthly excess returns is presented. The Sharpe ratio for the right-winged months is approximately 0,03. The ratio for the left-winged months is approximately 0,17. Making it clear that the left-winged governments are associated with prominent higher return per unit of risk.

From these initial tests, we can conclude that our political variables seem to have an impact on the excess returns on the stock market. In an attempt to establish the true relationship between the excess returns and our political we run regression 1.2 defined in Methodology.

Table 10 presents the results from running this initial regression. It tells us that there is a link between our political dummies and the excess returns. The R-squared is low, suggesting that the fit of the model might be bad. However, this is not surprising considering that regression 1.2 only includes our dummies and a constant. Also, this possible bad fit does not undermine the fact that we found a significant link. We can after this regression state that having a left-winged government in charge has a positive effect on the excess returns on the Swedish stock market on a 5 % significance level.

The relationship is illustrated in Figure 3. This visualisation elucidates the forces driving the low R-squared. The variance is clearly high and the effect deriving from our dummies is quite small even though it is significant.

In an attempt to create a model that can explain more, giving us a higher R-squared, we add another explanatory variable that in this case will represent the movement of the Swedish economy as a whole; the development of the GDP, creating regression 2. By adding this variable we can further examine whether the left-winged governments are associated with

higher excess returns or if the differences in returns actually are created by an uneven development of the GDP.

Table 11 shows the regression results after this factor is added. The probability that our first null hypothesis holds is now 5,12 %. We can therefore, on a 10 % significance level, reject this null hypothesis and state that our political variables have an impact on the excess returns on the Swedish stock market. Now α_1 is approximately 0,005.

These results are robust. When we reshape regression 2 with Huber and Biweight iterations $\alpha_1$is increased to approximately 0,006. This robust regression is presented in Table 5. When running this reshaped regression the t-value for our dummy variable is also increased and our probability of the null hypothesis being true is decreased. In short, the robust regression only strengthens our claim.

Further, we identify the outliers in our sample. Using the studentized r as a guideline we have listed 72 outliers in Table 6. As a control measure, we also run a regression where these outliers are deducted from the data set. The results from this regression are presented in Table 7. Also in this case, our t-value is increased and the probability of our first null hypothesis being true is decreased.

In addition, to verify the robustness we test for both heteroskedasticity and multicollinearity. The results can be found in Table 4 and Table 3 respectively**.** Table 4 implies that there is heteroskedasticity within our sample, in other words that our variances among residuals are non-constant. However, as seen in Figure 1, the plotting of these residuals does not show any clear sign that this heteroskedasticity is creating a bias. As is normal, we combine the results of both the test and our plot and determine that we do not need to correct for heteroskedasticity in this case.

Table 3 shows that our VIF-values are low for this model, thus we conclude that there is no multicollinearity to correct for. Based on these tests, we can state that our findings are both robust and significant. There is an empirical link between our political variables and excess returns. What is more, a left-winged government in charge equals higher excess returns and a higher Sharpe ratio.

Discussions whether the information about this is incorporated in stock prices will follow. If not incorporated in price, this can be seen as a violation of all versions of EMH since the information analysed in this thesis is publicly available. Besides the matter of price, the results shows that the left-winged governments are associated with higher excess returns and lower standard deviation. This result is surprising since it is a violation of the risk-return

relationship in CAPM. The results covering excess return and the risk-return relationship are similar to the one found in the US study.

7 Does the market know?

7.1 Election Shocks

We find that a left-winged government equals higher excess returns. Election results leading to a switch from a right-winged to a left-winged government should therefore create a positive reaction on the stock market. Otherwise, one could assume that the market does not know about the relationship we have found. As suggested by Santa-Clara & Valkanov, we investigate these election shocks to determine whether the results were expected or unexpected (Santa-Clara & Valkanov, 2003).

We focus on the 33 elections[7] included in our time frame, listed in Specification 3. The average excess return for the 33 election months is -1,26 %, signalling that election months equals months when the stock market is usually underperforming and weak. When right-winged governments are elected the average excess returns in the election months is -0,45 %. When left-winged governments are elected the drop is larger, the average excess return of these election months is -1,64 %, as seen in Table 12. In other words, the stock markets reaction is historically both greater and more negative when a left-winged government is elected.

Thus, the market does not react in a manner that can help us conclude that the positive relationship between the left-winged government and the excess return is included in the price. On the contrary, the markets reaction guides us to believe that the actors on said market acts on the popular belief that a right-winged government will be better for the market, even if there is no proof of this.

In this case, we can see a tendency that the efficient market hypothesis does not hold on any level. This available information seems to not be incorporated in the prices on the market in the correct way.

However, our proof here is quite weak, considering that we are using only monthly averages. The shocks could take place in hours or days and be equalized by other events that occurred during the election months. On the other hand, the differences in excess returns are quite substantial and the election months with the lowest excess returns were the ones where left-winged governments were elected. Moreover, this effect has escalated during more recent years leading to an excess return of -10,64 % in the election month of 1998, when the left-

[7] The first election considered was held in 1911, before that elections were not conducted in such a manner that we can include them in this test.

winged were re-elected for office[8], and an excess return of 8,39 % in the election month of 2010, when the right-winged were re-elected for office.

When the current right-winged government was elected in September 2014 the Swedish stock market dropped right away. Following the drop came a steady climb and 6 months after the election the market had climbed a whooping 19 %. Displaying once again that the initial reaction was based on false assumptions. This election is not included in our time frame, nevertheless it is important for the relevance of this study to show that this trend is still in place.

Our findings tell us that the market seems to act as if a right-winged government would equal higher excess returns. These findings are confirmed by a study conducted by PWC in March 2014 focused on the risk premium. The 32 market actors interviewed in the study were also asked about how they thought different outcomes in the September election would affect the movements on the stock market. The results showed that a significant majority of the actors thought that a right-winged government would result in higher returns than a left-winged government. 66 % of the respondents thought that a left-winged minority government would be associated with a negative development on the stock market during the 100 days following the election (PWC, 2014). For the full results from the study see Specification 4. They were wrong. In the initial days following the election the stock market fell. However, by the middle of October the climb started and after 100 days the total development amounted to 2,98 %.

7.2 Higher risk, higher return

The differences in returns could merely be a result of a variation in risk. We therefore examine if risk was indeed higher under left-winged governments. If this were the case, excess returns would have to be higher during these periods to compensate investors for the higher risk. To approach this concern we look at both the volatility and the average Sharpe ratio under the different governments.

The standard deviation in nominal returns is 4,7 % for our whole sample. When the right-winged governments were in charge the standard deviation was 4,8 % and when the left-winged were in charge the variance was 4,6 %. This difference is also visible in the standard deviation of excess returns, were the right-winged government is also associated with a higher volatility. Thus, the right-winged governments are linked to higher risks and therefore should

[8] The left-winged government was re-elected in the following election as well. This time the monthly excess return was -15,25 %. However, during this month Ericsson, one of Swedens biggest companies, had one of its worst crisis to date, making this a questionable month of comparison.

be the ones showing higher excess returns assuming that CAPM holds. We found the opposite to be true.

Our differences in standard deviation are quite small and one could also assume the standard deviations to be equal. Either way, there are no signs indicating that the excess returns under left-winged governments could be explained by higher risk. This finding is in line with what Santa-Clara & Valkanov found for the US market. They concluded that this finding implies that investors do not learn from the past and also that the difference in nominal returns is for the most part unexplained (Santa-Clara & Valkanov, 2003). We conclude the same. This unexplained difference leads us to also label the relationship between the political variables and returns as a puzzle.

8 Alternative Explanatory Factors

The established link between excess returns and our political variables is fascinating. However, there is a risk that our results are driven by some alternative explanatory factors not considered in our regressions and initial analyses. In this section we will elaborate further on possible factors that might affect the excess returns.

There is a risk that our political variable is acting as a proxy for some other factors and our link might therefore be untrue, even if we found it to be robust. It is hard for us to test for all different factors that might affect the excess returns; therefore we suggest that further testing of this link is in place. Below follows the alternative explanatory factors we deemed most likely to have an impact on the excess returns.

8.1 Control Groups

In the Santa-Clara & Valkanov study analysing the data with a control group in mind was not a concern, since the US is such a large economy and therefore assumed to be mainly affected by internal conditions. However, Sweden is quite a small economy and, according to Business Sweden, one of the most trade dependent countries in the world (Business Sweden, n.d.). To strengthen the reliability of our findings we have therefore compared the development on the Swedish stock market with the movements on the global, European and Norwegian stock markets.

If one would find that the Swedish index correlates with one of the other markets, one could state that regional factors, such as which Swedish government is in charge, does not matter much to the Swedish stock market. Instead, the stock market's development is primarily decided by the movements of another economy. Such a correlation would deem our findings less important.

What we found was a lack of correlation, something that suggests that trade links are not as important to the stock market movements in Sweden as we would have thought. The control groups chosen have helped to confirm that Swedish stock returns are heavily affected by internal factors and not entirely decided by macroeconomic variables.

The control groups are chosen based on the links to the Swedish economy. Norway is used as a more traditional control group, representing an untreated sample since the country's conditions are quite similar to Sweden's in regard to size, trading partners and geographical location[9]. However, Norway also comes with a lot of differences, mainly the country's oil and

[9] Norway is also one of Sweden's most prominent trading partners. Suggesting, that there should be a close link between the two economies (Business Sweden, n.d.).

the fact that their national debt is substantially lower than Sweden's (National Debt Clocks, n.d.). To get an untreated sample that is less affected by these extreme factors we also compare Sweden to a European and a global index. Now we instead gain differences in size of the economy and trade patterns.

8.1.1 STOXX Global 1800

The time frame for this comparison is dependent on the data available. Hence, the time frame extends from January 1992 through December 2012, amounting a total of 21 years.

In Table 13 a descriptive statistics table is presented. The results shows that the Swedish monthly stock returns are higher compared to the global index, 0,9 % versus 0,5 %, and that the median is higher as well, 1,1 % versus 0,8 %. Comparing the standard deviation of the monthly returns during the given time frame, the Swedish index has a standard deviation of 6,2 % and the global index of 4,6 %. These results come as no surprise considering that the global index contains a more diversified portfolio of stocks – lowering volatility.

According to these findings, we can also see that the results follow a pattern that would be expected if CAPM holds, the higher volatility is correlated with higher return. Furthermore, the data set covers a time period of 21 years and the two indices never have the same return. In order to understand the magnitude of the differences in returns we have set an interval where the differences are between -1 to 1 percentage points. 16 % of the time the differences lies in this spectrum, meaning that 84 % of the time the differences in returns are quite large. These findings underlines that the Swedish stock market is not merely a reflection of the global market forces, it seems to be affected by other variables as well.

Figure 4 illustrates the differences in monthly returns between AFGX and the STOXX Global 1800. Examining the figure one can see that the two indices seem to follow a similar pattern, yet the differences in returns are quite large. Figure 5 graphs the actual difference in percentage points. This Figure shows that the differences in returns are volatile and large - most of the differences lie in the spectrum -10 to 10 percentage points.

8.1.2 STOXX Europe 600

For this index, our time frame will stretch from January 1987 to December 2012, making it longer than the one used in the comparison with STOXX Global 1800. Because of the extended time frame this test becomes superior to the prior.

In Table 14 the descriptive statistics for the data set during the given time frame is presented. It shows that AFGX has higher mean returns yet the same median as the European index. AFGX also has a higher high and low in returns, and a higher standard deviation. As

with the STOXX Global 1800 index, the CAPM seem to hold – higher volatility is correlated with higher return. It is not surprising that the Swedish index has a higher standard deviation. Imagine investing in a Swedish fund versus a European fund. Since the European fund is more diversified you would demand a lower risk premium and hence expect a lower volatility for this fund.

The time period stretches over 26 years where the AFGX have a higher return than the European index in a total of 166 months, 53% of the time. 26 % of the time, the differences in returns lies in the interval of being between -1 to 1 percentage points. One can here conclude that the differences in returns are not as large and volatile as compared to the global index. Meaning that the movements in AFGX are more similar to the movements on the European stock market than the movements on the global stock market.

In Figure 6 one can see that just as in the STOXX Global 1800 case, the indices here seems to follow a similar pattern. However, in the same manner if you compare for each data point there are clear differences in the movements. In Figure 7 a more detailed view of the differences, explained in percentage points, is presented. We can here see that the differences in this case too are consistent but not as volatile as compared to the global index. There is an exception during the time period 2004-2008 where the returns look very similar and not as volatile.

With these results stated, one can conclude that the macroeconomic factors Sweden share with the European market actually have some impact on the movements on the Swedish stock market. Still, it is clear that the differences in Swedish stock returns are partly driven by internal factors, even though external factors similar to other European countries affect the development as well.

8.1.3 OSEAX

The Norwegian index OSEAX is chosen as the third control group based on geographical and economical similarities to Sweden. Before the analysis of the data could begin, similar problems that we faced with the AFGX appeared - the index changed both name and composition in 2001. Through the Oslo Børs we have access to the linked indices that offers time series that are longer than the current official indices. See Specification 5 for adjustments. The ticker for the linked OSEAX is AXLT, yet for simplicity we will define this data as OSEAX.

Given the data from the linked indices we compare Norwegian monthly returns with AFGX. The possible time frame, and time frame chosen, is January 1983 to December 2012.

In Table 15 the descriptive statistics are presented. These results differ from the two first indices presented. AFGX and OSEAX have the same mean in monthly return and OSEAX has a higher median of monthly return. AFGX has a higher high and low compared to OSEAX.

Aforementioned, in the comparisons with the two other indices the theory of CAPM holds – i.e. there is a clear correlation between risk and return. CAPM holds for this comparison too, as AFGX and OSEAX have both the same average standard deviation and mean. In other words, the average return and risk are equal.

However, the two indices never have the same return, and the differences in return lie in the interval of -1 to 1 percentage points only in 18% of the time. The similarities found in the descriptive statistics could be explained by the fact that both Norway and Sweden are small countries dependent on international trade and therefore their returns should look quite similar over a long period of time.

Figure 8 compares the monthly returns of AFGX and OSEAX. The returns follow the same pattern yet they are never exactly the same.

Just as in the cases with the STOXX Global 1800 index and the STOXX Europe 600 index, at first glance AFGX follow a similar return pattern to the OSEAX. However, in Figure 9 one can see that the differences in this cases seems to be larger than when AFGX is plotted against the STOXX Europe 600. This was a surprise considering that Norway and Europe share many macroeconomic conditions.

Thus, we conclude that Swedish returns are not mainly driven by any of the compared markets.

8.2 Inflation

In Table 1, where the descriptive statistics are presented, we can see that the right-winged governments have a 0,1 percentage points difference between nominal and real monthly returns. The corresponding number for the left-winged governments is 0,4 percentage points. The superior difference for the left-winged governments indicates that inflation is substantially higher during periods where they are in charge.

To analyse this implied difference further, we compute the average of the monthly inflation for the two different governments. The average monthly inflation is higher for the right-winged side, 0,33 % versus 0,28 %, as seen in Table 1. The inflation data is attained from Statistics Sweden and discounted to be comparable on a monthly basis[10]. In short, right-

[10] As mentioned in Methodology, this approach might come with a bias.

winged governments have a lower average difference between real and nominal returns, yet their average monthly inflation is higher. How is that?

This contradiction in our results baffles us and therefore we extend our regression framework to test if this puzzling data influence our results.

Since the excess return is dependent on the proxy for risk-free rate, which in its turn is dependent upon the inflation – we have not used the inflation as a variable in regression 2. Now, we include the log inflation as a variable and create regression 3. In this regression we use log nominal return, instead of excess return, as our independent variable. Otherwise, we would include the inflation two times in our regression.

In Table 15 the results from this extended regression are presented. The results show that log GDP are of greater importance to the nominal returns than the log inflation. The results are significant and robust. In Table 3 the tests for multicollinearity shows that there still is no multicollinearity to correct for after this variable is added.

With inflation taken into account, we can still state that the left-winged government has a positive effect on nominal returns. Yet, our R-squared in regression 3 is slightly lower, implicating that the fit of the model was not improved by adding this variable.

Further, we can state that inflation has a strong relationship with our nominal return.

The Swedish inflation is directed by the Swedish Central Bank. In our case, the clear link between inflation and nominal returns tells us that the decisions made by the Swedish Central Bank are of great importance to the development of the nominal returns. One possibility is that the impact of these decisions are greater under one certain government than the other, suggesting that the differences in nominal returns actually stems from how the Swedish Central Bank reacts to different political policies rather than these policies by themselves. This alternative explanation is of great importance, since it would mean that the link found between political variables and returns could be true, although the political variables are merely proxying for the Swedish Central Bank's reactions.

8.3 Investor optimism

An alternative explanation, contradicting our results, could be optimism correlated with voter behaviour. There is a possibility that voters may change political sides when they have a sense of optimism in the economy, and subsequently in the stock market. I.e. if there is a lot of optimism in the market voters may have a change of heart, leading to a shift in government in the next election.

With our results, this would mean that people tend to vote for a left-winged government when times are good. Which would result in the left-winged side being in charge during periods of higher excess returns. Assuming that the voter's perception of good times actually translates into continuous months of higher excess returns on the stock market. However, this is difficult to analyse on a deeper level than speculation. In the US they have an optimism index, CBA/AOL Finance Optimism Index, measuring the American population's level of optimism about their personal finances (CBA/AOL, n.d.). If such an index was available on the Swedish market one could have included it as a variable in our regression in order to find if left-winged governments are elected during periods associated with a higher level of optimism and right-winged are elected in periods associated with a lower level of optimism.

However, even if this index existed it would have been hard to interpret the results, since one could say that the regression could be run in both directions. The excess returns might as well be the factor driving the optimism which in its turn influences who is elected which affects the excess returns. This becomes a circle argument, which is hard to statistically prove.

Still, we were keen to mention this possibility because we believe that the governments may not be responsible for the differences in excess returns themselves. This is one way in which this hypothesis could be true.

9 Conclusion

In this thesis we establish an empirical link between political variables and excess returns on the Swedish stock market. This finding is new in an academic context and we believe it to be of value to both the academia and the Swedish voters. This result, in combination with prior studies, violates some fundamental financial theories.

We find that the left-winged governments are associated with higher excess returns, while a popular belief is that the opposite should be true. In fact, the market as a whole acts as if this link does not exist and the relationship is not included in the market price.

Moreover, we find that the left-winged governments also are associated with lower standard deviations. This finding goes again the standard risk-return relationship, since the left-winged governments are also related to higher returns.

Our findings are similar to the ones found in the US study by Santa-Clara & Valkanov that acted as a foundation for this thesis. Which is surprising considering the major differences between the economies and stock markets of the US and Sweden.

We return to our hypotheses and can now state;

H1a: There are differences in excess returns created by political variables.
ACCEPT

H1b: Having a left-winged government in charge equals higher reward-to-volatility.
ACCEPT

H2: The correlation between political variables and returns contradict the random walk theory.
ACCEPT

H3: Because of macroeconomic factors, the results found in Sweden will differ from the ones found in the US.
REJECT

H4: CAPM holds and the differences in excess returns can be explained by differences in required rate of return based on different levels of risk.
REJECT

H5: This information is easily available to the market, thus the market should know and incorporate this relationship.
REJECT

Following these findings we would like to suggest some future research questions that should be explored.

The inverted risk-return relationship in this study contradicts CAPM. Therefore, we suggest that one should develop this contradiction and try to find the variable that would have to be added to CAPM for the theory to hold also in this case.

Another further study that can be performed is to investigate this topic on a more detailed level. Are there certain industries that are more or less affected by these political variables?

Moreover, our findings are more similar to the results in the US study than the results from the Germany study. To us, this was a surprise, considering we see more resemblances economy wise between Germany and Sweden. So, why is this relationship present in Sweden and the US, yet not in Germany? What characteristics do Sweden share with the US that makes us share this relationship?

Lastly, we find that the link established is not incorporated in the market price. This suggests that none of the forms of the EMH holds on the Swedish market. We therefore suggest developing this lack of incorporation further, why do the Swedish investors not see this link?

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11 Appendix

11.1 Tables

Table 1

Descriptive Statistics: Sweden October 1901 - December 2012

The table presented below provides information regarding the dataset used for the Swedish market. The Swedish Government has provided the data concerning distribution of governments. The data considering returns reflects the development of the AFGX and is provided by Waldenström. Data regarding GDP is provided by Edvinsson and the inflation is provided by Statistics Sweden. The time period for the entire dataset is from October 1901 through December 2012.

	Right-winged	Left-winged	Total
Number of governments	24	17	41
Number of ruling months	512	823	1335
Average monthly nominal return	0,2%	0,8%	0,5%
Average annual nominal return	2,0%	9,6%	6,6%
Average monthly real return	0,1%	0,4%	0,2%
Average annual real return	0,7%	5,1%	3,0%
Average monthly excess return	-0,3%	0,4%	0,1%
Average annual excess return	-3,3%	4,4%	1,4%
Standard deviation in monthly nominal return	4,8%	4,6%	4,7%
Standard deviation in monthly real return	4,8%	4,6%	4,7%
Average monthly risk free-rate	0,4%	0,4%	0,4%
Standard deviation in risk-free rate	0,2%	0,2%	0,2%
Average monthly inflation	0,3%	0,3%	0,3%
Standard deviation in inflation	0,7%	0,4%	0,5%
Average monthly development of GDP	0,2%	0,3%	0,2%
Standard deviation in development of GDP	0,3%	0,2%	0,3%

Table 2

Definition of Swedish Governments

Left-winged	*Right-winged*
Socialdemokraterna	Moderaterna
Miljöpartiet	Folkpartiet
Vänsterpartiet	Kristdemokraterna
	Centerpartiet

Table 3

VIF-tests

The VIF values are low for all considered variables, implying that there is no multicollinearity within our data once our dummy RW is omitted. Thus, we conclude that we do not have to correct for any multicollinearity.

VIF-test Regression 2		
Variable	VIF	1/VIF
ln(GDP)	1.03	0.974511
LW	1.03	0.974511
Mean VIF	1.03	

VIF-test Regression 3		
Variable	VIF	1/VIF
ln(GDP)	1.14	0.879330
ln(Infl)	1.11	0.901059
LW	1.03	0.974511
Mean VIF	1.09	

Table 4

Heteroskedasticity test

The Breusch-Pagan / Cook-Weisberg test tests if the variance in the estimated residuals is non-constant, which would signal heteroskedasticity. The assumed null hypothesis is that there is a constant variance within our sample's residuals. A high chi2 value implies that we have heteroskedasticity at hand. In our case, the chi2 is absolutely signalling that variance in residuals is non-constant and therefore heteroskedasticity is implied. However, this test is used in combination with plotting of the residuals, to determine if this heteroskedasticity is something we need to correct for or not.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ln(MEN)

chi2(1)	18.17
Prob > chi2	0.0000

Table 5

Initial robust regression

This regression shows that our findings are robust. We can reject, on a 5 % significance level, that the betas of our political variables are equal with these robust results. 3 Huber iteration and 3 Biweight iterations were needed to reach the robust regression, a standard amount. These iterations reweight our outliers so that they have less impact on our findings. This robust regression is actually a substantially stronger model for our data. The t-values for both the political variable and the GDP variable are both higher and the probability of the null hypothesis, that the betas are equal, being true is only 0,5 %, according to the F-static.

Huber iteration 1: maximum difference in weights = .8475727
Huber iteration 2: maximum difference in weights = .06832206
Huber iteration 3: maximum difference in weights = .01445788
Biweight iteration 4: maximum difference in weights = .29411229
Biweight iteration 5: maximum difference in weights = .01914651
Biweight iteration 6: maximum difference in weights = .00528701

Robust regression

Number of obs.	1335
F(2, 1332)	7.68
Prob > F	0.0005

ln(MEN)	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
LW	.00635	.0022963	2.77	0.006	.0018453	.0108547
RW	0	(omitted)				
ln(GDP)	.9231091	.4013423	2.30	0.022	.1357772	1.710441
Const.	-.0044286	.0019295	-2.30	0.022	-.0082137	-.0006435

Table 6

Outliers

Outliers are found using the studentized residuals, denoted r. All observations with an absolute r exceeding 2 are listed below and is also excluded from the following regression. These outliers expose some of the most extreme periods on the Swedish stock exchange. The lowest r is found in March 1932, when the stock markets monthly excess return equalled -32,92 %. In this period of time Sweden was hit hard by the depression and experienced some years of decreasing trade and high uncertainty. The second lowest r is found in September 1990 during which Sweden experienced a financial crisis connected to deregulation on the real estate market. The fourth lowest r, found in October 2008, occurred under the most recent financial crisis that hit Sweden hard. In the other end of the list we find the highest r in the sample, under November 1992. This month is also found in a crisis period. After the Riksbank in September set the marginal rate to 500 % for a few weeks, and the market fell, the stock market jumped back in November. A similar movement is associated with the second highest r, found in April 2009. This month the market had an excess return of 17,15 %, jumping back from several months of negative excess returns.

	r	ln(MEN)	Date		r	ln(MEN)	Date
1.	-7.082897	-.3292401	mar 1932	37.	-2.056229	-.0904397	may 2006
2.	-5.441149	-.2550832	sep 1990	38.	-2.04784	-.0983583	mar 1994
3.	-5.179513	-.2387343	oct 1987	39.	-2.014999	-.0991623	jul 1914
4.	-4.105344	-.1991799	oct 2008	40.	-2.009007	-.0965454	nov 1993
5.	-3.590613	-.1654583	sep 2002	41.	-2.006153	-.089583	nov 1922
6.	-3.503284	-.1617463	nov 1987	1305.	2.036794	.0965085	jan 1975
7.	-3.463538	-.1580331	aug 1998	1306.	2.075923	.0940805	aug 1932
8.	-3.33761	-.1642576	nov 1907	1307.	2.084722	.0805861	jan 1920
9.	-3.223924	-.1535528	apr 1940	1308.	2.169663	.0991125	jul 1993
10.	-3.199328	-.1451299	feb 1922	1309.	2.217911	.1001961	jan 1991
11.	-3.140445	-.1546069	jun 2008	1310.	2.232038	.106738	jan 1988
12.	-3.100712	-.1419439	mar 2001	1311.	2.235921	.1015456	jul 1932
13.	-2.95469	-.1359784	dec 2002	1312.	2.238161	.1055695	nov 1982
14.	-2.927934	-.1350634	jan 1987	1313.	2.246081	.0978598	jul 2009
15.	-2.873459	-.1370709	aug 1990	1314.	2.252445	.1003054	jun 1981
16.	-2.860248	-.143693	sep 1931	1315.	2.260814	.1091788	nov 1999
17.	-2.752366	-.1231414	feb 1921	1316.	2.274466	.1040005	feb 1993
18.	-2.749148	-.1256066	sep 2001	1317.	2.28697	.1045836	oct 1993
19.	-2.737545	-.1359003	sep 2008	1318.	2.313419	.1024649	mar 1924
20.	-2.735148	-.1248866	oct 1997	1319.	2.323844	.1125532	nov 1998
21.	-2.71753	-.1349698	jan 2008	1320.	2.324047	.1118418	nov 2001
22.	-2.68214	-.1198822	may 1921	1321.	2.324478	.1123414	apr 2003
23.	-2.627485	-.1199443	feb 2001	1322.	2.414089	.1152255	nov 2002
24.	-2.575966	-.1195505	oct 1912	1323.	2.423464	.1157758	mar 1986
25.	-2.554216	-.1173479	jul 2002	1324.	2.45129	.1191407	apr 1922
26.	-2.538058	-.1173655	apr 1970	1325.	2.455988	.116848	feb 1987
27.	-2.500095	-.1254859	sep 1992	1326.	2.470474	.1178534	oct 2002
28.	-2.482817	-.1124779	sep 1998	1327.	2.81326	.1290862	jan 1994
29.	-2.439452	-.1226626	aug 1992	1328.	2.816668	.1361493	may 1922
30.	-2.337987	-.1088159	may 1984	1329.	2.899222	.1378103	jan 1983
31.	-2.32627	-.10212	mar 1938	1330.	2.983904	.1440496	feb 2000
32.	-2.315421	-.1069887	oct 1970	1331.	3.086717	.1476173	dec 1999
33.	-2.285118	-.1130678	aug 2011	1332.	3.425237	.1622148	feb 1983
34.	-2.148477	-.0984289	apr 2002	1333.	3.604347	.1731447	jul 1921
35.	-2.147874	-.1114797	may 1920	1334.	3.834084	.1715344	apr 2009
36.	-2.082299	-.0988605	nov 1918	1335.	5.25913	.2354417	nov 1992

Table 7

Regression without outliers

After the 72 outliers are deducted from our sample we run another regression. We want to make sure that our results are not biased by a few extreme values. On the contrary, our results are still significant after the outliers are dropped. The probability of the two betas, LW and RW, being equal have now dropped to just 0,7 %. This implies that our outliers actually biased our results in favour of right-winged governments. Something that fits well with Figure 2, that showed that the government that was the furthest from that political sides mean was a right-winged government. In other words, the outliers actually made the right-winged effect seem less negative. The R-squared is still low. However, this does not deem these findings less important.

Source	SS	df	MS
Model	.024179709	2	.012089854
Residual	1.59227896	1260	.001263713
Total	1.61645867	1262	.001280871

Number of obs.	1263
F(2, 1260)	9.57
Prob > F	0.0001
R-squared	0.0150
Adj R-squared	0.0134
Root MSE	.03555

ln(MEN)	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
LW	.0056338	.0020855	2.70	0.007	.0015425	.0097252
RW	0	(omitted)				
ln(GDP)	1.082804	.3647386	2.97	0.003	.3672419	1.798366
Const.	-.0046162	.0017591	-2.62	0.009	-.0080673	-.0011651

Hypothesis test	
(1) LW - o.RW	0
F(1, 1260)	7.30
Prob > F	0.0070

Table 8

Welch's T-test

As an initial test, we run a t-test based on the log monthly excess returns for periods with a left-winged and right-winged government divided; MEN(LW) vs MEN(RW). The test tell us that months with a left-winged government have higher excess returns and lower standard deviation than months with a right-winged government in charge. Our standard errors are low and our t-value is high, implying that it is highly likely that our two samples have different means. The probability that the means are the same is only 1,57 %, making it possible for us to state that the excess returns under left-winged and right-winged governments are different on a 5 % significance level. In other words, the difference is significant.

T-test: MEN(LW) = MEN(RW), unpaired unequal level(95)

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
MEN(LW)	823	.0025146	.001613	.0462728	-.0006514	.0056806
MEN(RW)	512	-.003957	.002135	.048309	-.0081514	.0002374
combined	1335	.0000326	.0012905	.0471513	-.002499	.0025642
diff		.0064716	.0026758		.0012211	.0117221

diff = mean(MRN(LW)) - mean(MRN(RW)) t = 2.4186
Ho: diff = 0 Satterthwaite's degrees of freedom = 1048.47

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.9921	Pr(|T| > |t|) = 0.0157	Pr(T > t) = 0.0079

Table 9

Sharpe ratio

In this case LW and RW denotes the excess returns during months where the left-winged and the right-winged governments were in charge respectively. Because LW has both a higher mean and a lower standard deviation it comes as no surprise that LW also has a substantially higher Sharpe ratio. This ratio illustrates that the reward-to-volatility is much higher during left-winged governments.

	Mean Excess return	Std dev	Sharpe ratio
LW	0,0076351	0,0458846	0,166397876
RW	0,00166	0,0476555	0,034833335

Table 10

First regression

Our initial regression illustrates the relationship between our two dummy variables, left-winged and right-winged, and the monthly nominal excess return. The RW variable is omitted due to collinearity. However, because of this perfect collinearity with the LW variable we know that the beta for RW would be the negative of the beta for LW. The 95 % confidence interval for LW is above zero, which tells us that we can state, on a 5 % significance level, that there is a difference between the betas of our dummy variables. The low R-squared tells us that this model cannot explain nearly enough of the variance in our data. Therefore, further variables are included in the following regressions. However, the R-squared cannot tell us whether the model is adequate or not. In other words, the low R-squared is troubling. Yet, does not undermine our rejection of the null hypothesis that the different governments are associated with the same returns.

Source	SS	df	MS
Model	.013219541	1	.013219541
Residual	2.9525913	1333	.002214997
Total	2.96581084	1334	.002223247

Number of obs.	1335
F(1, 1333)	5.97
Prob > F	0.0147
R-squared	0.0045
Adj R-squared	0.0037
Root MSE	.04706

ln(MEN)	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
LW	.0064716	.0026491	2.44	0.015	.0012748	.0116684
RW	0	(omitted)				
Const.	-.003957	.0020799	-1.90	0.057	-.0080373	.0001233

Table 11

Second regression

The second regression includes the log development of GDP. After adding this factor one can see that the coefficient for the political dummy is decreased slightly. The added factor gets a high beta, implying that the development of the GDP is of great importance to the monthly excess return. That comes as no surprise considering that the GDP factor is used as a proxy for the development of the Swedish economy as a whole. Our hypothesis test shows that the probability that the differences between the two betas is zero is merely 5,12 %, making it possible for us to reject this null hypothesis on a 10 % significance level. The R-squared was increased by this added factor. However, this change was small, leading to the conclusion that even if we find essential factors that with significance influences the monthly excess return the residuals will keep being high and therefore the fit, according to the R-squared, low.

Source	SS	df	MS		
Model	.032044104	2	.016022052	Number of obs.	1335
Residual	2.93376674	1332	.002202528	F(2, 1332)	7.27
Total	2.96581084	1334	.002223247	Prob > F	0.0007
				R-squared	0.0108
				Adj R-squared	0.0093
				Root MSE	.04693

ln(MEN)	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
LW	.0052227	.0026759	1.95	0.051	-.0000268	.0104721
RW	0	(omitted)				
ln(GDP)	1.367308	.467697	2.92	0.004	.449805	2.284811
Const.	-.0064952	.0022485	-2.89	0.004	-.0109061	-.0020843

Hypothesis test		
(1) LW - o.RW = 0	F(1, 1335) = 3.81	Prob > F = 0.0512

Table 12

Election shocks

The average excess return during election months in which a left-winged government was elected is indisputably lower than the same average when right-winged governments are elected. This illustrates that the market believes a right-winged government will result in higher excess returns in the future, something we found to be untrue. The averages also show that election months are associated with negative excess returns as a whole. The worst election months, excess return wise, comes towards the end of our time frame. If one studies the last four elections it becomes clear that the market reactions to different elections are substantial. In the elections 1998 and 2002, when a left-winged government was re-elected, the reactions were highly negative. In the elections 2006 and 2010, when a right-winged government was elected, the reactions were highly positive. However, we only use monthly average excess returns, suggesting that there might be day-to-day movements we are missing here. This needs to be taken into account when reading this table.

Elected	Average excess return
LW	-1,6449%
RW	-0,4485%
All months	-1,2570%

Election month	Monthly Excess return	Elected
1911-09	-2,0401%	RW
1914-03	-0,7474%	RW
1914-09	-0,4868%	RW
1917-09	-4,1177%	RW
1920-09	-8,1978%	LW
1924-09	-3,2090%	LW
1928-09	3,1950%	RW
1932-09	-1,2200%	LW
1936-09	1,0683%	LW
1940-09	3,6479%	LW
1944-09	-1,6723%	LW
1948-09	-1,7026%	LW
1952-09	-2,4601%	LW
1956-09	-2,3626%	LW
1958-06	3,3518%	LW
1958-09	3,0792%	LW
1960-09	-1,3793%	LW
1964-09	-0,3144%	LW
1968-09	-1,6287%	LW
1970-09	-3,9968%	LW
1973-09	-0,9956%	LW
1976-09	-5,1221%	RW
1979-09	-1,5946%	RW
1982-09	5,8908%	LW
1985-09	0,2207%	LW
1988-09	4,9433%	LW
1991-09	-6,4718%	RW
1994-09	-3,3637%	LW
1998-09	-10,6383%	LW
2002-09	-15,2495%	LW
2006-09	4,9898%	RW
2010-09	8,3588%	RW

Table 13

Descriptive Statistics: AFGX & STOXX Global 1800, 1992-01 - 2012-12

The table below presents the descriptive statistics for AFGX and the STOXX Global 1800 index during the time period 1992 until 2012. The table shows the mean, median and the high/low of nominal monthly return during the chosen time frame. As a first analysis it is possible to see that the mean for AFGX is higher than for the global index. It is also possible to distinguish that AFGX has more extreme numbers for their high/low compared to the global index. The standard deviation is also calculated, which is higher for AFGX. A general presentation of the data sample is done. It shows that the time frame is over 21 years and that AFGX is performing better than the global index in approximately 51% of the time. It is also stated that the two indices never have the same returns, and in order to understand the depth of this we show, in percent of total time frame, how many times the difference lies in the spectrum between -1 to 1 percentage points.

Nominal monthly return	AFGX	STOXX Global 1800
Mean	0,9%	0,5%
Median	1,1%	0,8%
High	27,5%	15,2%
Low	-17,8%	-12,6%
Standard deviation	6,2%	4,6%

Information of data	Data
Time period (years)	21
Months global index has higher return	123
Months Swedish index has higher returns	129
Months with same return	0
Difference in return -1<percentage points<1	16%

Table 14

Descriptive Statistics: AFGX & STOXX Europe 600, 1987-01 - 2012-12

The table below presents the descriptive statistics for AFGX and the STOXX Europe 600 index during the time period 1987 until 2012. The table shows the mean, median and the high/low of nominal monthly return during the chosen time period. As a first analysis it is possible to see that the mean for AFGX is higher than for the European index. It is also possible to distinguish that AFGX has a higher max and low compared to the other index. The standard deviation is also calculated, which is higher for AFGX. A general presentation of the data sample is done. It shows that the time frame is over 26 years and that AFGX is performing better than the European index in 53% of the time. It is also stated that the two indices have the same return in only one month, otherwise different. In order to understand the depth of the differences in return we show, in percent of total time frame, how many times the difference lies in the spectrum between -1 to 1 percentage points.

Nominal monthly return	AFGX	STOXX Europe 600
Mean	0,9%	0,5%
Median	1,2%	1,2%
High	27,5%	14,3%
Low	-21,5%	-24,8%
Standard deviation	6,3%	5,0%

Information of data	Data
Time period (years)	26
Months European index has higher return	145
Months Swedish index has higher returns	166
Months with same return	1
Difference in return -1<percentage points<1	26%

Table 15

Descriptive Statistics: AFGX & OSEAX, 1983-01 - 2012-12

The table below presents the descriptive statistics for AFGX and OSEAX during the time period 1983 until 2012. The table shows the mean, median and the high/low of nominal monthly return during the chosen time period. As a first analysis it is possible to see that the mean for AFGX is approximately the same as for OSEAX. It is also possible to distinguish that AFGX has a higher max and low compared to OSEAX. The standard deviation is also calculated, which is approximately the same for the two indices. A general presentation of the data sample is done. It shows that the time frame is over 30 years and that AFGX is performing better than the Norwegian index 47% of the time. It is also stated that the two indices never have the same return. In order to understand the depth of the differences in return we show, in percent of total time frame, how many times the difference lies in the spectrum between -1 to 1 percentage points.

Nominal monthly return	AFGX	OSEAX
Mean	1,0%	1,0%
Median	1,2%	1,8%
High	27,5%	17,0%
Low	-21,5%	-28,4%
Standard deviation	6,5%	6,5%

Information of data	Data
Time period (years)	30
Months Norwegian index has higher return	190
Months Swedish index has higher returns	170
Months with same return	0
Difference in return -1<percentage points<1	18%

Table 16

Third regression

In this regression we have 3 main variables taken into consideration. The regression framework is dependent upon log nominal return, log GDP and log inflation. The results are similar to our Regression 2, where the excess return and GDP were taken into consideration. Before running the regression we had to adjust the inflation numbers since they were presented on a yearly basis. We discounted the annual numbers in order to get them on a monthly basis. The results below shows that the log GDP is of farther greater importance to the log nominal return than the log inflation. Also, the r-squared is slightly lower for this model, implying that the fit is weaker. The test following the model shows that the probability of our betas being equal is just 6,48 %, making it possible for us to reject that null hypothesis on a 10 % significance level. In other words, the difference is still significant.With inflation taken into account, we can still state that a left-winged government has a positive effect on returns.

Source	SS	df	MS		
Model	.030149756	3	.010049919	Number of obs.	1335
Residual	2.89723936	1331	.002176739	F(3, 1331)	4.62
Total	2.92738911	1334	.002194445	Prob > F	0.0032
				R-squared	0.0103
				Adj R-squared	0.0081
				Root MSE	.04666

ln(MEN)	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
LW	.0049166	.0026604	1.85	0.065	-.0003025	.0101358
RW	0	(omitted)				
ln(GDP)	1.397579	.4894682	2.86	0.004	.4373655	2.357792
ln(In)	.3820795	.254245	1.50	0.133	-.1166851	.8808441
Const.	-.0033135	.0024949	-1.33	0.184	-.0082078	.0015808

Hypothesis test	
(1) LW - o.RW	0
F(1, 1331)	3.42
Prob > F	0.0648

11.2 Figures

Figure 1

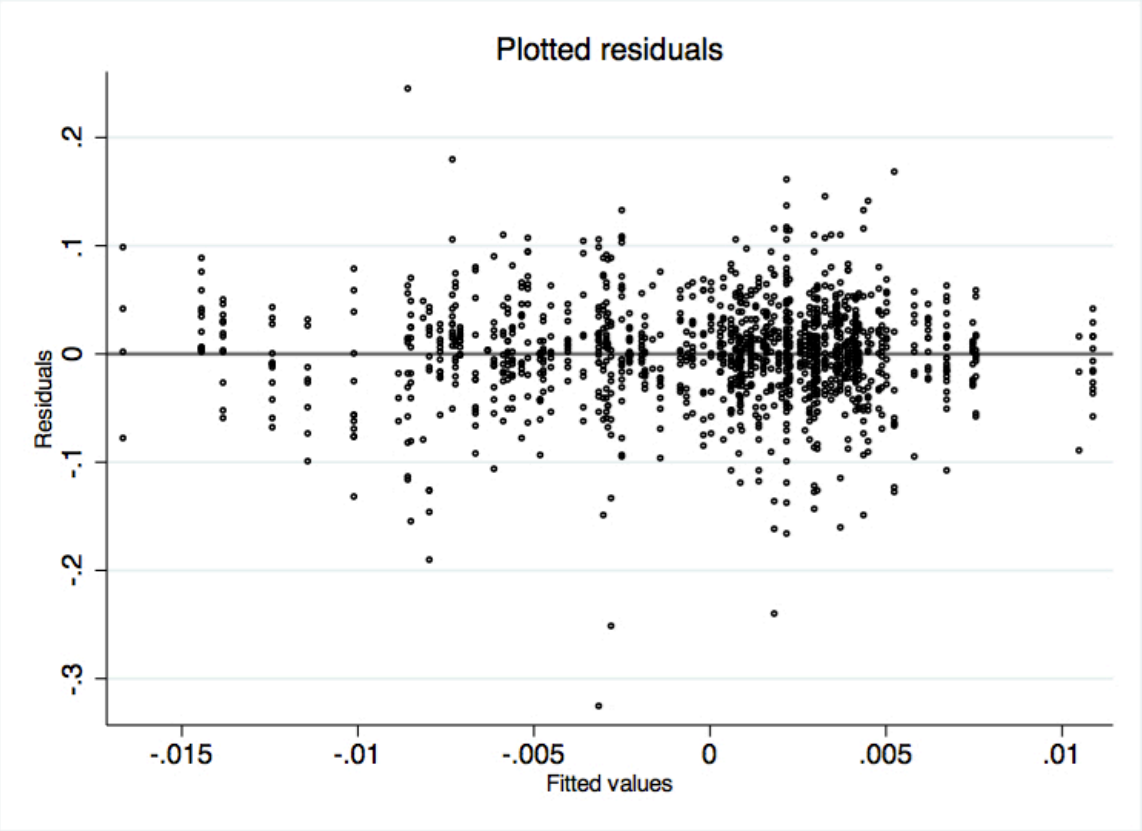


Figure 2

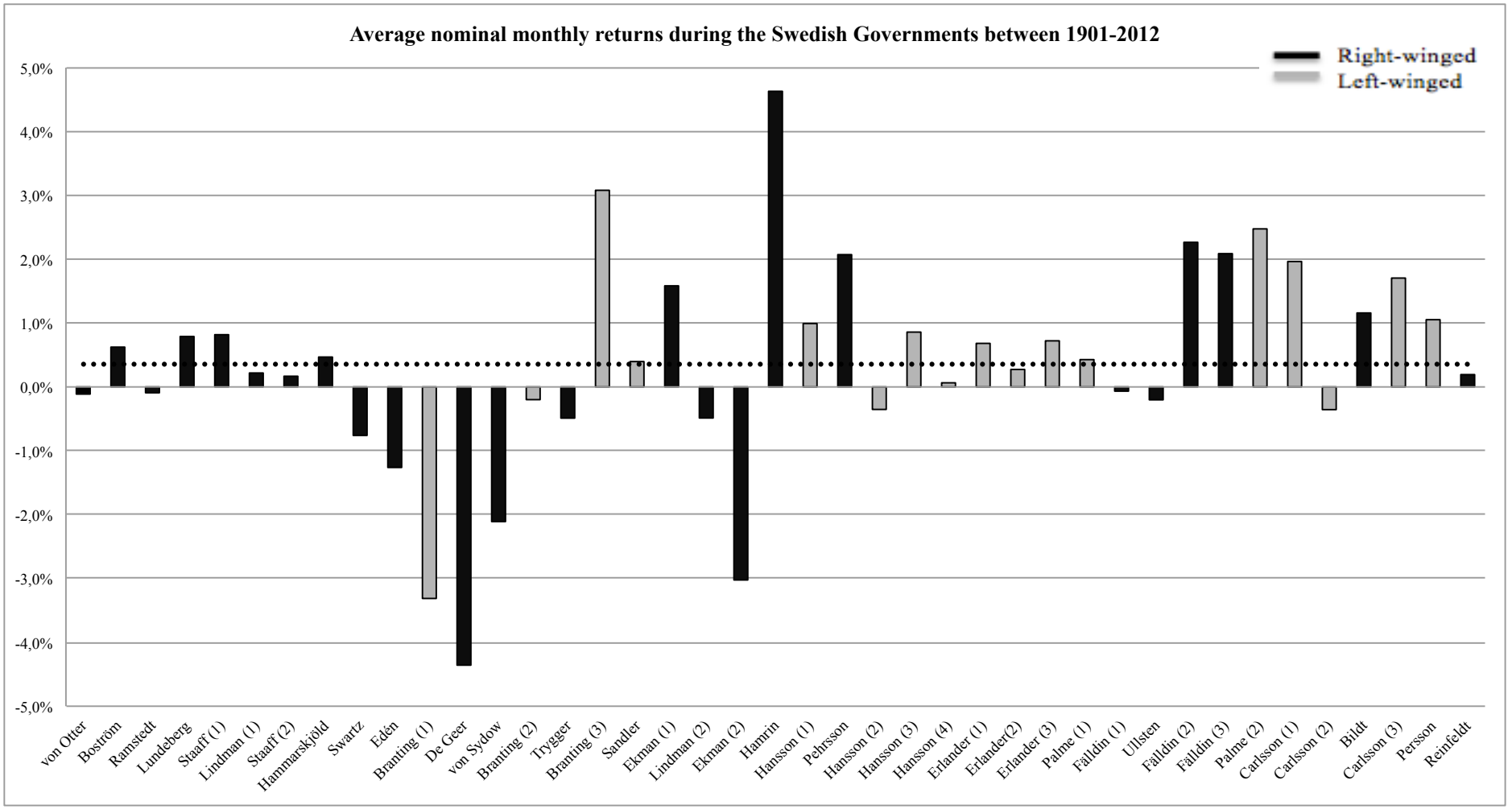
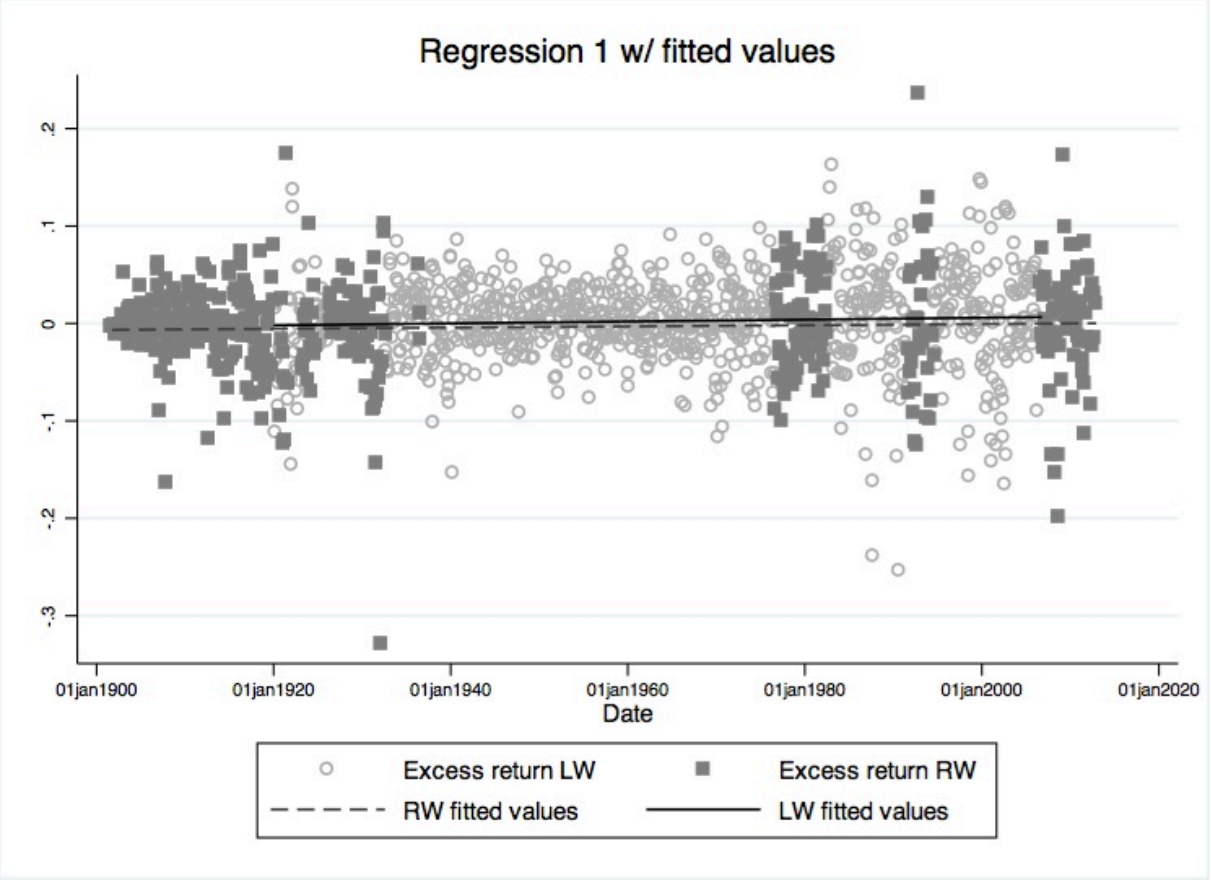

Average nominal monthly returns during the Swedish Governments between 1901-2012
Right-winged
Left-winged
5,0%
4,0%
3,0%
2,0%
1,0%
0,0%
-1,0%
-2,0%
-3,0%
-4,0%
-5,0%
von Otter
Bostrom
Ramstedt
Lundeberg
Staaff (1)
Lindman (1)
Staaff (2)
Hammarskjöld
Swartz
Edén
Branting (1)
De Geer
von Sydow
Branting (2)
Trygger
Branting (3)
Sandler
Ekman (1)
Lindman (2)
Ekman (2)
Hamrin
Hansson (1)
Pehrsson
Hansson (2)
Hansson (3)
Hansson (4)
Erlander (1)
Erlander(2)
Erlander (3)
Palme (1)
Fälldin (1)
Ullsten
Fälldin (2)
Fälldin (3)
Palme (2)
Carlsson (1)
Carlsson (2)
Bildt
Carlsson (3)
Persson
Reinfeldt

Figure 3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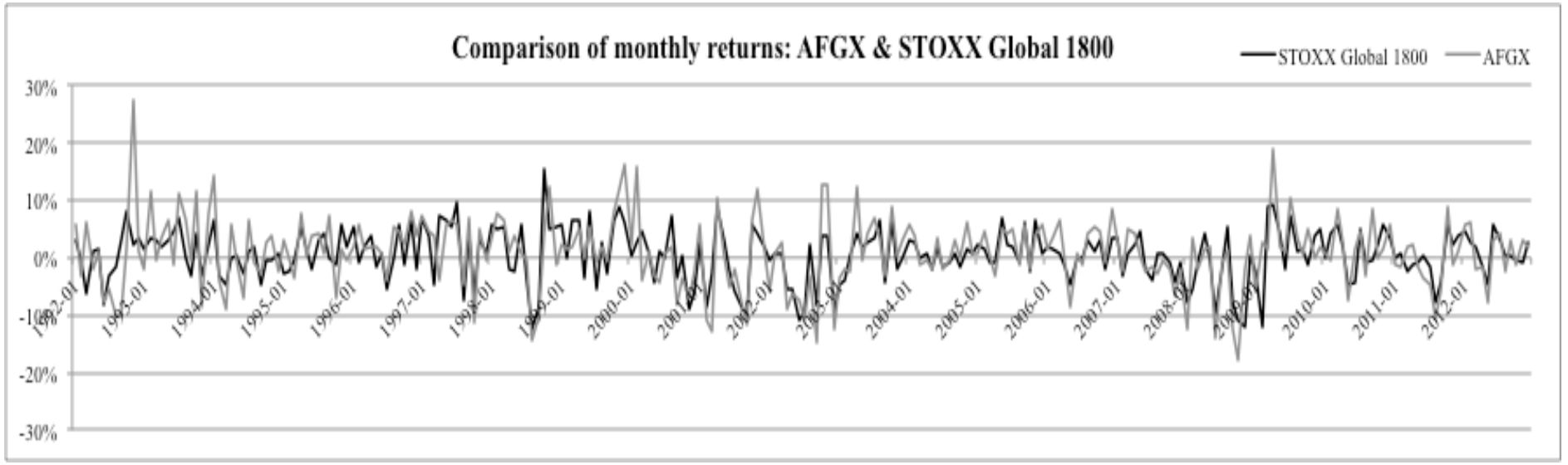
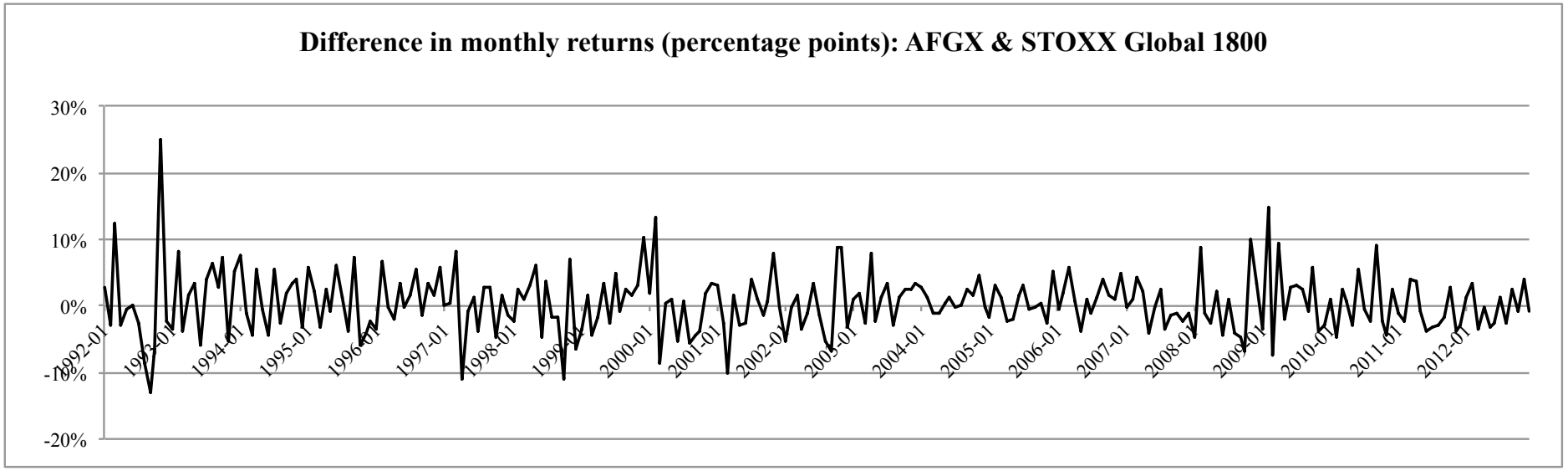
.2
.1
0
-.1
-.2
-.3
01jan1900
01jan1920
01jan1940
01jan1960
01jan1980
01jan2000
01jan2020
Date
Excess return LW
Excess return RW
RW fitted values
LW fitted values

Figure 4



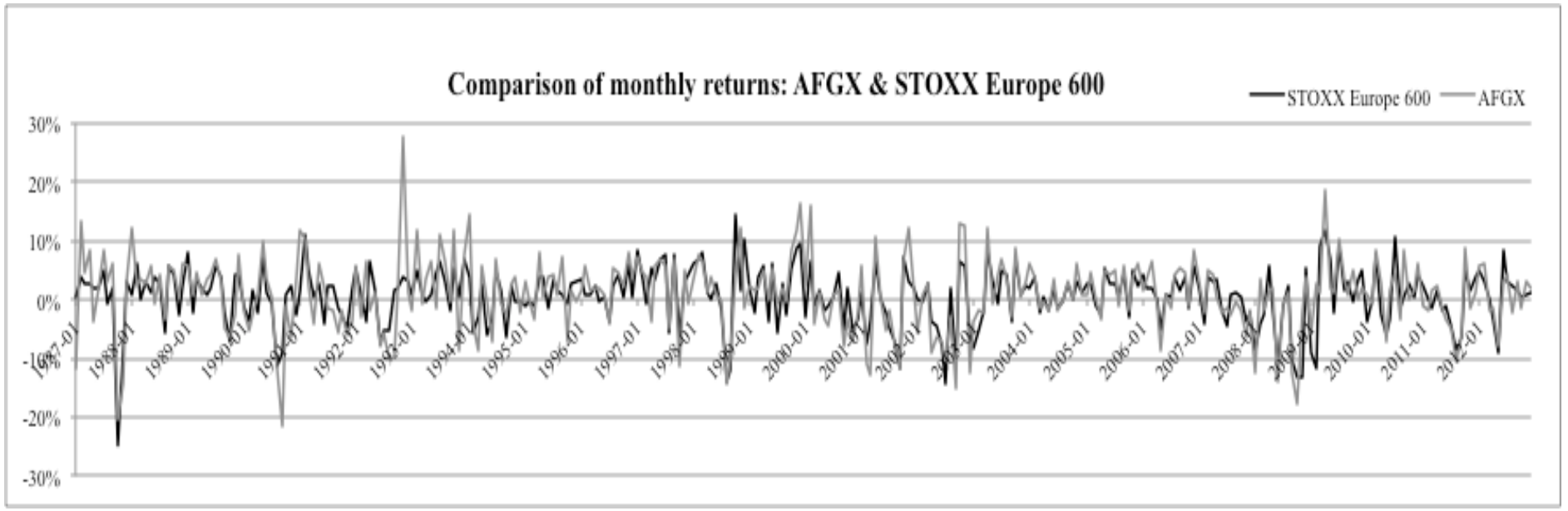
Above, a figure displaying the monthly returns for the two different indices is presented. The figure provides a picture of how similar or how different returns are between the two indices. It is possible to see that the returns between AFGX and STOXX Global 1800 are quite different from each other.

Figure 5



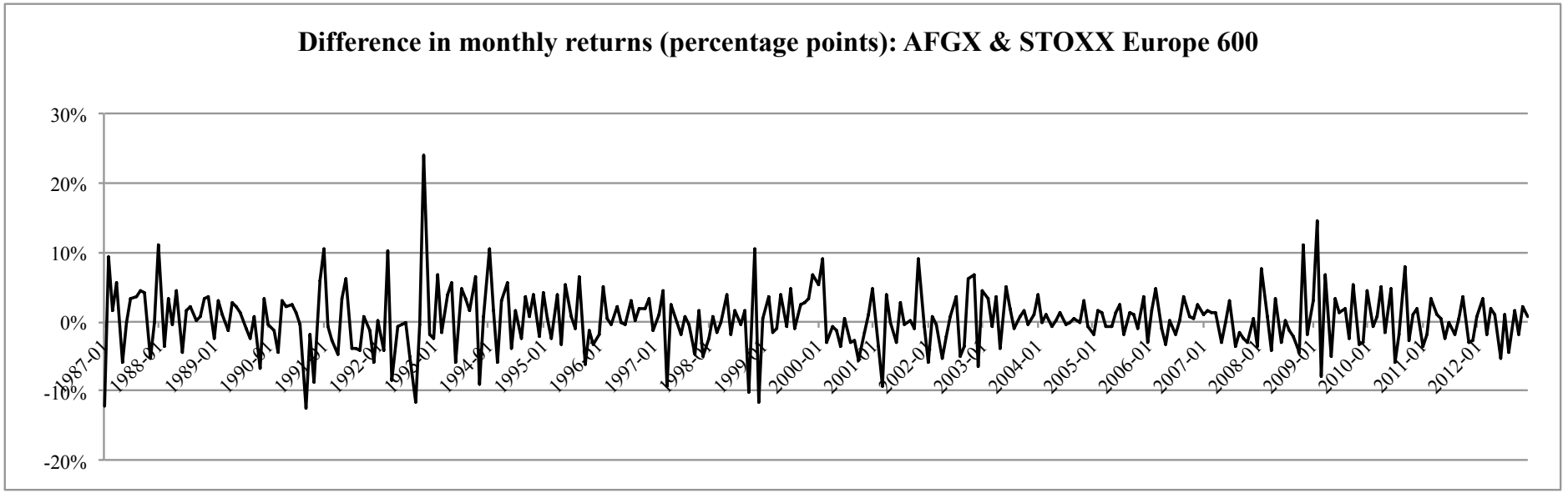
Above, a figure displaying the differences in monthly returns, measured in percentage points, is shown. The figure is provided as an indication of the magnitude of the differences in returns between the two indices. As seen in the figure, the differences in returns are quite volatile and large.

Figure 6



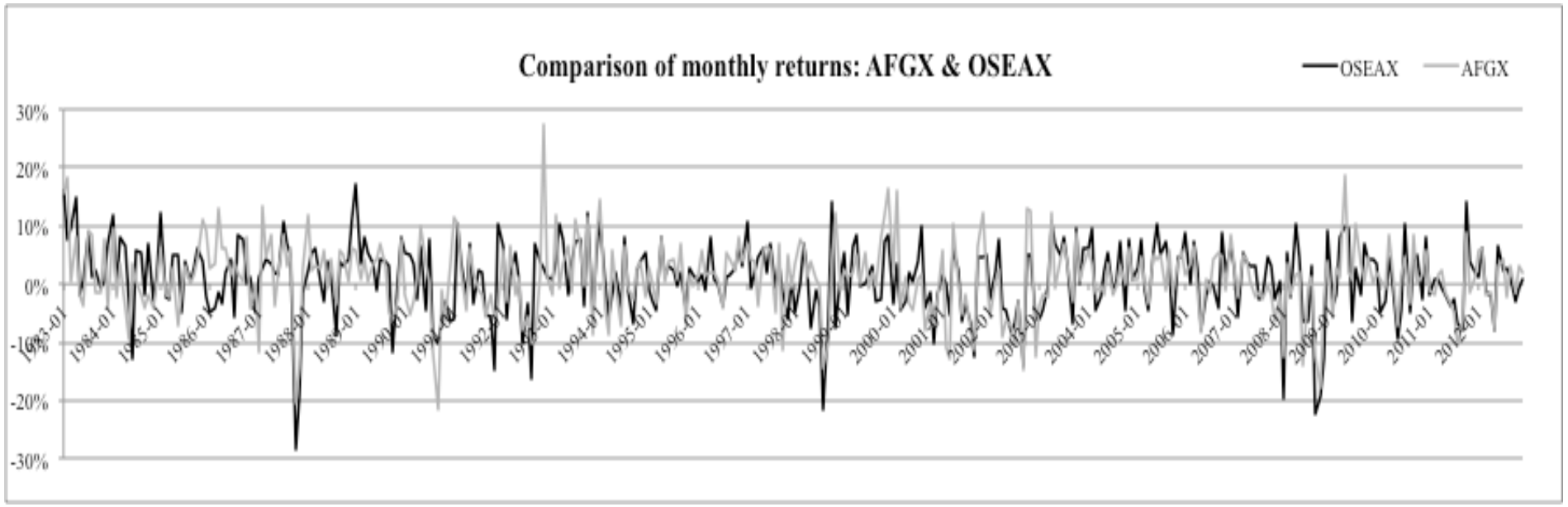
Above, a figure displaying the monthly returns for the two different indices is presented. The figure provides a picture of how similar or how different returns are between the two indices. It is possible to see that the returns between AFGX and STOXX Europe 600 follow the same pattern but still have quite different returns from each other.

Figure 7



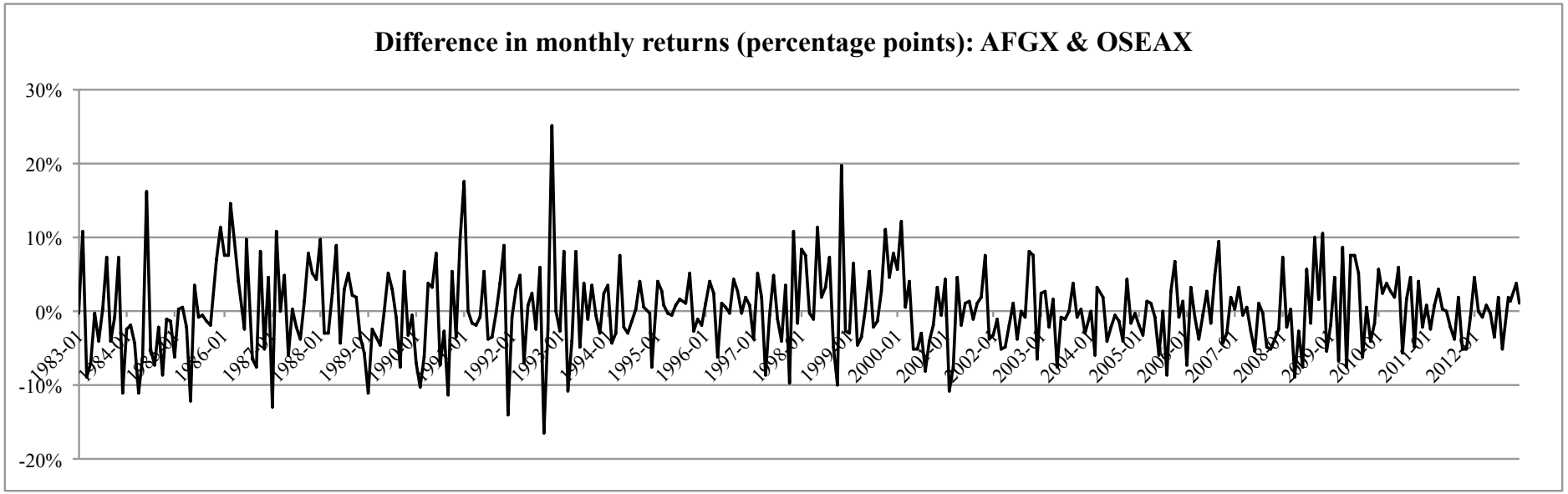
Above, a figure presenting the differences in monthly returns, measured in percentage points, is shown. The figure is provided as an indication of the magnitude of the differences in returns between the two indices. As seen in the figure, the differences in returns are quite volatile and large except for the period 2004-2008 where the returns look to be quite similar.

Figure 8



Above a figure displaying the monthly returns for the two different indices is presented. The figure provides a picture of how similar or how different returns are between the two indices. It is possible to see that the returns between AFGX and OSEAX follow the same pattern but still have quite different returns from each other.

Figure 9



Above a figure presenting the differences in monthly returns, measured in percentage points, is shown. The figure is provided as an indication of the magnitude of the differences in returns between the two indices. As seen in the figure, the differences in returns are quite volatile and large.

11.3 Specifications

Specification 1

Reconstruction of the AFGX and the short-term Swedish treasury bill

In professor Daniel Waldenström's study titled "Svenska aktiekurser, aktiavkastningar och obligationsräntor 1856 – 2006" the AFGX is constructed and reconstructed to become a homogenous and consistent data series spanning from 1856 through 2006. Considering that the first version of AFGX was published in 1918, this constructed data is vital for us to be able to use our full time frame.

As a foundation for the data series Waldenström uses both Affärsvärldens reported AFGX and various numbers of Kommersiella meddelanden (KM), a financial journal published in 1906 to 1918. Below, Waldenström's adjustments are presented;

1906 – 1918 KM published an index during these years that has guided the construction of AFGX. The index published by KM has prior to this study been adjusted by Anders Östlind in 1945. Waldenström mixes the KM index with the calculations done by Östlind to find a data series as true as possible for these years.

1918 – 1921 In December 1918 Affärsvärlden started publishing an index that would later turn into the AFGX. During these first years the index also includes paid dividends. An index following only shares should not include this data and therefore have these values been deducted from each month.

1922 – 1923 In January 1922 Affärsvärlden decides to no longer include paid dividends in the index. However, the stocks of the major banks are not included during these years, something that might bias this section of the data. Therefore, the development of these stocks are added.

1924 – 1927 In January 1924 Affärsvärlden decide to add paid dividends to the index again. As done before, these values are now deducted from the index.

1928 – 1934 During this period Affärsvärlden divided the index into two parts. One of them was tracking the market as a whole and the other was entirely focused on the companies owned by the tycoon Ivar Kreuger. This divide makes it possible to fully estimate the collapse of the Kreuger imperium in March 1932. As a result, first the Kreuger index is used up to the collapse and after this the full market index is used. The reason behind this is that the companies Kreuger owned were delisted for several months after the crash.

1935 – 1959 Here Birger Möller's reconstructed version of AFGX is used. Möller has added insurance and holding companies to the market value that worked as a foundation for to the index. Waldenström states that this improves the index for this period.

1987 – 1994 Here AFGX was estimated as a pure share index. For this period no adjustments were made.

1995 – 2006 For these years the Scandinavian Information Exchange Index (SIXGX) is used instead. Waldenström states that the switch was made for practical reasons, since SIXGX was an easily accessible index that was highly comparable to the data series constructed so far.

2006 – 2014 Waldenström has sent us an updated data series containing also these years. For them the SIXGX is used as well.

In Waldenström's study the short-term Swedish Treasury bill is also discussed. The series used to construct this series is the official discount rates recreated by the Swedish Central Bank for 1856 through 2002. Waldenström states that the discount rate was used as a normal market rate since the Swedish banks hade to follow the discount when the decided their lending and borrowing rates. In 1983 the state started using negotiable instruments (SSVX) with different run times. In this constructed series 30 day SSVX are used as a proxy for risk free rate from January 1983 and forward.

Specification 2

Reconstruction of the GDP

In a rigours study conducted in 2005 titled "Growth, Accumulation, Crisis: With New Macroeconomic Data for Sweden 1800 – 2000" Rodney Edvinsson constructs and reconstructs a continuous data series for the Swedish GDP in the period 1800 - 2000. Edvinsson states that the goal of the study:

"...is to construct annual macroeconomic data series that are consistent for the whole period under investigation, and which rely on modern methods of national accounting. This involves both recalculation and linking of previously constructed series (as for GDP) […] The construction of empirical data is based on the principles of national accounting, intended for the use by researchers with different theoretical backgrounds."

Edvinsson constructs an annual measure of the nominal GDP for years before 1960. Prior to his study, there existed no continuous data series for years before this. The construction builds further on previously constructed series; series of net domestic product, employment rate, worked hours, expenditure on wages, self-employed workers revenues, gross profits, productivity, changes in stockpiles and capital stocks. In short, based on histrorical data from the Swedish economy Edvinsson has constructed a GDP series that is comparable over time.

Edvinsson states that the reliability is quite low for many data points prior to 1950 in the study. However, his approach is widely used* in other studies and generally accepted as a good replacement, since there is no other data available.

*Hundereds of following studies have cited Edvinssons study and his GDP series is used in multiple articles about the development of the Swedish economy.

Specification 3

Swedish Election Months

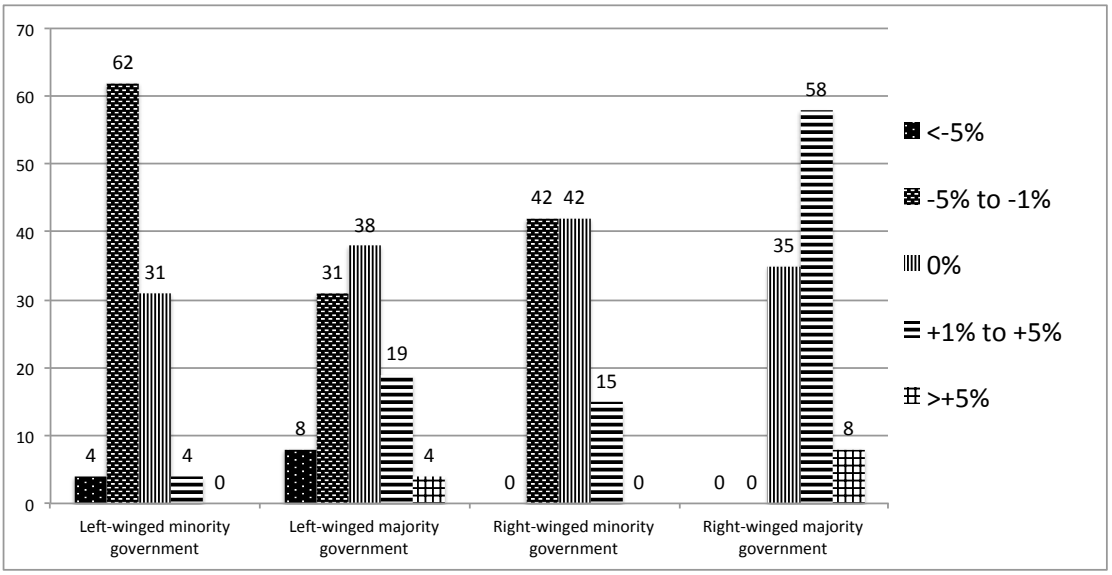
When testing for election shocks, we only consider elections held after 1910. The elections prior to this where hold in such a manner that we do not find them comparable to todays elections.The elections considered are listed as follows;

Date	Elected
September 1911	RW
March 1914 (re-election)	RW
September 1914	RW
September 1917	RW
September 1920	LW
September 1921	LW
September 1924	RW
September 1928	LW
September 1932	LW
September 1936	LW
September 1940	LW
September 1944	LW
September 1948	LW
September 1952	LW
September 1956	LW
June 1958 (re-election)	LW
September 1960	LW
September 1964	LW
September 1968	LW
September 1970	LW
September 1973	LW
September 1976	RW
September 1979	RW
September 1982	LW
September 1985	LW
September 1988	LW
September 1991	RW
September 1994	LW
September 1998	LW
September 2002	LW
September 2006	RW
September 2010	RW

Specification 4

Results from the PWC study

In PWC's report on risk premium published in March 2014 many of the interviewed brokers and corporate finance advisors underlined that they were sure that electing a minority left-winged government would result in a negative movement on the stock market on the 100 days following the election. 100 % of the respondents thought a right-winged government would mean no result or a positive result. At the same time, only 4 % of the respondents thought a left-winged minority would equal a positive movement on the market (PWC, 2014). In reality, a minority left-winged government was elected and the movement was positive.



Source: PWC

Specification 5

Reconstruction of OSEAX

The Norwegian index that we use as a control group is the Oslo Børs All-share index (OSEAX). Oslo Børs has constructed a linked version of OSEAX (AXLT). The purpose of this linked index is to be able to offer time series that are longer than the current official index offer. Oslo Børs changed their official indices from Total index (TOTX) and Small cap index (SMBX) to Benchmark index (OSEBX), Mutual fund index (OSEFX), All-share index (OSEAX) and Small cap index (OSESX) in September 2001. The date of the link is therefore set to 1st of September 2001.

In order to establish the linked version of OSEAX (AXLT) Oslo Børs use the historical values of TOTX. They adjust the historical values with an adjustment factor based on the ratio between TOTX and the OSEAX index per 31st of August 2001. After this date, the index value for OSEAX and AXLT are identical. This linked index is fundamental for our analysis of control groups since it allows us to compare over a longer time period making our results more reliable. In our study we will use OSEAX as a general term for the linked index.