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Political uncertainty and the stock market

The U.S. presidential elections

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ABSTRACT:

Recently political uncertainty has shown how vital a role it plays in the financial markets and why it is essential to understand its function. In 2020 political uncertainty rose to a record high level due to the Covid-19 pandemic, which was also dramatically reflected in the financial markets. It broadly refers to uncertainty about the future actions of the government. This means that presidential elections are an example of a source of it. This research examines the impact of political uncertainty on the stock market during the presidential elections in the United States. Previous literature has found that political uncertainty has a negative effect on stock prices because it needs a risk premium. This means that political uncertainty leads to an increased discount rate which in turn leads to a decrease in stock prices. This implies that it is priced.

This research focuses on the Dow Jones Industrial Average index, but the analysis is extended to cover panel data on fifty companies selected from the Dow Jones Industrial Average and Nasdaq 100. Using monthly data from February 2000 to December 2020, this thesis examines the relationship between monthly returns and political uncertainty. The data used in this research is retrieved from Refinitiv Workspace, the website of Economic Policy Uncertainty and the Federal Reserve Bank of St. Louis. The study uses linear regression to examine the influence of political uncertainty on the stock market index, and for the investigated companies, panel regression is used.

The results show that there is a negative relationship between political uncertainty and the stock market. In addition, this research reveals that during 2000—2020 political uncertainty caused by presidential elections has a negative impact on the stock market and stock returns. However, each presidential election has a different effect on stock returns. The harmfulness of previous policies can explain the differences in the influence of political uncertainty created by different presidential elections. Generally, the impact of political uncertainty is negative, but when the previous policies are detrimental enough, the impact can be positive, but often the impact is then insignificant because the change was already expected by market participants. Moreover, political uncertainty caused by the presidential elections that led to the victory of a Democrat has a more negative impact on the stock returns than political uncertainty caused by the election of a Republican candidate because the Republican party is seen as a party that is more in favour of business. Furthermore, different companies are impacted by political uncertainty differently. Larger companies are less negatively impacted by it because they are more stable than small companies. Additionally, companies doing well in corporate social responsibility are less negatively affected by it.

KEYWORDS: political instability, presidential elections, financial markets, enterprises, regression analysis

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TIIVISTELMÄ:

Viime aikoina poliittinen epävarmuus on osoittanut, kuinka tärkeä rooli sillä on rahoitusmarkkinoilla ja miksi on tärkeää ymmärtää sen roolia. Vuonna 2020 se nousi ennätystasolle koronapandemian takia, mikä heijastui dramaattisesti myös rahoitusmarkkinoilla. Poliittinen epävarmuus viittaa laajasti epävarmuuteen hallituksen tulevista toimista. Tämä tarkoittaa sitä, että presidentinvaalit ovat esimerkki sen lähteestä. Tässä tutkimuksessa tarkastellaan poliittisen epävarmuuden vaikutusta osakemarkkinoihin Yhdysvaltain presidentinvaalien aikana. Aikaisemmissa tutkimuksissa on havaittu, että poliittisella epävarmuudella on negatiivinen vaikutus osakekursseihin, koska se vaatii riskipreemion. Tämä tarkoittaa sitä, että poliittinen epävarmuus johtaa diskonttokoron nousuun, mikä puolestaan johtaa osakekurssien laskuun. Tämä tarkoittaa sitä, että se on hinnoiteltu.

Tässä tutkimuksessa tarkastellaan Dow Jones Industrial Average -indeksiä sekä viidestäkymmenestä yrityksestä muodostuvaa paneelidataa. Nämä yritykset on valittu Dow Jones Industrial Average - ja Nasdaq 100 -indekseistä. Tutkimuksessa käytetään kuukausittaista dataa helmikuusta 2000 joulukuuhun 2020. Tutkimuksessa käytetty data on hankittu Refinitiv Workspacesta, Economic Policy Uncertaintyn Internet-sivustolta ja St. Louisin keskuspankin verkkosivustolta. Lineaarista regressiota käytetään tutkimaan miten poliittinen epävarmuus vaikutta osakemarkkinaindeksiin. Paneeliregressiota käytetään tutkimaan poliittisen epävarmuuden ja valittujen yritysten osakekurssien välisen suhteen paljastamiseen.

Tämä tutkimus osoittaa, että sekä poliittisen epävarmuuden että presidentin vaalien aiheuttaman poliittisen epävarmuuden ja osakemarkkinoiden välillä on negatiivinen suhde. Eri presidentinvaaleilla on kuitenkin erilainen vaikutus osakkeiden tuottoon. Eri presidentinvaalien aiheuttamat erot poliittisen epävarmuuden vaikutuksissa voidaan selittää aiempien linjojen haitallisuudella. Yleensä poliittisen epävarmuuden vaikutus on negatiivinen, mutta jos aikaisempi linja on riittävän haitallinen, vaikutus voi olla positiivinen, mutta usein vaikutus on vähäinen, koska osakemarkkinat osasivat odottaa muutosta. Lisäksi demokraattikandidaatin voittoon johtaneiden presidentinvaalien aiheuttamalla poliittisella epävarmuudella on suurempi negatiivinen vaikutus osakkeiden tuottoon kuin poliittisella epävarmuudella, jonka on aiheuttanut republikaanikandidaatin valinta. Syy tälle on se, että republikaanipuolueen katsotaan olevan parempi liiketoiminnalle. Lisäksi poliittinen epävarmuus vaikuttaa eri yrityksiin eri tavoin. Poliittinen epävarmuuden vaikutus suuriin yrityksiin on vähemmän negatiivinen, koska ne ovat vakaampia kuin pienet yritykset. Lisäksi poliittinen epävarmuus vaikuttaa vähemmän negatiivisesti yrityksiin, jotka menestyvät hyvin yritysten yhteiskuntavastuussa.

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1 Introduction

The year 2020 has shown the importance of political uncertainty. The pandemic caused by the Covid-19 caused a tremendous increase in political uncertainty and caused a massive decrease in stock prices. In fact, since the financial crisis of 2008, the role of political uncertainty has increased in the stock markets. Kelly et al. (2016) state that the financial crisis caused a lot of political uncertainty due to government bailouts. In addition, during the crisis, there were many reforms in finance and tax policies. The Federal Reserve had also developed novel monetary policies to alleviate the recession. After the financial crisis in 2011, Standard & Poor's downgraded the U.S. Treasury Bill for the first time in history. According to Kelly et al., the main reason for the downgrade was political uncertainty. Kelly et al. find that there is political uncertainty in the European markets too. For example, the European debt crisis can be seen as a source of political uncertainty because there was uncertainty about the actions of politicians and central banks. Even though political uncertainty played a crucial role in the financial crisis, it has not disappeared from the stock market. Kelly et al. explain that political uncertainty still plays an essential role in the financial markets and the economy. However, the understanding of its effects on the financial market is still in the beginning.

This thesis treats presidential elections in the United States from 2000 to 2020. This period includes one of the biggest political surprises in the 2010s, which was the election of Donald Trump as the president of the United States. According to Wagner et al. (2017), the election of Donald Trump surprised everyone. Kelly et al. (2016) show that, for example, presidential elections cause political uncertainty, which means that the examined events are a source of it. This thesis examines the role of political uncertainty in the stock market reaction during the election month. This thesis compares the effect of political uncertainty caused by different elections and aims to answer whether political uncertainty caused by different elections affects companies differently.

Pástor & Veronesi (2013) define political uncertainty as uncertainty about the future behaviour of governments. Kelly et al. (2016) find that political uncertainty is usually

connected to different kinds of elections such as presidential elections, global negotiations, referendums, and policy changes because, during these events, there is uncertainty about the future government policies. Pástor & Veronesi find that political news plays a vital role in the financial markets. Stock prices seem to constantly react to the actions of governments from all around the world. For example, when the European Union announced that the debt of Greece would be divided in half, the S&P500 index rose by 3.4%. Interestingly, a country whose economy is even smaller than the economy of the state of Michigan can have a significant effect on the markets around the world. Because of this, it is essential to understand the role of political uncertainty in the stock markets.

Recently quite many studies have been conducted about political uncertainty and its influence on different markets. Political uncertainty seems to affect several dimensions of finance. Pástor & Veronesi (2012) find that when a government policy change is announced, the stock prices tend to drop. In addition, when the uncertainty about the new government policy increases, it leads to a larger decrease in stock prices. Additionally, Liu et al. (2017) find that due to the Bo Xilai political scandal in 2012 in China, assets prices decreased. Particularly politically sensitive companies experienced drops in stock prices. The decrease in stock prices is caused by the increased discount rate. This shows that there is a priced political risk. Pástor & Veronesi (2013) also study if political uncertainty has a risk premium on the market. Their findings suggest that political uncertainty needs a risk premium, and it is larger in weaker economies such as market downturns.

Moreover, many studies, such as the one conducted by Pástor & Veronesi (2013), find that political uncertainty results in higher volatility and correlations between stocks. Some studies focus on how political uncertainty affects the investment decisions of companies. Both Julio & Yook (2012) and Jens (2017) find that, on average, companies decrease their investment expenses by about 5% during the election years compared to the regular years.

Presidential elections in the United States have been significant sources of political uncertainty past years. For example, one of the most dramatic political events in 2016 was the presidential election in the United States. The presidential election in November 2016 led to the largely unexpected election of Donald Trump as the next president of the United States. Presidential elections cause reactions in the financial markets because, according to Pantzalis et al. (2000), market participants reconsider their supposition after the election results. After all, new information exists on the markets. Pàstor & Veronesi (2012) state that financial markets tend to react negatively to a victory of a Democrat candidate. In contrast, the reaction of the financial markets tends to be positive for a win of a Republican candidate because the Republican party is seen as more in favour of trade. For instance, Republicans normally do not support higher tax rates. However, Santa-Clara & Valkanov (2003) find that stock markets perform better during the Democrat presidency.

Wagner et al. (2018) find that many asset classes such as stocks, bonds and exchange rates experienced significant price movements due to the election of Trump. For example, the stock price of companies with a high level of taxes and companies with large deferred tax liabilities increased after the election since the campaign of Trump promised to lower the corporate tax rate. On the other hand, companies with substantial deferred tax assets experienced a loss. In addition, Selmi & Bouoiyour (2019) study the effect of the election of Donald Trump, but they also study the impact of the inauguration of Trump. They find that different sectors were affected differently by the presidential election of 2016. For example, health care companies experienced a negative abnormal return, whereas companies operating in the defence sector experienced a positive abnormal return after the election results.

1.1 Purpose of the study

The purpose of this study is to investigate how political uncertainty affects the stock market and individual companies. This study aims to answer the question if different

kinds of elections that cause political uncertainty have a distinct influence on the stock market. This research tries to answer whether political uncertainty caused by the election of a Democrat candidate or the election of a Republican candidate affects the stock market and individual companies differently. This study investigates presidential elections in the United States from 2000 to 2020. These events offer an ideal setting to study the effect of political uncertainty on the stock market and companies with different characteristics because these political elections had different characteristics. For instance, the election result of 2016 was a total surprise. Furthermore, this research aims to answer if firm characteristics can explain the reaction to political uncertainty.

1.2 Research hypothesis

This research examines if political uncertainty caused by presidential elections in the United States influence the stock market. The first hypothesis of the study is based on previous literature. For example, Pàstor & Veronesi (2012, 2013) find that political uncertainty affects stock prices negatively. Additionally, Liu et al. (2017) find that the political scandal of Bo Xilai in China caused negative abnormal returns in the Chinese stock market. Therefore, the first hypothesis of this research can be stated in the following way:

H_1: *The U.S presidential elections lead to an increase in political uncertainty that affects the stock market and stock returns negatively.*

The second hypothesis of the research relates to the impact of political uncertainty caused by presidential elections that led to the victory of a specific party. According to Snowberg et al. (2007) and Pàstor & Veronesi (2020), the stock market tends to react positively to the election of a Republican candidate because the Republican party is seen as a better party for the business. Therefore, it is possible that around presidential elections that led to the election of a Republican candidate, political uncertainty did not have

a strong impact on the stock market nor the stock returns. Therefore, the second hypothesis is the following:

H_2: Political uncertainty caused by the presidential elections that led to the election of a Democrat candidate has a more negative impact on the stock market and the stock returns because the Republican party is seen as more favourable for the business.

1.3 Structure of the study

The first section of this study determines the term political uncertainty and how it is measured. The second section of the thesis treats the theoretical framework. The third section shows the findings of previous literature on the effect of political uncertainty. The fourth section focuses on the previous empirical evidence of the impact of U.S. presidential elections on the stock market. The fifth section in this study describes the used data and the methodology. The sixth section of this study presents the empirical results attained by the study. The final section concludes the effect of political uncertainty on the stock market and informs about possible limitations.

2 Political uncertainty

According to Pástor & Veronesi (2013), political uncertainty can be widely defined as the uncertainty about the future actions of the governments. Due to this definition, political uncertainty has many sources. Kelly et al. (2016) find that political uncertainty stems from different kinds of elections such as presidential and national elections, global negotiations, referendums, and policy changes. Pastor & Veronesi (2012) state that the role of government is significant in the financial markets since governments determine the environment for the private sector to function.

Political uncertainty often stems from policy changes. Pástor & Veronesi (2012) study the effect of political uncertainty caused by government policy changes on the stock prices. Governments define the environment where companies function. When governments change their policies, the prices in the financial markets change because the policy change leads to a change in the private sector. They interpret policy changes that cause political uncertainty as actions of the government to change the economic environment. An example of this type of policy change is the change in too-big-to-fail policy when the United States government did not save Lehman Brothers from bankruptcy in 2008.

Pástor & Veronesi (2012) find that uncertainty about government policies consists of two components, and both have a significant effect on stock prices. The first component can be determined as political uncertainty. Political uncertainty is the uncertainty about the possible government policy change. The second component can be specified as impact uncertainty. Impact uncertainty rises when there is uncertainty about the effect of the new policy on the profitability of companies. This means that the uncertainty stems from the uncertainty about the actions of the government and the uncertain impacts of the actions. Governments often replace their policies when current policies are detrimental enough for the profitability of companies. When the policy change results in an unanticipatedly prominent political advantage, policies can be changed even if they were functional in the past. This indicates that policies are often changed during times of unanticipatedly poor profitability. These times can be seen as recessions.

2.1 Economic policy uncertainty index as a measure of political uncertainty

According to Baker et al. (2016), economic uncertainty is often measured by implied volatility. However, recently, new ways to measure economic uncertainty have emerged, but these new measures focus on measuring political uncertainty. These measures are based on the frequency of newspaper articles about policies. Husted et al. (2020) show that an integral pro of a measure based on newspaper articles is that it takes into account more market participants than, for example, implied volatility because not so many market participants take part in the trading of options.

Baker et al. (2016) create a novel index of economic policy uncertainty (EPU) that builds on newspaper coverage frequency. They want to examine the role of political uncertainty by creating an index to measure economic policy uncertainty. They want to determine the uncertainty about the party making the economic policy decision, which actions will be put into force and the timing of the policy actions. Hence, the measurement is based on the rate of occurrence of articles in ten major American newspapers such as Washington Post and Wall Street Journal, including a combination of words of "economic", "uncertain" or "uncertainty" and "Congress", "deficit", "Federal Reserve", "legislation", "reputation or "White House". The index includes both short-term and long-term worries about policy uncertainty.

Baker et al. (2016) construct the economic policy uncertainty index in the following way. The first step is to make newspaper-level series comparable from 1985 to 2009 by using standard deviation as a unit. The second step is to determine the monthly mean of the first step for the top ten newspapers. The last step to form the EPU is to formalize the series of the monthly average of newspaper for the ten newspapers to a mean of hundred from 1985 to 2009. They find that the index jumps up to around many political events such as even presidential elections, the 9/11 attacks and the debate over the debt ceiling in 2011 because these events cause economic uncertainty that is caused by

uncertainties in policies. Additionally, the index has sloped upwards since the 1960s, and there was a dramatic increase in the index in the 1930s. Moreover, the financial crisis of 2008 and the Eurozone debt crisis led to a global rise in political uncertainty, which in turn led to an increase in the index. Furthermore, Baker et al. notice that using newspapers as a measure for policy uncertainty offers excellent opportunities to dig deeper into the past for a better understanding of economic, political, and historical development.
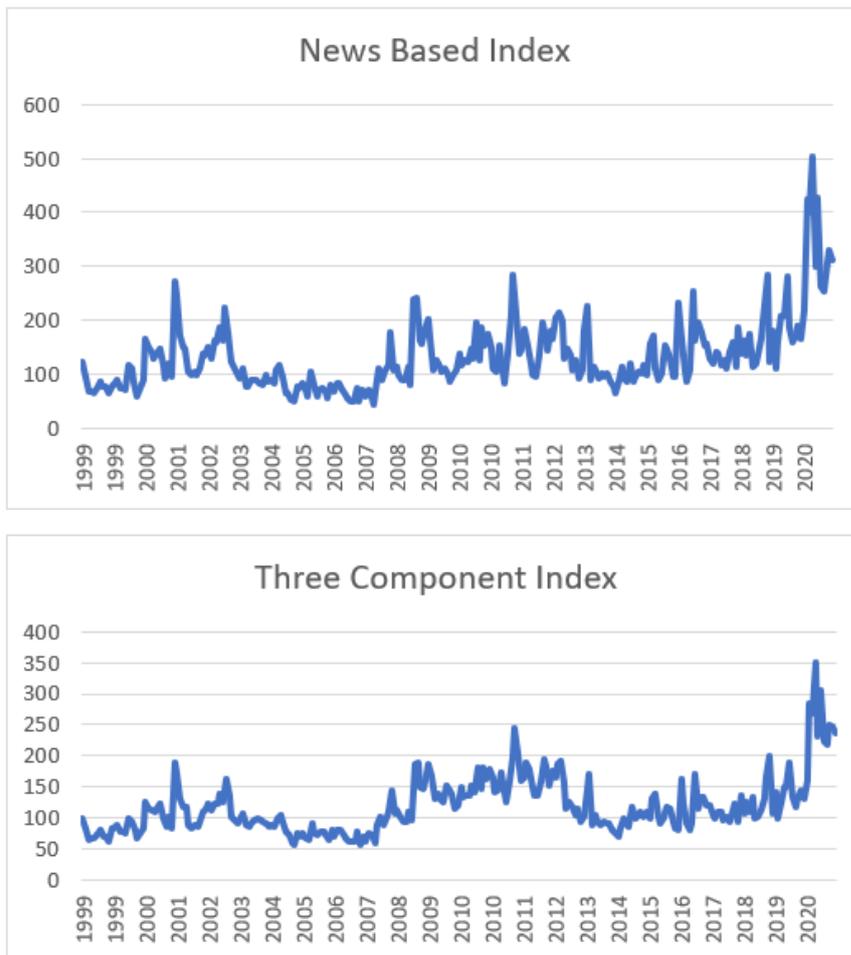
Figure 1. Political uncertainty from 1999 to 2020 (Economic Policy Uncertainty, 2020)

Figure one shows how political uncertainty has evolved throughout time in the United States. In the figure, political uncertainty is based on the article of Baker et al. (2016) and it is measured with the economic policy uncertainty index that is based on the newspaper articles and three-component index that consists of the frequency of newspaper

articles, the number of federal tax code provisions that will be no longer valid in upcoming years and differences in predictions of the economy. The figure shows that the two measures move in the same way but on a different scale. The data for the figure is retrieved from Economic Policy Uncertainty (2020). The figure confirms a significant increase in political uncertainty during the 9/11 attacks, the financial crisis of 2008, the European debt crisis, Brexit and presidential elections in the United States in 2016 and most recently during the global pandemic of Covid-19.

However, Baker et al. (2016) acknowledge that there are possible factors that can invalidate the reliability of their model. These factors are the trustworthiness of the newspapers, preciseness of the newspaper bias and the consistency of the newspapers. Baker et al. have identified these factors, and they have tested the model that it would not be affected by these factors. They point out that the measure of EPU is correlated with other measures of economic uncertainty, and there is also a strong correlation between the index and other measures of policy uncertainty which indicates that the EPU is a valid measure. In addition, both leftist and rightist newspapers cause the index to move, which means that the newspaper's political point of view does not affect the index. Moreover, they want to examine if the computer they employ to find the right articles picks the same articles as humans. To test this, they chose 12,000 articles randomly from big American newspapers for a group of auditors to evaluate if the reports meet the criteria of economic uncertainty. They find that there is a strong relationship between the index produced by the auditors and the index produced by the computer.

In order to address the problem that economic situations affect policies and that policies have high profitability of being a forward-looking, Baker et al. (2016) use micro-and macroeconomic approaches. The micro-level approach is used to examine what is the effect of the increase in political uncertainty at the firm level. It also helps to recognise differences at the company level in specific policies that primarily consist of policies about the buys of the government. They conduct a company-level regression that shows that stock prices of companies that are more sensitive to government buys have higher volatilities

when there is a high level of political uncertainty. Additionally, these companies also suffer from low levels of investments and employment growth. Baker et al. also discover that companies that operate in defence, health care and financial sectors are very sensitive to policy changes in their field. The results of Baker et al. imply that policy uncertainty has a causal effect on investments and employment in sectors that depend on government spending and in sectors that are sensitive to regulatory changes. Nevertheless, they find that the VIX index is the best indicator for 30-day implied volatility for an average company, but the EPU index can be used as a supplemental measure of a 30-day implied volatility for companies that operate in sectors that have significant exposure to government spendings such as health care and defence.

However, Baker et al. (2016) note that the company-level effect of policy uncertainty does not give enough information about the collective impact of the policy. One reason for this is that the company-level study only takes into account certain sources of policy uncertainty. To acquire information about its collective effect, Baker et al. employ a macro-level approach. For the macro-level approach, they employ a vector autoregressive model that takes advantage of EPU indices constructed for the United States and 12 other countries. They find that in the United States, an increase in the EPU results in a decrease of 6% in gross investments, a 1.1% decrease in industrial production and a 0.35% decrease in employment. The 12 other countries have alike regression result as the United States. Nevertheless, their results do not have evidence of causality, but the results can be interpreted so that sectors that are sensitive to policy changes, such as defence, have an extensive enough impact to affect at the macro level. The results of Baker et al. are in line with the theory that uncertainty shocks have a negative effect on the economy. It is even possible that the increased political uncertainty in Europe and the United States has been detrimental to the performance of the macroeconomy.

2.2 Monetary policy uncertainty index as a measure of political uncertainty

Husted et al. (2020) create a novel measure called a monetary policy uncertainty (MPU) index. Monetary policy changes can also be a source of political uncertainty. The monetary policy uncertainty index is quite similar to the EPU index, but it only measures the uncertainty about monetary policies, whereas EPU measures all types of policy uncertainty. More specifically, the MPU index measures the uncertainty about the policy moves of the Federal Reserve and the uncertainty about the impact of these moves. Often the uncertainty about monetary policies is measured by proxies that are constructed from the financial markets, such as implied volatility, but the monetary policy uncertainty index is built similarly to the economic policy uncertainty index. This means that the index of monetary policy uncertainty is based on news about uncertainty about monetary policy. They search for articles from the Washington Post, Wall Street Journal and New York Times containing combinations of words such as "uncertain", "monetary policy(ies)", and "Federal Reserve". In addition, Husted et al. conduct a similar type of audit test as Baker et al. (2016) to test if the computer picks the same articles as humans. The result of the audit test is that the computer-picked articles have an extremely high correlation with the reports picked by the auditors.

Husted et al. (2020) find that the monetary policy uncertainty index experienced a huge increase in March 2003 around the invasion of Iraq, before the Federal Open Market Committee meeting about the "liftoff uncertainty" in September 2015, during Brexit and around the U.S. presidential election in November 2016. This means that the uncertainty about monetary policies increased during these events. Additionally, Husted et al. examine how the MPU index is reflected in the economy by using company-level data from the United States. They find that an increase in the MPU index leads to a decrease in the investments of companies. This means that there is a negative relation between the MPU index and the investments of companies. Furthermore, the impact of the MPU index on the investment levels of companies lasts for multiple quarters. In addition, they find that the reason that increases in the MPU index lead to postponed investments of

companies is in line with both real options theory which is based on irreversible investments and with the financial frictions channel, which states that costs of financing lead to postponed investments.

Moreover, Husted et al. (2020) find evidence that the MPU index might be a better measure of monetary policy uncertainty than traditional ones, such as implied volatility. Since the MPU index takes into account more households than implied volatility which only takes into account households that take part in options trading, it is especially beneficial to measure both conventional and unconventional monetary policies.

3 Theoretical framework

This chapter discusses the theoretical background of the effect of political uncertainty on the stock market. The impact of political uncertainty is related to the formation of stock returns since Pàstor & Veronesi (2013) find that political uncertainty requires a risk premium that affects the formation of stock returns. The efficient market hypothesis is related to political uncertainty because events that cause political uncertainty release new information to the stock markets that, in turn, should lead to reactions in the capital markets.

3.1 Formation of stock returns

Fama & French (2004) state that the Capital Asset Pricing Model (CAPM) is the foundation of theory to value assets. It states that the assumed return of security consists of a risk-free rate and a risk premium. Risk premium in CAPM is the multiplication of the beta of security and the return of the market portfolio excess of a risk-free rate. However, CAPM has many simplifying assumptions which can invalidate it, and because of that, its empirical power is weak. Due to the weaknesses of CAPM, factor models have been created to explain the formation of stock returns better. For example, Fama & French (2015) develop a five-factor model by extending their three-factor model created in 1993 because it failed to capture some anomalies in the stock market. The five-factor model explains the formation of the stock prices better than the three-factor model. The three-factor model is an extension of the CAPM because it could not explain all the variation in stock returns. The three-factor model includes the market factor from CAPM, a size factor measured by market capitalization and a factor explaining the connection between stock returns and price ratios such as the book-to-market ratio. The five-factor model includes two additional factors that also seem to explain stock returns. These factors are profitability and investments.

However, Pástor & Veronesi (2013) study the risk premium of political uncertainty that also explains the formation of stock prices. According to them, governments are prompted by both economic and non-economic goals when they are making policy decisions. Governments act as social planners to maximize the welfare of investors, but at the same time, they consider the political costs that are related to the policy decisions. However, the political costs are not known in advance because investors are not able to completely forecast which policy the government will choose. In their model of a government policy decision, which measures how stock prices react to political news, political uncertainty stems from the uncertainty about the political costs. When the policy has lower political costs and the effect of the policy on profitability is expected to be higher or less uncertain compared to other policies, it is more likely to be enforced. Due to this, policy changes usually happen during weaker economic conditions such as recessions because current policy is usually seen as detrimental. During economic downturns, governments create put protection by exchanging unsuccessful policies. Nevertheless, it is possible that the value of put protection created by the governments decreases because it is not known which one of the possible new policies will substitute the current policy.

Pástor & Veronesi (2013) find that there are three types of shocks that determine asset prices. These shocks are capital shock, impact shock and political shock. Capital shock affects the amount of capital which means that it has a direct effect on stock prices. Impact shock guides investors to reconsider their opinions about the impact of the current government policies, which means that it indirectly impacts stock prices. Both shocks are determined by shocks to total capital. Together capital shock and impact shock form the fundamental economic shock. Political shocks form because investors become aware of the political costs related to the possible new policies. These shocks guide investors to reconsider their opinions about the probability of several different government policy options because of the constant stream of political news. The difference between political shock and impact shock is that impact shock is related to the uncertainty about the effect of the ongoing policy on the profitability of companies. In

contrast, political shock is related to uncertainty about future possible government policies.

Pástor & Veronesi (2013) then divide the equity risk premium based on the different shock types. They notice that political shocks impact the equity risk premium even though political shocks are not connected to economic shocks. This means that investors are asking for recompense for the uncertainty that is entirely related to political events. Political events are essential for investors because they shape the opinions of investors about which policy the government will enforce. This shows that there is a political shock component in the equity risk premium which can be referred to as a political risk premium.

However, Pàstor & Veronesi (2013) show that the formation of the equity risk premium depends on the country and the economic conditions. In weaker economies, the political risk gets bigger because it is more probable that governments will change their policies. This means that political shocks affect stock prices more than the other shocks during more inadequate economic conditions since there is more news about possible new policies. In addition, when political signals are more accurate or when there is simply more political uncertainty, the political risk premium increases. Nevertheless, during strong economic conditions such as economic upturns, the political risk premium decreases. Then the impact-shock component becomes big because it is not very probable that governments will change their policies during good financial conditions. This means that impact shock influences stock prices more since there is more news about the ongoing policy. This leads to that the impact shock is not very important during recessions because governments usually change their policies, so its influence on stock prices is only temporary.

Pástor & Veronesi (2013) discover that there are two opposite forces that influence risk premium. The put protection caused by the government's policy change during weaker economic conditions decreases the equity risk premium by making the impact-shock

component non-permanent. This means that the impact of the impact-shock part falls because of the put protection. However, the equity risk premium increases because political uncertainty increases the political-shock component of the equity risk premium. This leads to that the value of the put protection provided by the government is diminished because of political uncertainty. In addition, political risk cannot be wholly diversified away, which can lead to the increased equity risk premium.

Since political uncertainty requires a risk premium, Pàstor & Veronesi (2013) create a novel general equilibrium model to examine the impact of political uncertainty on share prices. More specifically, the model measures the effect of policy change on the profitability of companies. In their model, the profitability of companies acts in accordance with a stochastic process. Current policies have an impact on the mean of the stochastic process of the profitability of companies, but the effect is not known in advance. However, investors and governments become aware of the impact of the policy in a Bayesian way which means that they notice the achieved profitability of the company.

Nevertheless, Pàstor & Veronesi (2013) state that sometimes governments decide to change their policies. These new policies are expected to differ from the old ones, which leads to that market participants assume that the new policies have a dissimilar effect on the profitability of companies, and the level of uncertainty differs during different policy changes. The assumption of heterogeneity of policies is extremely important for their model because policies are often replaced in vulnerable economic situations, which means that detrimental policies are changed to new ones in weak economic conditions rather than replaced by similar ones. In addition, during policy changes, the expectations of market participants become different, which means that new expectations replace old ones. Moreover, they use the economic policy uncertainty index to measure political uncertainty. This leads to that their model is affected by political new.

$$dΠ_t^i = (μ + g_t)dt + σdZ_t + σ_1 dZ_t^i \qquad (1)$$

Where $d\Pi_t^i$ = profitability of company i, μ, σ, σ_1 = observable constants, Z_t = Brownian motion, Z_t^i = independent Brownian motion specific to company i and g_t = the effect of the current policy on the mean profitability process of companies

The model of Pàstor & Veronesi (2013) shows that the profitability of companies is constructed according to the first equation. In their model, the economy has a limited time horizon and companies are financed fully with equity. One of the most essential terms of the equation is g_t because it represents the effect of the current policy on the profitability of companies. If the policy of the government is seen as neutral, g_t is equal to zero. In addition, it stays the same if the policy is not changed. This means that it is possible for g_t only to change if the government makes a policy change. When the change is taken, it leads to a change in the profitability of companies, but the value of g_t is not known, which means that there is unpredictability in the effect of government policies.

3.2 Efficient market hypothesis and political uncertainty

The efficient market hypothesis is the basis of finance, and political uncertainty is also related to it. According to Fama (1991), for the market to be efficient, prices must completely reflect all accessible information. Malkiel & Fama (1970) state that market efficiency is vital for the functioning of capital markets since its main task is to distribute available funds efficiently. They state that adequate circumstances for capital market efficiency are that there are no transaction costs, all available information is accessible for all market participants for free, and all participants see the indications about current information of stock prices in the same way. However, the market in practice has frictions which can imply that not all information can be accessed freely and that not all investors see the information in the same way. However, markets do not need to meet all circumstances to be efficient. For example, markets can be efficient even if not all markets participants have access to all information, but then a large enough number of market participants must be able to access all information for markets to be efficient.

According to Fama (1991), market efficiency has three forms of efficiency. The markets can have a weak, semi-strong or strong form of efficiency. In the weak state of market efficiency, information is derived from historical prices in the market. According to Malkiel & Fama (1970), it tests how well the past prices predict future returns, but currently, it also includes growing work on forecasting returns with different variables such as dividend yields. Malkiel & Fama find that the weak-form test strongly supports the efficient market model in many studies, and there is not much evidence against the fair game and random walk model. The fair game model tests if the market prices fully reflect available information, and it shows if the market is in equilibrium. The random walk model is an extension of the fair game model, and it states that the current prices indicate all available information completely and that successive price changes require to be independent of each other and solid price changes form a similar distribution. However, Fama notices that recent studies have found that daily and weekly returns are possible to predict from, for example, past returns and dividend yields. This means that the old market efficiency-constant return model is refused, but in the long term, past returns are not able to predict future returns.

Malkiel & Fama (1970) show that prices efficiently adjust to publicly available information in the semi-strong form of market efficiency. For example, earnings announcements are publicly available information. The semi-strong-form test examines how quickly security prices reflect public information announcements, and it is reviewed by event studies. Out of all the market efficiency forms, the semi-strong supports the market efficiency the most even though some anomalies have been found. Particularly daily returns support the market efficiency model because, on average, security prices adapt rapidly to firm-specific information.

Malkiel & Fama (1970) state that market participants have a dominating admission to any information that is pertinent for the establishment of prices in the strong form of market efficiency. In the strong form, all market participants can access private information. Malkiel & Fama show that clearly, the strong-form test is not a precise

characterization of the market in practice because only corporate insiders and specialists have access to insider information. Furthermore, Fama (1990) states that in the markets, there are positive information and trading costs which means that it is impossible for the radical efficient market hypothesis to be true. However, this is not the biggest problem of market efficiency since the joint hypothesis poses more significant problems. The joint hypothesis problem means that the efficient market model cannot be examined on its own. It is possible to investigate market efficiency only together with other equilibrium models like CAPM. Nevertheless, Malkiel & Fama point out that the strong-form test model should be used as a point of reference to interpret market efficiency. To conclude, the market is efficient, and the evidence on the side of market efficiency is vast. Fama points out that regardless of some threats against market efficiency, it is enough to assume that the market is efficient.

Pantzalis et al. (2000) state that a requirement for market efficiency is informational efficiency which means that financial markets incorporate new information efficiently into prices. This means that markets should already reflect information about political news and trends before the political uncertainty is disappeared. Pantzalis et al. find that political occurrences have a massive impact on financial markets. They cause reactions in the financial markets because market participants reconsider their suppositions after the uncertainty has vanished. The reason for the reactions in the financial markets is that there is new information about political resolutions that can have an effect on the fiscal and monetary policy of a country. The political uncertainty can disappear even before the elections, and then market movements should be positive before the elections. However, if the uncertainty persists when there is no clear winner before the elections, there should be positive returns once the uncertainty is resolved. According to Brown et al. (1988), this is known as an uncertain information hypothesis which means that once the uncertainty disappears from the markets, prices should increase, which is in line with the efficient market hypothesis.

Pantzalis et al. (2000) use the event study method to study the functioning of different stock indices in 33 different countries nearby the elections throughout the period of 1974–1995. They discover that the indices seem to experience positive abnormal returns throughout two weeks before the election week. The positive abnormal return is larger in countries where there is less liberty and elections where the opposition wins and when the elections are held in advance. This means that the elections with more uncertain outcome cause bigger positive abnormal returns than an election with a sure outcome. The reason for this reaction is that during the election with the uncertain outcome, the amount of vanished uncertainty is larger than during elections with a confident outcome. Therefore, the result of Pantzalis et al. is in line with the uncertain information hypothesis.

However, recent studies have contradictory results compared to Pantzalis et al. (2000). For example, Pàstor & Veronesi (2012) find that after a policy change that led to increased political uncertainty, stock prices decrease. Additionally, Pàstor & Veronesi (2013) have similar results. This is not necessarily evidence against market efficiency because Pàstor & Veronesi (2012) find that two components affect the stock prices after policy announcement: cash flow and discount rate effect. The cash flow effect has a positive impact on the stock prices because policies are only changed when old ones are detrimental to the profitability of companies. Nevertheless, the discount rate effect has a negative impact on the stock prices because the effect of the policy change is uncertain. This leads to an increase in discount rates which causes stock prices to fall. The impact of the discount rate effect is larger, which causes stock prices to fall. This means that after elections and policy changes, the political uncertainty is not yet disappeared, which causes the stock prices to decline.

4   Prior empirical evidence

Based on the previous literature, it can be said that political uncertainty impacts financial markets, and it even seems to have an impact on the daily lives of people. Previous literature shows that the effect of political uncertainty tends to be negative. It leads to a decrease in stock prices because investors ask for a risk premium for political uncertainty. This risk premium is priced in the markets because options that live through a political event are more expensive than similar options that do not live through a political event. Political uncertainty can stem from many sources, but broadly it can be interpreted as uncertainty about future policies of governments. There is often uncertainty about future policies around political events such as elections and summits. This means that these political events cause political uncertainty, which in turn causes stock prices to decrease. Since political uncertainty naturally increases the level of uncertainty about the future, companies tend to delay their investments during the times of political uncertainty. Even households seem to hinder their consumption and prefer to save when political uncertainty is heightened.

4.1   Political uncertainty in the stock markets

Pástor & Veronesi (2012) find that the policy change announcement has two effects on stock prices: the cash flow effect and the discount rate effect. The policy change will lead to increased profitability for companies because governments change their policies when their current policy is detrimental to the profitability of companies or when the new policy will lead to a huge political advantage that was not anticipated. This leads to a rise in stock prices. This is known as the cash flow effect. However, since the impact of the policy change is uncertain, the discount rate rises. Due to the increased discount rate, stock prices fall. This is known as the discount rate effect. The discount rate effect has a stronger influence on stock prices than the cash flow effect. This leads to that when a new policy is introduced, stock prices drop.

Nevertheless, Pástor & Veronesi (2012) discover that only when the previous policy is seen as detrimental enough for profitability the stock prices rise. Usually, positive returns caused by the introduction of a new policy are only small because markets were already expecting them, so the effect of the new policy is already incorporated into prices before the introduction. On the other hand, negative returns caused by the introduction of new policies tend to be bigger because markets are not expecting them as much as in a situation in which the returns are positive. Pástor & Veronesi find that the probability distribution of stock returns is left-skewed, and it has a mean below zero. This leads to that when a new policy is introduced, the expected value of stock returns is negative. The expected value of stock returns becomes even more negative when there is more uncertainty about government policies.

Additionally, Pástor & Veronesi (2012) discover that the effect of the policy introduction depends on the general economic conditions. After a short and shallow economic downturn, the effect of the introduction of a new policy is negative, but after a long and deep economic downturn, the effect of the introduction of a new policy might be favourable. However, during long and deep recessions, policy changes are often expected. Because of this, positive returns are often small. Moreover, before the introduction of a new policy, there is uncertainty about whether the government will change its policy. When the policy change happens, stock prices drop, but on the other hand, if the policy is not changed, the stock prices rise. The price drop after the introduction of a new policy reveals that there is a risk premium for holding stocks during times of political uncertainty that is caused by policy changes. In addition, companies with higher exposure to policy uncertainty have higher risk premiums, leading to higher expected returns.

Liu et al. (2017) examine the Bo Xilai scandal in China in 2012. The scandal was the largest danger to the political stability in China since the economic reform in 1978. Bo Xilai scandal was a complex political scandal in which a high-ranking Chinese politician was accused of corruption, bribery, and abuse of power. In addition, he was aware that his wife had murdered a British businessman. The scandal ultimately led to the dismissal of Bo

Xilai from the Communist party and the imprisonment of Xilai. The Bo Xilai scandal in 2012 was a completely unpredictable political event. Because of this, the scandal is an ideal context to examine the impact of political uncertainty on asset prices because the scandal led to an immediate surge in political uncertainty.

Liu et al. (2017) study the A-shares that are traded on Shanghai and Shenzhen Stock Exchanges. They find that the price of these shares decreased around the scandal. On average, the three-day cumulative raw return decreased by 5.027% because of the rise in political uncertainty. Additionally, companies that have more political connections are more sensitive to political uncertainty. They find that companies with their headquarter in a province with a larger share of state-owned enterprise expenses than total expenses are more affected by policy changes. The decrease in stock prices is caused by an increase in discount rates rather than a reduction in expected cash flows since stock volatility for all companies that are sensitive to policy changes rises due to increased political uncertainty. This means that there is most likely a political risk that is priced. Their results support the findings of Pástor & Veronesi (2012, 2013).

One of the biggest political events in the 2010s was Brexit. According to Menon & Salter (2016), Brexit refers to the referendum of Great Britain about the membership of the European Union in June 2016 that unexpectedly led to the resignation of Great Britain from the European Union. This means that Great Britain is the first country to decide to leave the European Union. Menon & Salter state that the result of the referendum illustrates that social division, affluence, tuition, and geography still divides society in Great Britain. According to Menon & Salter, the instant effect of Brexit was the resignation of Prime Minister David Cameron. In addition, many ministers from the Labour party resigned due to the lack of trust towards Jeremy Corbyn.

Davies & Studnicka (2018) find that the referendum result was a surprise to the market even though the date was known. However, the outcome of the referendum was almost impossible to predict. According to them, after the announcement of the referendum

result, most companies experienced a negative return, but they find that the change in stock prices reflected the expectations of investors. The FTSE 350 index that represents the 350 biggest companies that are traded in the London Stock Exchange experienced a drop of 7% after the referendum, but the index recovered in a week, and it returned to its normal level. Moreover, $2.8 trillion disappeared from the global market during the two days after the referendum results. This means that the information about the referendum result was incorporated into the stock prices in two days. Additionally, the value of the British pound decreased compared to other currencies after the referendum. Davies & Studnicka state that studying stock price changes sheds light on the expectations of investors about the impact of Brexit and how investors expect British companies to perform compared to other companies.

Hill et al. (2019) study how political uncertainty caused by Brexit affects different companies in Great Britain. They study Brexit because it offers a unique setting to examine political uncertainty since it involves several government policies, not only chosen policies. Due to this, Brexit can have a major influence on the business environment. They use data from the stock market before the referendum and after the referendum result announcement. They find that companies are exposed to Brexit in different ways. Interestingly, the political uncertainty caused by Brexit has a smaller effect on companies that are more internationalized. The reason for their result is that companies that internationalize can diversify away the domestic risk because risks in different countries are not perfectly correlated. This is in line with the advantages of internationalization. They also find that the result of internationalized companies is not caused by the weakening of the British pound after the referendum. However, if the international operations of the company are in other European countries, the internationalization benefits decrease because the European countries are also affected by Brexit.

However, Davies & Studnicka (2018) find that companies with complex international value chains experienced inferior performance after the referendum results because investors were the most worried about these companies since possible trade barriers

increased the riskiness of these companies. Especially companies with international value chains in the European Union experience inferior performance. They find that the actual return of these companies is 12.1% smaller than the expected return. In addition, the market reaction of companies with intricate international value chains persists. This means that even though the market recovered from Brexit, companies with international value chains did not recover in the same way. Companies that relied on imported intermediates experienced inferior performance compared to the whole market. Moreover, Davies & Studnicka study the German stock market. They find that the German market experienced a similar drop compared to the British stock market. However, the international value chains did not explain the drop because German companies do not have international value chains in Great Britain, and Brexit does not influence trade policies between the remaining EU countries.

Hill et al. (2019) also find that growth companies seem to be more affected by Brexit. Growth companies tend to need continuous investments in physical and human capital in order to take advantage of growth opportunities, but during times of increased political uncertainty, companies invest less and reduce employment. Because of this growth, companies tend to be more affected by Brexit. Moreover, the control variables of their study show that larger companies are more impacted by Brexit, but on the other hand, companies with higher profitability are impacted less. However, Davies & Studnicka (2018) find that the effect of Brexit on larger companies is not as strong as for the whole market because the market did not expect them to be so affected by Brexit.

In addition, Hill et al. (2019) identify the effect of Brexit in different sectors. They find that uncertainty affects the financial and consumer sector the most. The effect of Brexit is the most negative to these sectors. The reason why financial companies were negatively affected by Brexit is that weaker economic conditions caused by Brexit led to decreased profitability of financial companies. Financial companies were also concerned the most because of the uncertainty about the agreements about free access to foreign markets. Giavazzi & McMahon (2012) find that households decrease their consumption

and increase their saving during times of political uncertainty. This is why the consumer sector was one of the most negatively affected sectors Brexit. On the other hand, basic materials and health care sectors were the least affected by Brexit. The reason for this is that companies in these sectors usually operate in several countries, so they are not so affected by changes in the national business environment.

Several studies, such as Pástor & Veronesi (2012, 2013), have found that political uncertainty results in a higher level of volatility and correlations between stocks. Pástor & Veronesi (2013) find that generally, stocks are more volatile during economic downturns. Correlations between stocks also increase during economic downturns. However, volatilities and correlations increase in the stock market when the policies of a possible new government are seen as more diverse compared to the previous policies. In addition, stock prices become more volatile and correlated when the government is able to make policy changes. The capacity to change policies can lead to an increase or a decrease in stock prices. However, the capacity to transform policies has a positive effect on stock prices when the economic conditions are terrible, but the effect of the government's ability to make policy changes is negative during normal or below-average economic conditions.

Goodell & Vähämaa (2013) also study the effect of political uncertainty on stock market volatility during the presidential elections in the United States. They interpret the stock market volatility as the volatility in the S&P 500, and it is measured by the VIX. They find that the VIX increases by about 0.6% when the probability of the election of the final winner rises by 1%. The volatility of the stock market rises when the result of the election becomes surer. This implies that the election uncertainty has no effect on the stock market volatility because its effect is statistically insignificant. In other words, the market volatility is driven by changes in the probability of the victory of a single presidential candidate. The stock market volatility increases due to the change in the likelihood of the final winner because the change in the probability of the final winner can be considered as new and surprising information. It might be surprising that the increase in the

likelihood of the election of the final winner results in an increased stock market volatility. However, the reason for that is that surprising changes in the election probabilities of the final winner can cause uncertainty about the macroeconomic policies in the future. These policies can impact the stock market, which in turn leads to that even though the uncertainty about the next president diminishes, the stock market volatility might grow. The results of Goodell & Vähämaa imply that presidential elections cause increased market volatility when investors establish and reconsider their expectations about the macroeconomic policies of the future government.

4.2   Political uncertainty in the option markets

Kelly et al. (2016) study how political uncertainty that is risen due to national elections and global summits affects option markets because option markets give insight into the pricing of political uncertainty. According to Kelly et al., options fit well to study political uncertainty for two reasons. The first one is that options have short maturities, and it is easy to find options that live through a political event. Secondly, options that live through a political event can be used as a hedge against risks related to political events. In addition, because options have short maturities, usually the political event is the most important event during their life, so the price of the option reflects the value of the defence as opposed to the political risk. Moreover, differences in exercise prices make it possible to investigate different types of threats, such as the tail risk that arise due to political events.

Kelly et al. (2016) study the political uncertainty around elections and summits because these events are ideal for their research since they usually lead to major political changes. In addition, the dates of these events are known early enough so that it is possible to calculate the prices of options that live through this type of political event. Due to this, political events like global summits and national elections are an external source of deviation in political uncertainty.

Kelly et al. (2016) use the model of Pastor & Veronesi (2013) with small changes. They change the uncertainty about government policies to the uncertainty about who will be elected. There are three types of risks that are related to political uncertainty: price risk, tail risk and variance risk. Price risk is caused by the possibility that stock prices might fall. Tail risk rises from the potential that the decrease in stock prices might be extensive. Variance risk is caused by the possibility that the volatility of returns increases. These risks are already correlated in the model of Pastor & Veronesi because a risky policy can lead to increased volatility and that in turn can lead to decreased stock prices.

According to Kelly et al. (2016), options can be used as a hedge against these three types of risks. Three variables: the implied volatility of an at-the-money option, the slope of the relationship between implied volatility and moneyness, and the variance risk premium show the worth of the defence that is created with options against the three types of risks related to political uncertainty. The model of Kelly et al. suggests that the three market variables of options should be larger for options that live through a political event compared to similar options that do not live through one. Additionally, all three option market variables should be negatively correlated with economic conditions because the current government is not very likely to be re-elected in a weaker economy which leads to uncertainty about the new government, which in turn leads to increased political uncertainty. Options can be used to hedge against disadvantageous policy changes or unwanted election results. Hence the value of the option protection should be higher in weaker economies because the undesirable outcome is more likely to appear.

Kelly et al. (2016) find that all three option market variables have positive unconditional means. The average implied volatility is 1.43% per year. However, one-month at-the-money put options whose lives span political events tend to be 5.1% more expensive than those that do not live through a political event. Implied volatilities are also abnormally high before key political events such as the presidential elections in the United States in 2008 and the national elections in Greece in 2012. Additionally, the average

variance risk premium is 0.0107 per year, but the insurance against variance risk is more expensive before political events.

Moreover, Kelly et al. (2016) find that in weaker economic situations, all option market variables are inclined to have bigger values. This means that the hedge provided by options against the three market variables is more valuable when the economy is weaker. Kelly et al. use a one-month at-the-money option as an example to highlight the price increase. During weaker economy at-the-money options with a maturity of one month that yield protection against political events tends to be 8% more expensive, whereas the prices of options that provide protection against political events in the more robust economy are only 1% higher. They also find that when the outcome of the election is more uncertain, the option market variables of implied volatility and variance risk premium are usually larger. However, their result for the slope of the relationship between implied volatility and moneyness is insignificant. This means that when the result is more uncertain, the worth of the hedge provided by options rises due to increased price and variance risk. This means that the predictions of the model were correct.

Kelly et al. (2016) also find evidence that political uncertainty in one country can also affect other countries. This is known as the spillover effect of political uncertainty. The spillover effect is stronger in weaker economies, and it has a positive correlation with the foreign exchange option effect. The result of Kelly et al. proves that political risk is evaluated in the option markets, and the price of the option protection is higher in poorer economic conditions and during increased uncertainty about the election outcome. Their findings are in line with the theory.

4.3 Political uncertainty and investments

Julio & Yook (2012) examine the effect of political uncertainty on the investment behaviour of companies during national elections in multiple countries. The investment decisions of companies are affected by elections since the results of the election can change

the regulation of companies. National elections cause brief surges in political uncertainty, which in turn can lead to reduced investment expenses of companies. Julio & Yook state that it is hard to separate the effect of political uncertainty from the general economic conditions. However, they are able to separate political uncertainty from economic growth by studying reoccurring elections in different countries.

Julio & Yook (2012) find that companies decrease investment expenses by 4.8% prior to national elections compared to years without elections. This means that political uncertainty caused by national elections creates investment cycles for companies. Companies postpone their investment decisions during national elections because the election result might hurt the company. This indicates that the option value of waiting to invest increases due to political uncertainty. Additionally, the decrease in investment expenses is larger in countries that do not have a reliable government. The decline in investment expenses is smaller if the election has a clear winner compared to elections with an even outcome. However, after the elections, there is a small surge in investments since the political uncertainty has vanished, but the increase in investment is smaller than the decrease before the elections. Moreover, prior to elections, there is an increase in cash holdings of companies that is about the same as the decrease in investment expenses. This implies that the amount of money that would have been invested normally is held as cash until the political uncertainty caused by elections has disappeared.

Jens (2017) studies the relationship between political uncertainty and investments of companies during the gubernatorial elections in the United States. The source of political uncertainty in her study is the gubernatorial elections. She finds that if there is a gubernatorial election during the following quarter in the home state of the company's headquarters, the company reduces investments by 4.9% compared to companies that have their headquarters in other states. Companies that are more sensitive to changes in state politics, such as geographically focused companies, reduce their investment expenses even more. In addition, companies that are situated in states with upcoming

gubernatorial elections have higher volatility. This implies that the decrease in investment expenses of companies is linked to an increase in uncertainty at the company level.

Jens (2017) also finds that companies increase their investments after the gubernatorial elections. However, the level of increase depends on whether the current governor is re-elected or if a new governor is elected. If the current governor is re-elected, then the gain in investments corresponds to the decrease in investments prior to elections because the political uncertainty disappears since the policies of the governor are already known. However, if the elected governor is new, then the increase in investments of companies after the elections is smaller than the decrease in investments prior to the elections since there is still some uncertainty about the future policies. In addition, Jens finds that companies are less likely to issue equity during the election years, but there is about a 10% rise in seasoned equity offerings during the year after the elections. Companies also postpone debt issuances for new investments before the elections, but they still issue debt to replace old debts. The results of Jens show that companies in the United States are continuously impacted by political uncertainty rather than the general economic uncertainty.

Giavazzi & McMahon (2012) study how households react to increased political uncertainty. They research the German general elections in 1998 that was the first elections of Germany after the second world war. Their measure of political uncertainty is determined by how many people are uncertain about the economic conditions of their country in the future. They find that the political uncertainty increased sharply before the general election in 1998 even though people were expecting improvements in economic conditions and employment. This implies that the uncertainty about the future economic conditions was caused by the elections.

Giavazzi & McMahon (2012) find that households increase saving during times of political uncertainty. Previously the average savings rate in Germany in 1998 was 8.9%, but in the year 2000, the average savings rate had risen to 15.9%. This is a natural response

since savings increase when the uncertainty about the future path of income increases. Households have two ways to increase their savings. The first one is to consume less and the second one is to work more by taking advantage of part-time employment. Giavazzi & McMahon notice that households take advantage of the part-time margin. This means that a person who used to work 10 hours per week increases their working hours to 19 hours per week. In addition, they find that the increased savings caused by the risen political uncertainty played a significant role in the slowdown of the German economy in the 2000s.

5 The presidential elections in the United States

The research focuses on the presidential elections from 2000 to 2020. This period of presidential elections includes several different types of elections. According to Knight (2006), republican candidate George W. Bush was elected for the first time in 2000 and 2016; according to Wagner et al. (2018), Republican candidate Donald Trump was elected for the first time. This means that the period includes two elections of Republican candidates for the first time. Additionally, in 2008 Democrat candidate Barack Obama was elected for the first time, and in 2020 Democrat candidate Joe Biden was elected for the first time, which means that the examined period also includes two elections of Democrat candidates for the first term. Furthermore, the period includes two re-elections; in 2004, George W. Bush was re-elected, and in 2012 Barack Obama was also re-elected. Pástor & Veronesi (2013) define that political uncertainty is uncertainty about the future actions of the government. Presidential elections are political events that fill the definition made by Pástor & Veronesi since there is uncertainty about the future actions of the governments.

Many studies, such as Knight (2006) and Wagner et al., notice that presidential elections cause reactions in the financial market. According to Pantzalis et al. (2000), the reason why political events such as presidential elections cause reactions in the financial markets is that market participants reconsider their suppositions after the election results because there is new information on the markets. Positive news cause positive reactions, and negative news cause negative reactions to the financial markets.

5.1 Effect of U.S. presidential election on the stock market

According to Santa-Clara & Valkanov (2003), stock markets tend to perform better under a Democrat president than under a Republican president. They find that the difference in mean excess returns of the CRSP index excluding the risk-free rate is annually 9%. During a Democrat president, the CRSP index earns on average 11% more than the risk-free

rate, whereas, during a Republican president, the index earns on average 2% more than the risk-free rate. Moreover, Pàstor & Veronesi (2020) find that the gap between returns under different presidencies has gotten larger since 1999. They discover that during 1999—2015 the stock market experienced 17.4% higher annual returns under a Democrat president. The reason for this phenomenon is that generally, Democrat candidates are elected when returns are assumed to be high in the future, whereas candidates representing the Republican party are normally elected when the expected returns in the future are low. This is caused by that people tend to vote for a Democrat candidate when the level of risk aversion is high, but on the other hand, Republican candidates are elected when risk aversion is low. The high level of risk aversion during the elections of a Democrat candidate leads to a higher equity risk premium, leading to higher expected returns. Furthermore, the lower level of risk aversion during the elections of a Republican candidate results in a lower equity risk premium which causes lower returns under a Republican presidency. However, Santa-Clara & Valkonov do not discover evidence that presidential elections cause reactions in the financial markets.

Regardless of the result of Santa-Clara & Valkanov (2003) more recent studies have found contradictory evidence. Snowberg et al. (2007) study presidential elections from 1880 to 2004 and find that the election of a Republican candidate leads to an increase of 2—3% in stock prices. This is known as the partisan effect. The increase is even bigger when the election of a Republican candidate was surprising. The contradiction in the reaction of financial markets after the election and the performance of the market during a Democrat presidency can be explained by several factors. Firstly, past Democrat presidents imposed advantageous policies for the economy, but market participants have ignored it. Secondly, even though prior Democrat presidents have imposed profitable policies, market participants assume that future Democrat presidents will not do so. Moreover, Ejara et al. (2012) state that normally, financial markets react positively to a victory of a Republican candidate and negatively to a triumph of a Democrat candidate because the Republican party is seen as more in favour of trade. They find that the stock prices dropped the more popular Barack Obama became in 2008. Pàstor & Veronesi (2020)

receive similar results that stock markets tend to react positively to the election of a Republican candidate because the Republican party prefers lower tax rates which is beneficial for investors. They find that the election of a Republican candidate causes an announcement return of 1.57%, but the election of a Democrat candidate leads to an announcement return of -1.42%.

Knight (2006) studies the presidential election of the United States in 2000. The purpose of his study is to discover if policy plans are incorporated into equity prices by examining reactions of different types of companies' stocks. The sample of the study consists of 70 politically reactive companies. The companies are favoured by one of the candidates. The policy plans of Bush favour 41 of the companies, and 29 companies are favoured by the policy objectives of Gore. The election of 2000 led to the election of George W. Bush. Knight finds that the companies that are preferred by the policies of Bush are 3% more valuable. However, the companies that are preferred by the policies of Gore are 6% less valuable. This implies that when using daily data, the stock returns have a difference of 9% that is statistically significant.

Knight (2006) notices that when using weekly returns, the predictions get even larger and the difference in returns turns to 16%. Nevertheless, the most reactive sectors have large differences even when measured by daily returns. For example, under the government of Bush, tobacco companies are 13% more valuable because they are preferred by the policies of Bush. On the other hand, unconventional energy companies are 16% less valuable because they are not favoured by the policy objectives of Bush. Additionally, the price of stocks of the companies that are preferred by the policy plans of Bush increases after the election of George Bush. For example, the price of Pfizer increased by 4.1%, the price of Exxon increased by 1.3%, and the price of Philip Morris increased by 6.5%. This confirms that policy platforms are incorporated into equity prices. The results of Knight show that the stock prices of companies that are preferred by the policies of the elected candidate perform better after the elections. Moreover, the results show

that stock prices incorporate information about policies already during the election process.

The result of the study of Knight (2006) shows that the stock markets seem to be dependent on elections. Because of this, investors can buy stocks to protect themselves from the wealth risk that is emerged due to different wealth distribution of policy programmes. This means that during the presidential elections of the United States in 2000, well off investors could have bought stocks that were preferred by the policy platforms of Gore as a protection against the victory of Gore. Bush was favoured by well off investors since he wanted to decrease the income tax for the wealthiest.

5.2 The election of Donald Trump

Wagner et al. (2018) state that the Americans voted the Republican candidate Donald Trump to become the President of the United States on November 8, 2016. The result of the election was a surprise to most people. According to New York Times (2017), Trump received 304 votes from the electors, so he was able to beat his more experienced Democrat opponent Hillary Clinton even though throughout the campaigning, it seemed that Clinton enjoyed wider support. Clinton only received 232 votes from the electors, even though she was able to get more votes from the voters. She received 48% of the votes, whereas Trump received only 45.9% of the votes.

According to Mutz (2018), often, the victory of Donald Trump is seen as a result of that some Americans felt that they were economically left behind because they were unemployed, or their salaries did not increase. However, Mutz finds that the financial well-being of Americans did not affect the candidate decision. Moreover, this statement does not make sense because Trump was elected during an economic recovery. Alternatively, the real reason for the popularity of Trump is that the opinions of Americans about the global superiority of the United States were closer to the Republican party. Additionally, one main reason for the victory of Trump was that for the first time white Americans

were becoming the minority in the United States. Nevertheless, this does not mean that becoming a minority race would lead to a decrease in their position, but it had a symbolical meaning. This means that the threat to lose their position as the most economically developed race caused a defence reaction that led to the voting of Donald Trump. Because of this, Mutz finds that white people and men were more probable to vote for Trump.

Wagner et al. (2018) study how the stock prices reacted to the election of Donald Trump. One of the main agendas of Trump's presidential campaign was to cut corporate tax rates. He also wanted to enforce more restrictive trade policies. Trump wanted to reduce the corporate tax rate from 35% to 15%. In addition, he wanted to add a 10% tax for one-time withdrawals from corporate cash deposited abroad. Wagner et al. examine the performance of Russell 3000 stocks and how the performance differs for companies with different tax-related dimensions. They want to discover who benefited the most from the election of Trump.

Wagner et al. (2018) find that the election of Trump caused different asset prices such as stocks, bonds, and exchange rates to move significantly. The stock price of companies with high tax charges and companies with large deferred tax liabilities increased. However, the stock price of companies with notable deferred tax assets arising from net operating loss carryforwards decreased. This shows that the major cut in corporate taxes promised by Trump had an influence on the stock returns. In addition, companies focusing on domestic markets experienced better performance compared to companies that were internationally focused. This indicates that markets expected that the future policies of the government would be harmful to international companies. Investors were probably afraid of possible trade barriers and disadvantageous tax policies for non-domestic income. They also find that companies that had a lot of leverage and interest expenses experienced inferior performance. The results of Wagner et al. are in line with the results of Knight (2006), which implies that companies that are in line with the

policies of the elected candidate react positively to election results. Moreover, the results of Wagner et al. are robust, and they hold for all forms of data.

Additionally, Wagner et al. (2018) study how quickly the market responded to the information. The market had the quickest response to the information about the deferred tax liabilities because during the first trading day after the election of Trump 80% of the total impact had appeared. The market had the second quickest reaction to the deferred tax assets. However, the reaction of the market to more complex issues was slower because the consequences of these issues were harder to estimate. For example, the reaction of the markets was moderate to the information about the impact of leverage, interest expenses and international orientation. During the first trading day, less than 30% of their total impact had appeared. This implies that public information does not incorporate into prices immediately. The market also recovered the quickest from the reaction to the issues it reacted the fastest. This means that the stock prices of companies with deferred tax liabilities and the stock price of companies with deferred tax assets returned fastest back to their normal level.

Brown & Huang (2020) study how the political access of companies affected their performance during the presidential elections in 2016. Political access can be seen as access to political figures that are in the decision-making process. However, in their study, they determine political access as meetings between a representative of the top management of an S&P 1500 company and an officer that has a high position in the federal government. Political access can be vital for companies because governments are in charge of the regulation, and they also act as clients, investors and collaborators in the private sector. It can even lead to a competitive advantage for companies. They find that political access leads to positive cumulative abnormal returns. This means that, on average, during the 12 days around the meeting, the company experienced a cumulative abnormal return of 0.375%. This result is mainly caused by the companies that took more part in the campaign of Barack Obama than in the campaign of the Republican candidate. These

companies experienced a cumulative abnormal return of 0.512% during the 12 days around the meeting.

However, Brown & Huang (2020) find that during the presidential elections of 2016, the companies that had more access to the government of Obama experienced lower returns compared to similar companies that did not have access to the government of Obama. This means that during three days around the elections, these companies performed worse by 0.7% compared to the companies that did not have ties to the government of Obama. The results of their study prove that political access has an influence on the value of companies.

Selmi & Bouoiyour (2019) study how different sectors were affected by the election results of 2016. They conduct an event study to discover if there were abnormal returns in multiple sectors of the S&P 500 stock index. If the result of the election did not lead to a significant change in the stock price, it means that the expectations of investors remained unchanged because investors were anticipating the result, or the information was not new to the market. On the other hand, if the results were seen as positive, it results in a positive abnormal return, whereas if the results were seen as negative, it leads to a negative abnormal return.

Selmi & Bouiyour (2019) find that different sectors had different reactions to the outcome of the presidential election in 2016. Sectors that experienced negative abnormal returns after the election outcome were consumer essentials, banking, health care, information technology, communication services and utilities because there was uncertainty about the way new laws would be implemented, and the investors expected that the future administration would not be favourable towards them. For example, the health care sector experienced a negative abnormal return of 2.04% over the two days after the election results because Trump had been campaigning against Obamacare, which meant that it seemed very likely that policies in the health care sector would change. However, sectors that had positive abnormal returns were consumer

discretionary, energy, manufacturing, materials, aerospace, and armaments, as well as real estate because the financial markets were expecting that the administration of Trump would be favourable for them. This means that political uncertainty has a significant effect on the risk-return relationship in the financial markets.

According to Selmi & Bouoiyour (2019), Donald Trump swore in on the 20th of January in 2017, which means that Donald Trump became the 45th President of the United States officially. Interestingly they find that the increased political uncertainty did not disappear after the elections. In fact, the political uncertainty was stronger after the inauguration of Donald Trump compared to the days after the election outcome was revealed. The reason for this is that many industries were still affected by the uncertainty about the forthcoming legislation. Most of the sectors that had a positive abnormal return experienced a positive abnormal return after the inauguration and vice versa. However, the energy sector that experienced a positive abnormal return after the election results did not have a significant reaction to the inauguration of Donald Trump during the twenty-day time period after the inauguration. The results of Selmi & Bouoiyour show that the health care sector was the most negatively affected by the inauguration of Donald Trump, whereas the defence sector experienced the biggest positive impact.

Nevertheless, the research of Selmi & Bouoiyour (2019) has some weaknesses. For instance, they use the Capital Asset Pricing Model to measure the expected returns of the different sectors. According to MacKinley (1997), CAPM has many assumptions that do not hold in real life, so that the results of their study might be affected by that.

6 Data & methodology

This part of the research describes the data and methodology that are employed in the research. The study examines the effect of political uncertainty on the stock market by examining presidential elections in the United States from 2000 to 2020. This means that the data of the study consists of stock market data from the United States. The research examines the relationship between political uncertainty and stock market performance, so it is natural to use linear regression to conduct the study.

6.1 Data

This research examines political uncertainty and its effect on the financial markets. The research also aims to examine if the effect of political uncertainty is different during different political events. Therefore, multiple political events must be examined. This research examines presidential elections in the United States from 2000 to 2020. The presidential elections in the United States are chosen to examine because the United States is the leading country and economy of the Western world, and its presidential elections can affect the whole world. Presidential elections from 2000 to 2020 are examined in this research because firstly, these are the most recent presidential elections in the United States, and secondly period from 2000 to 2020 includes very different kinds of elections.

In 2000 the Republican presidential candidate George W. Bush was elected for the first time, but he received fewer votes than his competitor Al Gore, and in 2004, Bush was elected for the second time. In 2008 the Democrat candidate Barack Obama was elected for the first time. Obama was elected again in 2012. The election of 2016 is probably one of the most remembered ones since, surprisingly, the Republican candidate Donald Trump became the 45th president of the United States. The election of 2016 was particularly tight, and Donald Trump received fewer votes than his Democrat opponent Hillary Clinton. In 2020 the Democrat candidate Joe Biden was elected as the next president of

the United States after a long process of calculating votes that lasted for several days. Therefore, the examined period includes elections of candidates from both parties, elections of candidates for the first time and the second time and elections that were tight and not so tight.

To measure the effect of political uncertainty, several companies are examined. Since the research studies the presidential elections of the United States, the data is collected from the U.S. financial markets. This research also examines how companies with certain characteristics are affected by risen political uncertainty. These characteristics are leverage, internationalization, sustainability, and size. Because some of these characteristics, such as internationalization, require careful examination of the companies, the research is limited to companies listed on the Dow Jones Industrial Average index and the forty largest companies that are listed on the Nasdaq 100. Dow Jones Industrial Average consists of the thirty largest listed companies in the United States. The companies on Nasdaq 100 index are the hundred largest companies listed on Nasdaq, which is a common stock exchange for technology companies. However, some companies such as Apple, Microsoft and Intel are included on both indices, so they are considered only once. Moreover, some companies in the sample, such as Tesla, Facebook and Broadcom, are relatively new companies which means that there is no data about them for many elections. Consequently, companies that do not have returns for the presidential elections in 2008 are excluded from the research. Furthermore, foreign companies such as Pinduoduo Inc and ASML Holding that are listed on Nasdaq are excluded because this research examines the effect of internationalization from the point of view of the United States. Therefore, the sample consists of fifty companies. The examined companies can be seen in Appendix 1.

This research uses monthly data from February 2000 to December 2020. This research employs the monthly economic policy uncertainty index to measure the level of political uncertainty and election polls to measure election uncertainty. The data for the returns of examined companies is retrieved from Refinitiv Workspace, and the data is modified

in Microsoft Excel. Finally, the regressions are carried out in RStudio. In addition, the values of the economic policy uncertainty index are gained from the website of Economic Policy Uncertainty Index (2020). Furthermore, the data for macroeconomic variables are retrieved from the Federal Reserve of St. Louis.

6.2 Descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Observations
Change in DJIA	0.534%	0.804%	11.837%	-14.060%	0.042	-0.506	1.202	250
Change in company prices	1.255%	1.191%	109.457%	-57.744%	0.098	0.844	10.162	12,164
Change in election probability	0.000%	0.000%	47.000%	-49.000%	0.099	-0.045	18.202	250
Change in election probability 2000	0.000%	0.000%	47.000%	-47.500%	0.043	-0.179	122.523	250
Change in election probability 2004	0.000%	0.000%	46.500%	-49.000%	0.043	-0.869	122.817	250
Change in election probability 2008	0.000%	0.000%	45.500%	-42.000%	0.039	1.329	123.293	250
Change in election probability 2012	0.000%	0.000%	45.363%	-46.000%	0.041	-0.234	124.191	250
Change in election probability 2016	0.000%	0.000%	40.418%	-41.900%	0.037	-0.601	122.374	250
Change in election probability 2020	0.000%	0.000%	44.223%	-44.050%	0.040	0.066	123.818	250
Change in election probability Dem	0.000%	0.000%	45.500%	-46.000%	0.069	0.208	39.291	250
Change in election probability Rep	0.000%	0.000%	47.000%	-49.000%	0.071	-0.318	39.531	250
Chage in residual EPU	4.962%	-1.736%	192.984%	-60.104%	0.336	2.092	7.959	250
Change in ln industrial production	0.0004	0.001	0.060	-0.136	0.012	-5.545	66.680	250
Change in ln CPI	0.002	0.002	0.014	-0.018	0.003	-1.331	9.356	250
Change in ln M2	0.006	0.005	0.062	-0.005	0.006	5.257	40.150	250
Change in ln Fed Funds rate	-0.017	0.000	0.693	-2.564	0.227	-6.315	66.394	250
Effect of political uncertainty	-0.081	-0.058	0.716	-0.692	0.164	-0.013	2.845	250
Size in millions	49,438	27,278	523,964	26,620	70,938.873	3.699	17.371	292
Leverage	57.939%	57.129%	227.594%	8.247%	0.255	1.146	5.968	292
Sustanability	55.745	61.232	91.583	0.000	23.061	-0.672	-0.226	275
Internationalization	42.955%	43.939%	98.361%	0.000%	0.259	0.076	-0.823	292

Table 1. Descriptive statistics

Table one presents the descriptive statistics of the data for each variable. For the first 16 variables, the data is monthly data from February 2000 to December 2020. However, for the last eight variables, the data is collected only for the presidential election years. Change in DJIA and change in company prices are both monthly percentage changes in the price of the instrument. From the table, it can be seen that, on average, the return on the stock market index and examined companies is positive. Moreover, monthly price changes in the companies seem to have larger movements than the stock market index because the maximum and minimum of the examined companies are more extreme than those of the stock market index. Changes in election probabilities are a monthly unit change in the election polls measuring the probability of the Republican candidate winning the elections. There are also variables for each election separately, and the variable takes a value of zero always when there are no election polls of the particular presidential election the variable is measuring. Additionally, two variables measure the

impact of presidential elections that led to a victory of a specific party, and it follows a similar pattern as the variables for each election. It can be surprising that generally, the changes in election probabilities are zero. However, presidential elections happen every four years in the United States, so most of the observations are zero. Change in residual EPU is the monthly percentage change in the economic policy uncertainty index, excluding the uncertainty of the presidential election.

The four variables measuring the macroeconomic factors impacting stock returns are change in ln industrial production, change in ln CPI, change in M2, and change in ln Fed Funds rate. Each of these variables is determined as a monthly unit change in the natural logarithm of each macroeconomic factor. Table one shows that the average change in these variables is very low, which could imply that they are quite stable. The last five variables are used in the explanatory regression to examine the impact of firm characteristics on the effect of political uncertainty. The variable effect of political uncertainty combines presidential election uncertainty and political uncertainty, excluding it, and it shows that, on average, companies are negatively affected by political uncertainty. Furthermore, size is the turnover of the companies in millions, and the companies are quite large, which is not surprising since the companies are picked from the Dow Jones Industrial Average and The Nasdaq 100. The leverage variable, which is a percentage of total liabilities to total assets, shows that, on average more than half of the companies' assets are financed with debt. Sustainability is measured as the ESG score of the company, and the table shows that during 2000—2020 it has not been very high for the companies on average. Internationalization is measured by the percentage of turnover received abroad to the total turnover, and it shows that around 40% of the turnover of companies is received abroad on average. However, some companies receive almost all of their revenues from abroad, but some operate only domestically. The descriptive statistics of each firm characteristics for each presidential election separately can be found in Appendix 2.

6.3 Economic policy uncertainty index in the methodology

This research uses the economic policy uncertainty index created by Baker et al. (2016) to measure political uncertainty. The economic policy uncertainty index is derived from the frequency of articles published in high-quality U.S. newspapers that handles uncertainty about future policies. Baker et al. also create an index that is based on three components that measure political uncertainty. The first component of the index is the measurement that is based on the newspaper articles. The second component is built on the number of federal tax code provisions that will be no longer valid in upcoming years, and the third component is built on differences in predictions of the economy. However, as shown in figure one, the three-component index moves similarly to the news-based policy uncertainty index, so it is not presented nor used in the research.
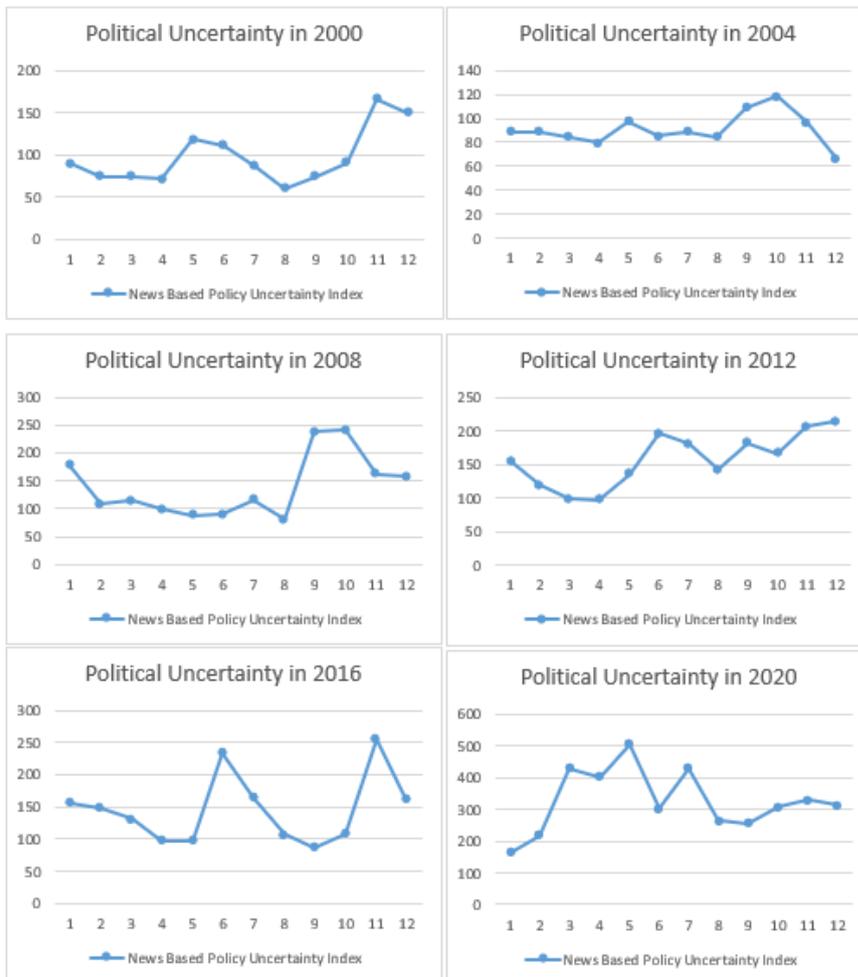
Figure 2. Political uncertainty in election years in the United States (Economic Policy

Uncertainty, 2020)

Figure two portrays how political uncertainty develops during the election years, and the values of the EPU index are retrieved from the website of Economic Policy Uncertainty (2020). In general, political uncertainty is elevated in the month of the elections, which is November in the United States. This confirms that presidential elections lead to an increase in political uncertainty. Moreover, figure two demonstrates that political uncertainty caused by presidential elections has increased throughout time. However, at first glance, the years 2004, 2008 and 2020 seem not to follow this pattern. In 2004 the drop in political uncertainty in November can be explained by a video made by Osama bin Laden that was published on October 29th. According to CNN (2004), in the video, the al Qaeda chief addresses the American people and reminds them about the 9/11 attacks and makes fun of the response of the incumbent president George W. Bush. The Guardian (2004) states that the video of bin Laden led to a significant increase in the popularity of Bush which in turn led to that Bush had a significant lead over the Democrat candidate John Kerry. Therefore, the increase in October can be caused by the video published by Osama bin Laden and then the decrease in November can be explained by the significant lead of George W. Bush.

The year 2008 is probably best remembered as the year when the latest financial crisis started. According to BBC (2018), a famous investment bank called Lehman Brothers filed for bankruptcy on the 15th of September in 2008. Baker et al. (2016) state that the default led to an increase in economic policy uncertainty which can be seen in figure two. The level of political uncertainty remains high until October, and it decreases in November, which is the election month. However, compared to months prior to the bankruptcy of Lehman Brothers, the level of political uncertainty is elevated on the election month. This means that the presidential election in 2008 caused political uncertainty but not as much as the bankruptcy of Lehman Brothers, which marked a change in the policy of too-big-to-fail.

Figure two shows that in 2020 political uncertainty rose to a record level. The year 2020 marks the year of the global pandemic of Covid-19. In March 2020, political uncertainty experienced a large increase in the United States because, according to Taylor (2021), by the end of March, the country had become the centre of the pandemic by verifying the largest number of contaminations. In addition, many countries, along with the United States, had to enforce untraditional policies such as lockdowns and curfews to restrict the expanse of the virus. Therefore, political uncertainty remained extremely high until August 2020. Even after August 2020, political uncertainty remained at a high level, and towards November, it increased slightly. Political uncertainty in November 2020 is elevated compared to the level of political uncertainty prior to the pandemic. This could imply that presidential elections in 2020 caused political uncertainty but not as much as the global health crisis.

6.4   Regression models

The methodology of the research is based on the study of Snowberg et al. (2007) and Hill et al. (2019). The study of Snowberg et al. examine the partisan effect, and it is measured by regressing changes in the probability of re-election on changes in the logarithm of financial variables. Hill et al. study the effect of Brexit on the stock market. The study of Hill et al. is conducted in a similar way as the study of Snowberg et al. They regress changes in the probability of Brexit, that is measured by bookmaker's odds, on changes in a financial variable. The model of Snowberg et al. that the research is based on is determined in the following way:

$$\Delta Log(Financial\ variable_t) = \beta_0 + \beta_1 \Delta Re - election\ probability + \varepsilon_t \qquad (2)$$

Where $\Delta Log(Financial\ variable_t)$ is the change in the logarithm of financial variable such as a stock market index at time t, β_0 is the constant, β_1 equals to the exposure of the financial variable to the changes in re-election probabilities, $\Delta Re - election\ probability$ is equal to the change in the re-election probability of the current

president that can be measured for example by election polls or bookmaker's odds and ε_t is the error term.

In this research, the election probability is determined as election polls that measure the percentage of votes the Republican candidate is assumed to receive. However, this research measures political uncertainty during the elections, which means that the equation above needs to be extended in the research so that it also considers the political uncertainty that is not related to election uncertainty. Because of this economic policy uncertainty index is added into the regression.

However, it is very likely that the economic policy uncertainty index and election probability partially cover the same areas of political uncertainty, which means that they can suffer from multicollinearity. Woolridge (2013, p. 84) states that a regression model suffers from collinearity when there is a relationship between independent variables. However, it does not mean that there cannot be any correlation between independent variables, but there should not be perfect collinearity in the model which means that one independent variable is perfectly correlated with another independent variable. According to Salméron et al. (2018), collinearity can cause regression results to be inaccurate because inflated variance estimators reduce the preciseness of the estimates.

To avoid multicollinearity economic policy uncertainty index is not added to the regression equation per se. However, the error term of the regression between changes in economic policy uncertainty index and changes in election probability of a Republican candidate is used in the regression model. The error term represents all the political uncertainty that is not related to the uncertainty caused by the election probability. The regression between the EPU and election probability is determined in the following way:

$$\Delta EPU = \beta_1 \Delta EP_R + \varepsilon \qquad\qquad (3)$$

Where ΔEPU equals to the monthly percentage changes in economic policy uncertainty index, ΔEP_R is the unit changes in the monthly election probability of a Republican candidate measured by monthly election polls and ε is the error term.

Therefore, the error term explaining political uncertainty that is not related to the election probability is determined in the equation below.

$$\varepsilon_{EPU} = \Delta EPU - \beta_1 \Delta EP_r \tag{4}$$

Next, it is possible to determine the regression model that captures the effect of political uncertainty. Firstly, the regression is run for the Dow Jones Industry Average index, and it measures the effect of political uncertainty created by all the elections by one variable. This is done to capture the general effect of political uncertainty caused by presidential elections. In addition to the model of Snowberg et al. (2007), some macroeconomic variables are added to the equation to enhance the explanatory power of the model. Based on the study of Chen et al. (1986), inflation, industrial production, interest rates and money supply are considered as macroeconomic variables. The null hypothesis is that political uncertainty does not have an effect on the stock market. The first regression model is determined in the following way:

$$\Delta DJIA = \beta_0 + \beta_1 \Delta EP_R + \beta_2 \varepsilon_{EPU} + \beta_3 \Delta lnIP + \beta_4 \Delta lnCPI + \beta_5 \Delta lnM2 + \beta_6 \Delta lnFF + \varepsilon \tag{5}$$

Where $\Delta DJIA$ is equal to the monthly percentage change in the Dow Jones Industry Average index, β_0 is constant, β_1 equals to the effect of election uncertainty, β_2 is the effect of political uncertainty that is not related to election uncertainty, $\Delta lnIP$ is equal to the unit change in the natural logarithm of monthly industrial production index in the United States, $\Delta lnCPI$ is the unit change in the natural logarithm of monthly U.S. consumer price index, $\Delta lnM2$ equals to the unit change in the natural logarithm of monthly money supply M2 in the United States, $\Delta lnFF$ is the unit change in the natural logarithm

of monthly Fed Funds rate and ε is the error term. Moreover, β_3, β_4, β_5 and β_6 are the exposure of the Dow Jones Industrial Average on the macroeconomic variables.

After estimating the aggregate effect of political uncertainty caused by the presidential elections in the United States, the model can be extended to measure the effect of each presidential election separately. This is done to discover if the impact of political uncertainty is different during different elections. Again, the null hypothesis is that political uncertainty does not affect the stock market. The model is determined in a similar way as equation five, but each election has a separate independent variable. Therefore, the second regression model is defined in the following way:

$$\Delta DJIA = \beta_0 + \beta_1 \Delta EP_{2000} + \beta_2 \Delta EP_{2004} + \beta_3 \Delta EP_{2008} + \beta_4 \Delta EP_{2012} +$$
$$\beta_5 \Delta EP_{2016} + \beta_6 \Delta EP_{2020} + \beta_7 \varepsilon_{EPU} + \beta_8 \Delta lnIP + \beta_9 \Delta lnCPI + \beta_{10} \Delta lnM2 +$$
$$\beta_{11} \Delta lnFF + \varepsilon \qquad\qquad (6)$$

Where β_1, β_2, β_3, β_4, β_5 and β_6 is the effect of election uncertainty of each election, ΔEP_{2000}, ΔEP_{2004}, ΔEP_{2008}, ΔEP_{2012}, ΔEP_{2016} and ΔEP_{2020} are equal to the unit changes in the monthly election probability of a Republican candidate measured by monthly election polls during each presidential election. Other variables are determined in the same way as in equation five.

Then the effect of political uncertainty caused by just the elections that led to the election of a Democrat candidate is examined. In addition, the effect of elections that led to the election of a Republican candidate is measured. This is done to discover if the political uncertainty that is increased by elections that led to the election of a certain party impacts the stock market differently. Pàstor & Veronesi (2020) state that the stock market tends to react negatively to the election of a Democrat candidate because a Republican party is seen as the party that favours the trade, and it is more likely that the Democratic party increases taxes. The relationship between political uncertainty caused by

elections that led to the election of a Democrat or a Republican candidate is determined in the following way:

$$\Delta DJIA = \beta_0 + \beta_1 \Delta EP_{ED} + \beta_2 \Delta EP_{ER} + + \beta_3 \Delta \varepsilon_{EPU} + \beta_4 \Delta lnIP + \beta_5 \Delta lnCPI + \beta_6 \Delta lnM2 + \beta_7 \Delta lnFF + \varepsilon \qquad (7)$$

Where β_1 and β_2 are equal to the effect of political uncertainty created by elections that led to the election of a Democrat or a Republican candidate, ΔEP_{ED} is the unit change in the monthly probability of the election of a Republican candidate during the elections that led to the victory of a Democrat candidate and ΔEP_{ER} equals to the unit change in the monthly probability of the election of a Republican candidate during the presidential elections that resulted in the election of a Republican candidate. Rest of the terms are determined in the same way as in the equation five.

The model then can be extended to cover panel data of the fifty companies that are examined in the research. This means that the Dow Jones Industrial Average is no longer the dependent variable. Instead, the monthly returns of the companies are now the dependent variable. However, the data set can be prone to outliers since it includes Alphabet, Amazon, and Apple, which are part of the big four that consists of four large technology companies. It is possible that these companies do not behave like standard companies since they are so large, and it can have an effect on the results. Therefore, the regression is run twice. Firstly, the regression is run for the whole data set and then it is run for the data set excluding Alphabet, Amazon, and Apple to ensure that the results are not affected by outliers. The equations for this step are similar to equation five, six and seven. Nevertheless, the dependent variable is replaced by the returns of examined companies. The null hypotheses are also like the previous ones, which means that it is expected that political uncertainty does not affect the stock returns of companies.

Multiple independent variables can lead to a problem of multicollinearity. Salméron et al. (2018) state that multicollinearity can be checked by variance inflated factors (VIF).

Multicollinearity poses problems if the value of VIF is ten or higher. In order to check if each model is affected by multicollinearity, VIFs are calculated for each variable. Table two below presents VIFs for each model. It is clear the models do not suffer from multicollinearity since every value is below three.

VIF							Variable							
DJIA	EP	EP00	EP04	EP08	EP12	EP16	EP20	Dem	Rep	EPU	IP	CPI	M2	FF
Total	1.018									1.055	2.027	1.162	1.552	2.400
Elections		1.007	1.006	1.012	1.020	1.005	2.826			1.089	2.484	1.187	1.703	2.767
Dem/Rep								1.109	1.002	1.056	2.034	1.151	1.563	2.423
Set of companies														
Total	1.018									1.055	2.037	1.165	1.559	2.414
Elections		1.005	1.004	1.047	1.005	1.007	1.066			1.063	2.040	1.181	1.575	2.420
Dem/Rep								1.055	1.014	1.055	2.038	1.165	1.562	2.421
Restricted set of companies														
Total	1.018									1.055	2.035	1.165	1.558	2.412
Elections		1.005	1.004	1.047	1.005	1.007	1.066			1.063	2.040	1.181	1.575	2.420
Dem/Rep								1.014	1.009	1.055	2.036	1.165	1.561	2.418

Table 2. Variance inflated factors of regression models

6.5   Explanatory regression

To understand political uncertainty better, it could be interesting to examine its effect on companies with different characteristics. Firm characteristics that could be interesting to examine are characteristics that are somehow related to common themes of election campaigns. One characteristic that this research examines is leverage because Wagner et al. (2017) state that one of the main agendas of Donald Trump's presidential campaign was lowering the corporate tax rate. In general, Republican candidates are in favour of lower tax rates. Lowering tax rates leads to a decrease in the benefit of tax shield, which can harm leveraged companies. In addition, a higher level of debt leads to a higher level of riskiness. This could lead to that companies having more debt are more negatively affected by political uncertainty. Leverage is measured as a ratio of total liabilities to total assets.

According to Mutz (2018), one important theme of Donald Trump's campaign was protectionism, so one characteristic that this research is examining is internationalization. On the other hand, Biden (2019b) states that his goal as a president is to restore collaboration with foreign allies. Protectionism possibly could harm internationalized

companies, but the election of Joe Biden could, in turn, benefit them. Additionally, Hill et al. (2019) show that internationalized companies can be less affected by domestic political uncertainty because it is possible for these companies to diversify away the domestic political risk. Nevertheless, Boutchkova et al. (2012) find that internationalized companies are more negatively affected by political uncertainty because political uncertainty causes uncertainty about foreign trade deals which leads to that the future returns of internationalized companies are more unsure than returns of companies operating domestically. Internationalization is measured as a percentage of the company's revenue from abroad.

Moreover, this research examines the sustainability of companies and how sustainable companies were affected by political uncertainty. Sustainability is chosen as a firm characteristic because, for instance, the attitude of Trump towards climate change and other sustainability issues could be described as sceptical, and according to the White House (2017), Trump started the process to withdraw the United States from the Paris Climate Agreement. However, the Democrat party has a completely different approach to climate issues. For instance, Biden (2019a) states that he wants that the United States rejoins the Paris Climate Agreement in which the United States joined during the presidency of Barack Obama. Moreover, could it be possible that during heightened political uncertainty, companies that invest in corporate social responsibility (CSR) are not as affected by political uncertainty as companies that are not as involved in CSR. For example, Lins et al. (2017) find that companies doing well in CSR performed better by around four to seven per cent during the financial crisis in 2008—2009 than companies with lower CSR rankings. This means that investing in CSR is particularly important in times when the trust in financial markets is low. The sustainability of the company is measure by the ESG score on Refinitiv. However, by the making of this research, Refinitiv has not released the ESG scores of 2020, and for the year 2000, Refinitiv does not calculate ESG scores. Therefore, these years are excluded from the examination of sustainability.

An attractive firm characteristic to study political uncertainty is size. Pàstor & Veronesi (2012) explain that bigger companies need larger risk premiums for uncertainty about future policies of governments. Therefore, companies that are larger in size should be more affected by political uncertainty caused by presidential elections. However, Hill et al. (2019) state that it is possible that larger companies are more stable than small companies and therefore, they can be less negatively affected by political uncertainty. The size of companies is measured as the turnover in millions.

$$Effect\ of\ political\ uncertainty_{i,t} = \beta_0 + \beta_1 Leverage_{i,t} +$$
$$\beta_2 Internationalization_{i,t} + \beta_3 Sustainability_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i.t} \qquad (8)$$

Where $Effect\ of\ political\ uncertainty_{i,t}$ is equal to the effect of political uncertainty on company i during the examined presidential elections that combines the exposure to the election probabilities and to political uncertainty that is not explained by election uncertainty, β_0 is the intercept, $Leverage_{i,t}$ equals to total liabilities divided by total assets of company i during the years of the presidential elections, $Internationalization_{i,t}$ is the revenue from abroad divided by total revenue of company i during the years of the presidential elections, $Sustainability_{i,t}$ is equal to the sustainability score on Refinitiv of company i during the presidential elections, $Size_{i,t}$ is the total revenue from business activities of company i during the years of the presidential elections, β_1, β_2, β_3 and β_4 are equal to the exposure to the firm characteristics and $\varepsilon_{i.t}$ is the error term.

The null hypothesis of the additional regression is that firm characteristics do not explain political uncertainty, which means that political uncertainty similarly affects companies. Moreover, since the explanatory regression model has multiple variables, it can suffer from multicollinearity. Therefore, VIFs are also calculated for each explanatory model and for each data set. The VIFs of the explanatory regression are presented in table three. The models are not impacted by multicollinearity since none of the values is above two.

VIF	Variable			
	Size	Leverage	Sustainability	Internationalization
Total	1.174	1.100	1.314	1.271
2000	1.007	1.097		1.093
2004	1.085	1.137	1.117	1.184
2008	1.262	1.089	1.455	1.336
2012	1.176	1.086	1.336	1.327
2016	1.131	1.078	1.098	1.214
2020	1.094	1.044		1.140
Restricted set of companies				
Total	1.186	1.112	1.334	1.303
2000	1.016	1.080		1.067
2004	1.097	1.196	1.130	1.240
2008	1.261	1.096	1.488	1.369
2012	1.227	1.089	1.391	1.351
2016	1.188	1.076	1.130	1.252
2020	1.075	1.043		1.119

Table 3. Variance inflated factors of explanatory regression

7   Empirical results

This part of the research presents the empirical findings of the study. These findings are obtained from the regression equations presented in the previous part of the research. The results are shown in the following way. Firstly, the effect of political uncertainty on the stock market is presented. Then the impact of political uncertainty on the examined companies is shown. Thirdly, the effect of political uncertainty caused by elections that led to the election of a candidate from a specific party is examined on the stock market and the companies. Finally, the influence of firm characteristics is introduced.

7.1   Effect on the stock market

The impact of political uncertainty on the stock market is measured by the impact on the Dow Jones Industrial Average index. Table four below presents the acquired results. In table four the model one describes the effect of political uncertainty and the election uncertainty during the period of 2000—2020. The model shows that during the examined period, the effect of political uncertainty caused by presidential election uncertainty has a negative impact on the Dow Jones Industrial Average index. This part of political uncertainty is measured by election polls.

Additionally, the part of political uncertainty excluding the presidential election uncertainty has a negative influence on the stock market index, and the impact is highly statistically significant. Since both measures of political uncertainty are statistically significant, it means that an increase in political uncertainty measured by both variables leads to a decrease in the stock market index. This confirms that an increase in political uncertainty caused by presidential elections in the United States leads to a decline in the stock market, but the results also confirm that political uncertainty, in general, leads to a decrease in the stock market index. The results are in line with previous studies, which means that presidential elections are a source of political uncertainty that causes a drop in the stock market. Nevertheless, the economic significance of political uncertainty

caused by presidential elections and the part of it that is not explained by presidential election uncertainty can seem small. One standard deviation increase in change in election probabilities leads to a 0.455% decrease in the monthly return of the index, whereas one standard deviation increase in change residual EPU index leads to a 1.210% drop in the monthly returns of the stock market index. The decreases are quite small, but it is necessary to keep in mind that the average monthly return of the Dow Jones Industrial Average is only 0.534%. Therefore, comparing the economic significance of the two variables for political uncertainty and the average monthly return of the Dow Jones Industrial Average index shows that political uncertainty also has an economically significant impact. However, it seems that macroeconomic variables do not have a statistically significant effect on the Dow Jones Industrial Average.

Model two in table four shows the impact of political uncertainty on the stock market by separating the effect of each presidential election. It seems that only political uncertainty caused by presidential elections in 2020 had a negative impact on the Dow Jones Industrial Average index. The coefficients for other elections are statistically insignificant, which means that election uncertainty did not affect the stock market during those elections. This can imply that presidential elections in aggregate can explain stock market returns better than individual ones. The result can be explained by the record high value of the economic policy uncertainty index in 2020, so it is quite natural that the presidential election of 2020 had the largest negative impact on the stock market. Additionally, the result of model two can imply that the presidential elections of 2020 were the most followed by the financial markets. Moreover, the result for the presidential elections of 2020 is economically significant since one standard deviation increase leads to a 0.72% decrease in the stock market index. It is also possible, based on the results of Pàsor & Veronesi, that previous policies of the government were seen so detrimental that the policy change was expected. Therefore, the presidential elections between 2000—2016 did not have a statistically significant impact.

However, political uncertainty that is not explained by the changes in election probability is statistically significant at a 0.1% level of significance. This means that political uncertainty, in general, leads to a decrease in the stock market index. Furthermore, its economic significance is similar to model one. The results are in line with previous studies such as Pàstor & Veronesi (2012) and Liu et al. (2017) that political uncertainty has a negative impact on the stock market. Nevertheless, macroeconomic variables do not appear to have an influence on the Dow Jones Industrial Average index in model two. Results of table four imply that the first hypothesis holds for the stock market.

Dependent variable: change in DJIA		
	Model (1)	Model (2)
Constant	0.005	0.004
	(1.130)	(1.028)
Change in election probability	-0.046*	
	(-1.751)	
Change in election probability 2000		-0.048
		(-0.789)
Change in election probability 2004		-0.066
		(-1.093)
Change in election probability 2008		0.014
		(0.204)
Change in election probability 2012		-0.021
		(-0.324)
Change in election probability 2016		0.036
		(0.516)
Change in election probability 2020		-0.180***
		(-2.676)
Change in residual EPU	-0.036****	-0.035****
	(-4.576)	(-4.397)
Change in ln industrial production	-0.171	-0.220
	(-0.564)	(-0.723)
Change in ln CPI	0.932	0.727
	(0.981)	(0.761)
Change in ln M2	0.129	0.262
	(0.245)	(0.495)
Change in ln Fed Funds rate	-0.003	-0.003
	(-0.199)	(-0.191)
Effects specifications		
R-squared	0.093	0.117
Adjusted R-squared	0.071	0.076
F-statistics	4.173	2.866
Prob (F-statistics)	0.001	0.002
S.E. of regression	0.041	0.041
Observations	250	250

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 4. Effect of political uncertainty on the stock market

7.2 Effect on the stock returns

The influence of political uncertainty on companies is measured by the examined fifty companies that are listed in appendix one. The results of the impact of political uncertainty on the stock returns of companies are presented in the table below.

Dependent variable: change in company prices		
	Model (1)	Model (2)
Constant	0.011****	0.010****
	(7.613)	(6.446)
Change in election probability	-0.031****	
	(-3.467)	
Change in election probability 2000		0.029
		(1.365)
Change in election probability 2004		-0.050**
		(-2.383)
Change in election probability 2008		-0.005
		(-0.221)
Change in election probability 2012		-0.035
		(-1.580)
Change in election probability 2016		0.046*
		(1.856)
Change in election probability 2020		-0.141****
		(-5.959)
Change in residual EPU	-0.048****	-0.048****
	(-18.001)	(-17.222)
Change in ln industrial production	-0.260**	-0.285***
	(-2.560)	(-2.677)
Change in ln CPI	1.372****	1.175****
	(4.283)	(3.509)
Change in ln M2	0.314*	0.424**
	(1.775)	(2.288)
Change in ln Fed Funds rate	-0.00002	0.0001
	(-0.003)	(0.012)
Effects specifications		
R-squared	0.028	0.033
Adjusted R-squared	0.028	0.032
F-statistics	59.01	34.4
Prob (F-statistics)	0.000	0.000
S.E. of regression	0.096	0.095
Observations	12,164	12,164

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 5. Effect of political uncertainty on stock returns

Model one in table five is similar to model one in table four except that the dependent variable in table five is the change in the stock prices of the examined companies. Model one explains the effect of political uncertainty and election uncertainty between 2000 and 2020. During that period, political uncertainty had a negative impact on the stock prices of companies. Both presidential election uncertainty and political uncertainty that

is not related to election uncertainty are statistically significant at a 0.1% significance level. This means that an increase in both election probabilities and residual economic policy uncertainty index leads to a decrease in the stock returns of the examined companies. This confirms that the stock returns of companies are negatively affected by political uncertainty in general as well as by political uncertainty caused by presidential elections. This affirms the findings of previous studies that presidential elections are a source of political uncertainty, which leads to a decrease in prices.

Interestingly, the decrease in stock prices caused by the residual EPU index is larger than the decrease caused by the election polls. However, for the stock market index, it is contrary. This could imply that the stock market index is more affected by political uncertainty created by presidential elections than political uncertainty excluding the election uncertainty, whereas, for the examined companies, it is the opposite. Moreover, the economic significance can also seem small for the companies, but the average monthly return of the analysed companies is 1.255% which means that even small changes can have a significant impact. For election probabilities, one standard deviation increase leads to a 0.307% decrease in stock returns, whereas for the EPU index excluding the presidential election uncertainty, one standard deviation increase leads to a 1.613% decrease in stock returns.

Additionally, in model one, all macroeconomic variables except for the Fed Funds rate have a statistically significant impact on the stock prices. Industrial production has a negative impact on stock prices even though normally economic activity has a positive impact on stock returns, as found by Chen et al. (1986). However, the study of Bhuiyan & Chowdhury (2020) cannot deduce the effect of industrial production because it might not be the best measure for economic activity. After all, the United States has become a service-based economy. Surprisingly, the consumer price index measuring inflation has a positive impact on the examined companies, which is in contradiction to the generally accepted relationship even though there are conflicting results. For example, Ratanapakorn & Sharma (2007) find that there is a positive relationship between inflation and

stock returns because stocks can be seen as a protection against inflation. Additionally, table five shows that an increase in money supply leads to a rise in stock prices which is also in line with the results in Ratanapakorn & Sharma. According to them, the reason for this can be that increase in money supply leads to an increase in liquidity which in turn leads to a decrease in interest rates which leads to a rise in stock prices. The economic significance for the macroeconomic variable is relatively small, but it is important to remember that the average stock return is also small. One standard deviation increase in the variable for industrial production leads to a decrease of 0.312% in the stock returns; for the variable for consumer price index, one standard deviation increase leads to an increase of 0.412%, and for the variable measuring money supply, one standard deviation increase leads to an increase of 0.188%.

In table five the model two is similar to model two in table four. This means that model two examines the impact of political uncertainty by examining each presidential election separately. The table shows that the impact of political uncertainty caused by presidential elections varies with different elections. The only elections that did not have a statistically significant impact on stock prices are the presidential elections in 2000, 2008 and 2012. Political uncertainty caused by the presidential elections of 2004 and 2020 had a negative impact on stock prices that is statistically significant. The largest negative impact is caused by the political uncertainty created by the presidential election in 2020. The most likely reason for this is that political uncertainty rose to a record high level because of the Covid-19 pandemic and political uncertainty remained at a high level throughout the year. However, political uncertainty caused by presidential elections in 2016 had a positive impact on stock prices that is statistically significant. Furthermore, it seems that the economic significance of single presidential elections depends on the elections. Some presidential elections have a stronger economic relevance, like the elections in 2020 and some weaker, like the elections in 2004.

There seems not to be a specific pattern in how political uncertainty caused by different presidential elections differ. However, this can be explained by the result of Pàstor &

Veronesi (2012) that the response to policy changes depends on how destructive previous policies are seen, which could imply that the impact of political uncertainty caused by presidential elections can vary by the harmfulness of previous policies. When the previous policy is seen as extremely harmful, the reaction can be positive, but often the reaction is insignificant because the stock market was already anticipating it. The result of the presidential election in 2016 was a total surprise so that it can explain the statistically significant positive reaction. It is also possible that policies prior to the presidential elections in 2000, 2008 and 2012 were seen detrimental enough to have a statistically insignificant effect on the stock prices, and in 2016 the policies of the previous government were detrimental enough, and the election result was unexpected enough to create a positive effect. For example, about two months before the presidential election in 2008, the financial crisis started, which could imply that the policies of the previous government were extremely detrimental, which caused the impact of political uncertainty to be insignificant. Moreover, in 2008 political uncertainty had already decreased by the presidential elections, which could also lead to that simply political uncertainty was not high enough to cause a significant negative reaction in the stock returns.

Moreover, political uncertainty that is not explained by election uncertainty has a statistically and economically significant influence on the stock prices of examined companies. This suggests that political uncertainty leads to a decrease in stock prices which is in line with previous findings of multiple studies. In addition, macroeconomic variables have a similar effect on the stock prices in model two as in model one, and the results can be explained by the same reasons as in model one. Additionally, their economic significance is quite similar to model one, which means that they are not very significant economically.

The examined companies include Alphabet, Amazon, and Apple. These companies are huge and might not behave in the same way as typical companies. Because of that, the sample can be prone to outliers, so these companies are excluded from the data set to

ensure that the results are reliable, which can also be considered as a robustness check for the previous results. The results for this sample are presented in table six.

Dependent variable: change in company prices		
	Model (1)	Model (2)
Constant	0.011****	0.010
	(7.349)	(6.397)
Change in election probability	-0.035****	
	(-3.793)	
Change in election probability 2000		0.019
		(0.891)
Change in election probability 2004		-0.053**
		(-2.478)
Change in election probability 2008		-0.009
		(-0.395)
Change in election probability 2012		-0.041*
		(-1.831)
Change in election probability 2016		0.044*
		(1.772)
Change in election probability 2020		-0.143****
		(-6.015)
Change in residual EPU	-0.046****	-0.045****
	(-16.923)	(-16.154)
Change in ln industrial production	-0.265**	-0.291***
	(-2.557)	(-2.714)
Change in ln CPI	1.252****	1.075***
	(3.842)	(3.188)
Change in ln M2	0.212	0.313*
	(1.180)	(1.676)
Change in ln Fed Funds rate	-0.0002	-0.0001
	(-0.039)	(-0.012)
Effects specifications		
R-squared	0.027	0.093
Adjusted R-squared	0.026	0.030
F-statistics	52.74	30.95
Prob (F-statistics)	0.000	0.000
S.E. of regression	0.095	0.093
Observations	11,468	11,468

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 6. Effect of political uncertainty on restricted companies

Table six shows that the results for the sample without the three extremely large technology companies are pretty similar compared to the results for the whole sample, which can imply that the previous results are quite robust. However, some differences in the results can imply that the data set can be prone to outliers. Model one shows that the

restricted set of companies is negatively affected by political uncertainty created by presidential elections and the effect is statistically significant at a 0.1% level of significance. Additionally, political uncertainty excluding the presidential election uncertainty has a statistically significant negative impact. The results are in line with the previous findings of this research and earlier findings of the literature. However, the restricted set of companies is more affected by presidential election uncertainty than the whole set, but the entire set of companies is more affected by the political uncertainty excluding uncertainty caused by presidential elections. This could imply that Alphabet, Amazon, and Apple are less affected by the political uncertainty around presidential elections, which leads to the higher exposure of a restricted set of companies, but on the other hand, the three companies are more affected by political uncertainty in general which causes the whole data set to be more affected than the restricted set. Additionally, the economic significance of the variable measuring presidential election uncertainty is slightly higher for the restricted data set, whereas the economic significance of the rest of the political uncertainty is somewhat lower for the restricted data set.

Model two in table six again shows that political uncertainty caused by different presidential elections have a different impact on the restricted set of companies. For the restricted companies, only the presidential elections in 2000 and 2008 do not have a statistically significant and the reason for this is probably the harmfulness of policies of the previous government as in table five. The presidential elections in 2004, 2012 and 2020 have a statistically significant impact on the stock returns of the limited set of companies, and the effect is negative, which is in line with the generally accepted stance. Moreover, the presidential election of 2016 had a statistically significant positive effect. The reason for this is probably the same as for the whole data set. However, the coefficients are quite similar to the ones for the entire data set, but the largest difference is that for the presidential election in 2012, the coefficient is statistically insignificant, but for the restricted data set, the effect is negative. The economic significance of political uncertainty is similar for the restricted data set as it is for the whole data set except that now

presidential election uncertainty in 2012 also has economic significance since one standard deviation increase in it leads to a decrease of 0.168% in stock returns.

Furthermore, political uncertainty that is not explained by presidential election uncertainty also has a negative effect on the restricted set of companies, and the impact is highly statistically significant, and it has a similar economic significance as in table five. For the macroeconomic variables, the largest difference is that in model one, the money supply is not statistically significant for the restricted set of companies, whereas in model one in table five, it has a statistically significant positive impact on stock returns. This implies that the results can be influenced by outliers a bit. However, the economic significance of macroeconomic variables for the restricted data set is similar as it is for the whole data set, which means that their economic impact is relatively low.

The result for both sets of companies confirms that political uncertainty has a negative impact on stock returns. This is in line with previous studies such as Pàstor & Veronesi (2012, 2013), Liu et al. (2017) and Hill et al. (2019). In addition, during 2000—2020, the aggregate effect of political uncertainty caused by presidential elections is negative, which can also be interpreted that a specific type of political uncertainty has a negative impact on stock prices. Furthermore, the results show that different presidential elections cause political uncertainty, but the impact can be different. The reason for this can be, according to Pàstor & Veronesi (2012) be the harmfulness of previous policies. However, the economic significance of political uncertainty excluding presidential election uncertainty is higher than that of presidential election uncertainty. Furthermore, the results of table five and six indicate that the first research hypothesis hold for the stock returns of the companies.

7.3   Effect of the presidential elections of a specific party

The effect of political uncertainty caused by presidential elections that led to the election of either a Democrat candidate or a Republican candidate is examined. Firstly, the effect

on the stock market is researched by examining how the Dow Jones Industrial Average index is impacted. Then the impact of political uncertainty caused by presidential elections that led to the election of a candidate from a specific party is examined on the companies. Then finally, the impact is examined for the restricted set of companies.

Dependent variable: change in DJIA	
	Model (1)
Constant	0.005
	(1.110)
Change in election probability in Democrat elections	-0.061
	(-1.627)
Change in election probability in Republican elections	-0.032
	(-0.864)
Change in residual EPU	-0.036****
	(-4.558)
Change in ln industrial production	-0.175
	(-0.575)
Change in ln CPI	0.937
	(0.985)
Change in ln M2	0.143
	(0.270)
Change in ln Fed Funds rate	-0.003
	(-0.169)
Effects specifications	
R-squared	0.095
Adjusted R-squared	0.068
F-statistics	3.613
Prob (F-statistics)	0.001
S.E. of regression	0.041
Observations	250

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 7. Effect of the elections of a specific party on the stock market

In table seven the model one describes the impact of political uncertainty around presidential elections that resulted in the election of either a Democrat candidate or a Republican candidate on the Dow Jones Industrial Average index. The results show that there is no difference between the impact of political uncertainty created by presidential elections that led to the election of a candidate from a specific party because both

effects are statistically insignificant. However, political uncertainty that is not explained by presidential election uncertainty has a statistically significant effect on the stock market at a 0.1% level of significance. This means that an increase in the residual economic policy uncertainty index results in a decrease in the stock market, which is in line with the previous finding of this research and prior studies. Its economic significance is at the same level as in previous models for the stock market index, which is quite small, but the average stock market index return is also small, so small changes can have a big impact. Again, the macroeconomic variables have a statistically insignificant impact on the stock market index which means that they cannot explain stock market returns measured by Dow Jones Industrial Average index. The results show that the second research hypothesis does not hold for the stock market.

Dependent variable: change in company prices		
	Model (1)	Model (2)
Constant	0.011****	0.011****
	(7.492)	(7.322)
Change in election probability in Democrat elections	-0.065****	-0.067****
	(-5.140)	(-5.248)
Change in election probability in Republican elections	0.003	-0.002
	(0.239)	(-0.126)
Change in residual EPU	-0.048****	-0.046****
	(-17.936)	(-16.860)
Change in ln industrial production	-0.268***	-0.273***
	(-2.640)	(-2.633)
Change in ln CPI	1.384****	1.264****
	(4.323)	(3.880)
Change in ln M2	0.344*	0.242
	(1.945)	(1.342)
Change in ln Fed Funds rate	0.001	0.001
	(0.196)	(0.150)
Effects specifications		
R-squared	0.029	0.028
Adjusted R-squared	0.029	0.027
F-statistics	52.7	47.13
Prob (F-statistics)	0.000	0.000
S.E. of regression	0.096	0.095
Observations	12,164	11,468

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 8. Effect of the elections of a specific party on companies

In table eight the model one describes the impact of political uncertainty around presidential elections that resulted in the election of either a Democrat or a Republican candidate on the examined companies. Model one shows that the political uncertainty caused by presidential elections that resulted in the election of a Democrat candidate had a negative effect on the stock returns. One standard deviation increase in the variable measuring political uncertainty created by those presidential elections leads to a decrease of 0.449%, so its economic significance is relatively small, but since the average stock return is also small, even a small change can have a significant impact. However, the effect of political uncertainty created by presidential elections that led to the victory of a Republican candidate is statistically insignificant, which means that it does not have an impact on stock returns. This could be connected to results of several studies such as Snowberg et al. (2007) and Pàstor & Veronesi (2020) that state that the Republican party is seen as a party that is in favour of business which leads to that the stock market tends to react positively to the election of a Republican candidate. Because of that, it might be possible that these elections do not cause as much political uncertainty because the election of a Republican candidate is seen as positive, so the impact is not as strong as during presidential elections that resulted in the Democrat presidency. However, it is quite surprising that the presidential election uncertainty caused by the elections that led to the election of a Democrat candidate is so highly statistically significant for the stock returns, whereas for the returns of the stock market index, it does not have a statistically significant impact. One reason for this can be behind the weighting of the Dow Jones Index, which cancels the negative impact of presidential election uncertainty created by the elections that led to a Democrat presidency.

Nevertheless, in model one, political uncertainty that is not explained by election uncertainty is statistically significant at a 0.1% significance level, and its economic significance is similar as in previous models for stock returns of the whole data set. The relationship between the political uncertainty excluding presidential election uncertainty and stock returns of the examined companies is negative, which means that when there is an increase in political uncertainty in general, it leads to a decrease in stock returns.

Furthermore, the impact of macroeconomic variables is quite similar as in table five, which means that industrial production, inflation measured as consumer price index and money supply measured as M2 has a statistically significant impact on stock returns, but their economic significance is still quite small. The impact of these variables can be explained by the studies of Ratanapakorn & Sharma (2007) and Bhuiyan & Chowdhury (2020), as in table five.

In table eight, model two presents the effect of political uncertainty caused by presidential elections that led to a victory of a specific party on the restricted set of companies to ensure that the findings are not impacted by outliers. This can also be considered as a robustness check of the results from model one. Model two has quite similar results as model one, which could imply that the results of model one are quite robust and that the results are not affected by outliers too much. The biggest difference is that in model one, the coefficient for money supply is significant, whereas, in model two, it is statistically insignificant. The results confirm that political uncertainty caused by presidential elections that led to the election of a Democrat candidate has a negative impact on stock returns. Moreover, the impact is more negative for the restricted data set, which could imply that the three huge technology companies are not so affected by this type of political uncertainty, which leads to less negative impact in model one. The economic significance is too a bit higher in model two since one standard deviation increase in the variable leads to a decrease of 0.462% in stock returns. Nevertheless, political uncertainty created by presidential elections that resulted in a Republican presidency does not affect stock returns since the impact is statistically insignificant. This finding can be explained in a similar way as in model one, which implies that since the Republican party is seen as more in favour of the business, political uncertainty caused by the elections that led to the victory of a Republican party do not harm the stock returns as much.

In model two, political uncertainty excluding the part of political uncertainty that is explained by presidential election uncertainty has a negative impact on the stock returns. This implicates that growth in the residual economic policy uncertainty index leads to a

decrease in stock returns. This is in line with previous research findings that political uncertainty has a negative impact on stock returns. This decrease is slightly larger than for the whole set of companies which is in line with the results of table six. Therefore, in model two, this variable is somewhat less economically significant than in model one. This could imply that the three large technology companies are affected mainly by political uncertainty, excluding the presidential election uncertainty, which leads to the result that the impact of this type of political uncertainty is more negative for the whole set of companies than for the restricted set of companies. Furthermore, the macroeconomic variables have quite a similar impact except for the money supply that in model one has a statically significant whereas in model two it does not have an impact on stock returns. This can imply that the results for macroeconomic variables are affected by outliers caused by the three extremely large technology companies, as in model one in table five. However, the economic significance of the variables for industrial production and consumer price index is similar as in model one, which means that it is quite low, but small changes can have a significant impact since the average return of the companies is also low. The results of table eight confirm that the second research hypothesis holds for the stock returns.

7.4 Effect of firm characteristics

The impact of firm characteristics on the effect of political uncertainty is examined. The goal is to discover if companies with particular features are affected similarly. Firstly, the impact of firm characteristics is examined for all the presidential elections, and then the influence of them is reviewed for each presidential election separately.

Dependent variable: effect of political uncertainty		
	Model (1)	Model (2)
Constant	-0.123****	-0.123****
	(-3.592)	(-3.382)
Size in millions	3.355e-7**	3.378e-7**
	(2.313)	(2.218)
Leverage	0.015	-0.013
	(0.358)	(-0.283)
Sustainability	0.0008*	0.0008*
	(1.819)	(1.765)
Internationalization	-0.040	-0.038
	(-1.041)	(-0.950)
Effects specifications		
R-squared	0.076	0.075
Adjusted R-squared	0.056	0.054
F-statistics	3.777	3.501
Prob (F-statistics)	0.006	0.009
S.E. of regression	0.124	0.125
Observations	292	275

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 9. Effect of firm characteristics

In table nine, the results for the impact of firm characteristics on the effect of political uncertainty around presidential elections during the whole examined period are shown. Model one includes the three major technology companies, but in model two, they are excluded to ensure that outliers do not impact the results. Model two can also be considered as a robustness check for the results of model one. The statistically significant negative constant in both models shows that, in general, companies are negatively affected by political uncertainty.

Model one shows that size and sustainability have a significant influence on the effect of political uncertainty, which means that other firm characteristics do not have an impact on the effect of political uncertainty. The relationship between the effect of political uncertainty and both significant firm characteristics is positive. This means that companies that have a larger turnover are less affected by political uncertainty. The result for size has quite a high economic significance since one standard deviation increase leads to a

rise of 2.380% in the effect of political uncertainty. This result is quite surprising because the result for the size variable is in contradiction with studies of Pàstor & Veronesi (2012) and Hill et al. (2019) that find that larger companies are more negatively affected by political uncertainty. However, for example, Hill et al. measure size by market capitalization, whereas this research measures size by turnover. This could be the reason for the opposing results because some companies that have a large market capitalization do not have a high turnover. Hill et al. state that it is possible that larger companies are more secure, so they are not as likely to suffer from heightened political uncertainty. This could result in acquired findings because a high level of turnover can implicate stability.

In addition, sustainability has a positive impact on the effect of political uncertainty, which means that companies that are doing well in CSR are not as much impacted by political uncertainty. It also has relatively high economic significance because one standard deviation increase leads to an increase of 1.845% in the impact of political uncertainty. This can relate to the finding of Lins et al. (2017) that state that during the financial crisis, companies doing well in CSR performed better than companies with lower CSR rankings. This could imply that it is also beneficial to do well in CSR during times of uncertainty.

Model two, which excludes Alphabet, Amazon and Apple, has quite similar results compared to model one because the same variables have a statistically significant effect that is also positive. However, the impact of size is only a bit larger for the restricted set, but the impact of sustainability is exactly the same for the restricted data set. This implies that model one is not impacted by outliers and that the results of model one are robust. The results of table nine could imply that investors can protect themselves from the negative impact of political uncertainty around presidential elections by investing in large and sustainable companies. Furthermore, managers can take advantage of the results of table nine. To reduce the negative impact of political uncertainty on the stock returns, managers should invest in CSR and strive for a larger turnover.

Dependent variable: effect of political uncertainty

	2000	2004	2008	2012	2016	2020
Constant	0.158	-0.119***	-0.120	-0.047	-0.060	-0.046
	(1.442)	(-3.352)	(-1.345)	(-0.487)	(-0.985)	(-1.605)
Size in millions	-1.207e-6	4.663e-7*	5.583e-7	3.395e-7	5.506e-8	4.406e-7*
	(-1.027)	(1.846)	(1.387)	(1.090)	(0.391)	(2.000)
Leverage	-0.095	0.056	-0.051	-0.079	0.005	-0.090
	(-0.901)	(1.196)	(-0.465)	(-0.751)	(-0.089)	(-0.911)
Sustainability		-0.0008	0.0006	0.0009	0.001	
		(-1.196)	(0.489)	(0.690)	(1.540)	
Internationalization	-0.141	0.025	-0.012	-0.164*	-0.023	-0.044
	(-0.792)	(0.542)	(-0.116)	(-1.851)	(-0.528)	(-0.476)
Effects specifications						
R-squared	0.059	0.155	0.074	0.125	0.068	0.122
Adjusted R-squared	-0.019	0.071	-0.012	0.043	-0.019	0.059
F-statistics	0.753	1.836	0.862	1.533	0.780	1.946
Prob (F-statistics)	0.528	0.141	0.495	0.210	0.544	0.137
S.E. of regression	0.243	0.072	0.162	0.144	0.071	0.146
Observations	44	48	50	50	50	50

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 10. Effect of firm characteristics during different elections

Dependent variable: effect of political uncertainty

	2000	2004	2008	2012	2016	2020
Constant	0.154	-0.152****	-0.103	-0.032	-0.055	-0.178*
	(1.371)	(-4.269)	(-1.099)	(-0.313)	(-0.848)	(-1.843)
Size in millions	-1.124e-6	3.613e-7	5.554e-7	3.567e-7	1.139e-7	6.890e-7**
	(-0.922)	(1.513)	(1.364)	(1.085)	(0.727)	(2.508)
Leverage	-0.097	0.115**	-0.072	-0.118	-0.007	-0.084
	(-0.832)	(2.324)	(-0.619)	(-1.054)	(-0.118)	(-0.818)
Sustainability		-0.0007	0.0005	0.001	0.0009	
		(-1.383)	(0.407)	(0.739)	(1.301)	
Internationalization	-0.148	0.040	-0.010	-0.168*	-0.015	-0.005
	(-0.813)	(0.917)	(-0.085)	(-1.854)	(-0.321)	(-0.057)
Effects specifications						
R-squared	0.057	0.221	0.075	0.142	0.072	0.168
Adjusted R-squared	-0.026	0.137	-0.017	0.056	-0.021	0.104
F-statistics	0.689	2.631	0.814	1.651	0.779	2.619
Prob (F-statistics)	0.565	0.050	0.524	0.181	0.545	0.064
S.E. of regression	0.248	0.067	0.163	0.145	0.073	0.147
Observations	42	45	47	47	47	47

The t-statistic is reported in the parentheses

****, ***, ** and * indicate statistical significance at the 0.1%, 1%, 5% and 10% level

Table 11. Effect of firm characteristic of restricted set of companies

Table ten and eleven show the impact of firm characteristics on the effect of political uncertainty on companies during each presidential election. Table ten presents the results for the whole set of companies, whereas table eleven introduces the results for the restricted group of companies. The results for the restricted data set can be considered as a robustness check to ensure that outliers do not impact the results. Both tables show that the impact of firm characteristics on the effect of political uncertainty caused by a

single presidential election is not very significant, which means that the firm character-
istics are able to explain better the differences in aggregate. This result is quite natural
since presidential elections happen only once every four years, so individual elections
do not have a remarkable impact on firm characteristics.

In table ten, size has the most notable impact on the effect of political uncertainty. It is
statistically significant during the presidential elections 2004 and 2020, which means
that larger companies were not as negatively affected by political uncertainty during
those presidential elections. The result for these years also has economic significance
since in 2004; one standard deviation increase leads to an increase of 2.033% in the ef-
fect of political uncertainty, whereas in 2020, the increase is 4.384%. Interestingly inter-
nationalization has a negative impact on the effect of political uncertainty during the
presidential elections in 2012. It also has the most economically significant impact of the
statistically significant variables since one standard deviation increase leads to a 4.477%
decrease in the effect of political uncertainty. This means that internationalized compa-
nies were more negatively affected by political uncertainty. This result is in line with the
findings of Boutchkova et al. (2012). Therefore, the reason for this result could be that
during the presidential elections of 2012, there was particularly much uncertainty about
future foreign trade policies, which means that the returns of these companies were
more uncertain. Consequently, internationalized companies were more negatively af-
fected by political uncertainty in 2012.

Table eleven shows that the results differ slightly from the results of table eight, which
could imply that the whole data set may be prone to outliers a bit. The reason for this
can be that there are only around fifty observations in the original data set, so removing
three observations can alter the results. The largest difference seems to be in 2004 when
leverage has a positive impact on the effect of political uncertainty, whereas in table ten,
only the size is statistically significant, and the effect of leverage is quite economically
significant. The result for leverage is quite surprising because it could be assumed that
more leveraged companies that are also riskier are more negatively affected by political

uncertainty. However, it is possible that the election of Bush was seen as beneficial for leveraged companies. Additionally, internationalization in 2012 and size in 2020 have a higher economic significance for the restricted data set than for the whole data set. This could imply that results in table ten are impacted by outliers.

8 Conclusions

This research treats the topic of political uncertainty and its effect on the stock market and companies. Recent events such as the global health crisis of 2020 have shown the importance of political uncertainty and that its effect on financial markets is significant. This research examines political uncertainty around presidential elections in the United States from 2000 to 2020. Presidential elections are an essential source of political uncertainty, and it sets an ideal setting to examine political uncertainty since presidential elections happen every four years, and they often lead to multiple new policies. Monthly returns of the Dow Jones Industrial Average index and fifty selected companies from February 2000 to December 2020 are examined. The election probability of a Republican candidate measured by election polls and economic policy uncertainty index are used as measures of political uncertainty. Moreover, this research examines the role of firm characteristics on the reaction of companies to political uncertainty. Examined firm characteristics are size, leverage, sustainability, and internationalization.

Even though political uncertainty plays a vital role in the financial markets, its understanding is still in the beginning. However, recently there has emerged multiple studies about the topic. Previous literature has found that political uncertainty has a negative impact on the stock market. This means that when political uncertainty increases, it results in a decrease in stock prices. According to previous findings, the reason for this is that political uncertainty needs a risk premium. This means that the discount rate increases due to political uncertainty, which in turn leads to a drop in stock prices. This implies that political uncertainty is priced. Moreover, options prove that it is priced because options that live through a political event creating political uncertainty are more expensive than similar options that do not experience a political event. In addition, during times of heightened political uncertainty, volatilities between stocks grow. Furthermore, political uncertainty even impacts investments because companies prefer to postpone investments during times of political uncertainty. Even households prefer to save during heightened political uncertainty.

This research finds that there is a negative relationship between political uncertainty and stock returns which is in line with previous studies. Additionally, presidential elections cause political uncertainty that leads to a decrease in stock returns. Based on this research, stock market indices are also impacted negatively by political uncertainty and political uncertainty caused by presidential elections. Moreover, political uncertainty caused by different presidential elections leads to different reactions in the returns of individual companies and the stock market. Based on previous literature, one reason for this is that if the previous policy is seen as detrimental enough, it can lead to a positive reaction, but often the reaction is insignificant because the policy change was already expected. Furthermore, stock prices tend to react more negatively to political uncertainty caused by the election of a Democrat candidate than to political uncertainty caused by the election of a Republican candidate. In addition, firm characteristics seem to explain the effect of political uncertainty on different companies during all the presidential elections in total. These firm characteristics are size and sustainability, which means that companies with high turnover and companies doing well in CSR are less affected by political uncertainty. These companies can offer protection against the negative impact of political uncertainty. However, the chosen firm characteristics have quite a weak explanatory power on separate presidential elections.

The principal limitation of this research is the low R-squared of the model, which means that independent variables explain only a little of the variance in the dependent variable. This means that the employed models could be enhanced by adding more variables. Additionally, the data set covers only fifty companies, so the results could be enhanced by covering more companies. Moreover, since the understanding of political uncertainty is still in the beginning, it still offers many possible aspects for future research. For example, a similar study can be done to examine the effect of political uncertainty caused by presidential or parliamentary elections in different countries. Additionally, this research can be extended to research if political uncertainty caused by U.S. presidential elections has an international impact on the stock market.

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Appendices

Appendix 1. List of companies

Ticker	Company name	Industry
AAPL.O	Apple Inc	Computer Hardware
ADBE.O	Adobe Inc	Software
ADP.O	Automatic Data Processing Inc	Financial Administration
AMAT.O	Applied Materials Inc	Semiconductors
AMD.O	Advanced Micro Devices Inc	Semiconductors
AMGN.O	Amgen Inc	Biotechnology
AMZN.O	Amazon.com Inc	Broadline Retailers
AXP	American Express Co	Consumer Finance
BA	Boeing Co	Aerospace
BKNG.O	Booking Holdings Inc	Travel & Tourism
CAT	Caterpillar Inc	Commercial Vehicles & Trucs
CMCSA.O	Comcast Corp	Broadcasting & Entertainment
COST.O	Costco Wholesale Corp	Broadline Retailers
CRM	Salesforce.com Inc	Software
CSCO.O	Cisco Systems Inc	Telecommunications Equipment
CVX	Chevron Corp	Integrated Oil & Gas
DIS	Walt Disney Co	Broadcasting & Entertainment
GILD.O	Gilead Sciences Inc	Pharmaceuticals
GOOGL.O	Alphabet Inc	Internet
GS	Goldman Sachs Group Inc	Investment Services
HD	Home Depot Inc	Home Improvement Retailers
HON	Honeywell International Inc	Diversified Industrials
IBM	International Business Machines Corp	Computer Services
INTC.O	Intel Corp	Semiconductors
INTU.O	Intuit Inc	Software
ISRG.O	Intuitive Surgical Inc	Medical Equipment
JNJ	Johnson & Johnson	Pharmaceuticals
JPM	JPMorgan Chase & Co	Banks
KO	Coca-Cola Co	Soft Drinks
MCD	McDonald's Corp	Restaurants & Bars
MDLZ.O	Mondelez International Inc	Food Products
MMM	3M Co	Diversified Industrials
MRK	Merck & Co Inc	Pharmaceuticals
MSFT.O	Microsoft Corp	Software
MU.O	Micron Technology Inc	Semiconductors
NFLX.O	Netflix Inc	Broadcasting & Entertainment
NKE	Nike Inc	Footwear
NVDA.O	NVIDIA Corp	Semiconductors
PEP.O	PepsiCo Inc	Soft Drinks
PG	Procter & Gamble Co	Nondurable Household Products
QCOM.O	Qualcomm Inc	Semiconductors
SBUX.O	Starbucks Corp	Restaurants & Bars
TMUS.O	T-Mobile US Inc	Mobile Telecommunications
TRV	Travelers Companies Inc	Property & Casualty Insurance
TXN.O	Texas Instruments	Semiconductors
UNH	UnitedHealth Group Inc	Health Care Providers
V	Visa Inc	Consumer Finance
VZ	Verizon Communications Inc	Fixed Line Telecommunications
WBA.O	Walgreens Boots Alliance Inc	Drug Retailers
WMT	Walmart Inc	Broadline Retailers

Appendix 2. Descriptive statistics of explanatory regression for each election

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Observations
Size in millions 2000	24,334	17,027	166,803	26.622	31,928.030	2.877	9.810	44
Leverage 2000	55.730%	50.093%	227.594%	8.245%	0.373	2.585	10.050	44
Internationalization 2000	35.713%	38.078%	80.836%	0.000%	0.229	-0.017	-1.026	40
Size in millions 2004	30,531	21,82	258,681	96.023	43,596.530	3.657	16.549	48
Leverage 2004	49.019%	49.202%	106.994%	10.684%	0.245	0.392	-0.548	48
Sustanability 2004	36.710	40.638	87.305	0.000	21.543	-0.294	-0.389	48
Internationalization 2004	38.632%	37.360%	86.141%	0.000%	0.258	0.148	-0.990	45
Size in millions 2008	43,029	24,873	377,023	748.700	64,672.870	3.749	16.508	50
Leverage 2008	54.617%	54.065%	102.124%	11.108%	0.222	0.257	-0.445	50
Sustanability 2008	56.270	57.351	91.583	0.000	22.712	-0.479	-0.621	50
Internationalization 2008	42.880%	44.106%	91.662%	0.000%	0.268	0.069	-0.765	48
Size in milions 2012	54,876	38,561	446,509	2,178.800	71,643.960	3.736	18.303	50
Leverage 2012	55.600%	54.472%	93.288%	11.803%	0.205	0.140	-0.770	50
Sustanability 2012	60.979	65.826%	91.252	6.763	19.343	-0.779	0.180	50
Internationalization 2012	46.564%	50.008%	94.943%	0.000%	0.273	-0.119	-0.919	48
Size in millions 2016	61,754	38,014	482,130	2,706.500	77,196.180	3.632	17.737	50
Leverage 2016	63.606%	62.150%	107.105%	10.931%	0.202	-0.217	0.048	50
Sustanability 2016	68.260	70.523	91.200	16.169	16.125	-1.415	2.676	50
Internationalization 2016	46.827%	47.331%	98.361%	0.000%	0.262	0.071	-0.809	48
Size in millions 2020	78,335	39,576	523,964	4,358.400	99,491.050	2.769	8.919	50
Leverage 2020	68.441%	71.375%	126.552%	12.623%	0.226	0.036	0.569	50
Internationalization 2020	47.753%	47.673%	94.805%	0.000%	0.253	0.147	-0.554	46