

# The Rise of Populism: Effect on National Stock Market Returns and Volatility

Populist Politics Pounding Profit?

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## ABSTRACT

This paper investigates whether the increase in electoral success of populist extreme parties has an impact on short-term equity market returns and volatility by looking at a sample of 192 European elections. Using a cross-national regression methodology, we find that a large change in the share of seats in the national parliament held by populist extreme parties has a negative impact on national equity market returns. This confirms the view often articulated in popular press that populist extreme parties have a negative effect on a country's long-term economic development. We also find that populist extreme parties entering into government post-election increases the volatility around the election day, while there is no indication of an impact on volatility of the change in populist extremist seat share.

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## I. Introduction

Politics is a constantly changing field and political trends often spread like shockwaves across continents. Since closely interrelated with macro- and socioeconomic factors, political developments are carefully observed by investors. Even though economists do not always agree on which political parties or ideology are most suitable for economic prosperity, it seems undoubtable that politics and elections are a crucial matter to the financial industry.

The political movement that has risen most dramatically, particularly in Europe and the U.S., over the last few decades is populism. An increased polarisation of the political landscape has gone hand in hand with a fast-growing popularity and electoral success for populist extreme parties of both left and right philosophies. While this development has been well covered by media outlets, many pundits in financial journals have expressed their concerns regarding the success of populist extremists. As this paper is being written, Brazil was holding presidential elections in which the populist radical right candidate Jair Bolsonaro celebrated a staggering success, which has been thoroughly covered in for example the Financial Times.<sup>1</sup> In September 2018 parliamentary elections were held in Sweden as well, which was documented by both local and international financial press and during which the populist extreme party received the most attention from journalists.<sup>2</sup> Given the large overall focus on populist extreme parties in financial media outlets, it seems unlikely that investors do not price in and take into consideration those developments when making their trading decisions.

Which parties will be in the government and parliament of a country affects economic and financial policies over a period of at least four years. Policies will in turn affect corporate performance and decision-making and thus determine the amount of dividend paid out. As stock prices represent the discounted expected future dividends it is therefore reasonable to assume that investors care about the political impact-makers in a country.

While the recent strengthening of populist extreme movements worldwide has been largely studied in academic papers, very little research has been conducted regarding the effect of election results of populist extreme parties on national equity markets. Therefore, the purpose of this paper is to test empirically if, and in that case how, the success of populist extreme parties has an impact on the return of the national equity market of that country. It conducts a study of 192 parliamentary elections in 28 European countries. The main factor that is investigated in the study is the change in the share of parliamentary seats held by populist extreme parties between two consecutive

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<sup>1</sup> Leahy, Joe, and Schipani, Andres, 2018, Bolsonaro wins first round of Brazil's presidential poll, Financial Times, October 8, accessed 2018-10-18

<sup>2</sup> The Economist, 2018, The anti-immigrant Sweden Democrats fail to achieve an electoral breakthrough, September 10, accessed 2018-10-18

elections, which we interpret as a proxy for political power. Besides the latter, we consider eleven additional variables. They include election-specific factors such as the number of parties in the government coalition following the election and the winning margin of the government parties as well as country-specific such as GDP per capita.

Based on our methodology, we first we analyse the descriptive statistics of the tested variables to get an understanding of what characterizes both the elections and the countries studied. We can for example conclude that a majority of the countries studied are parliamentary democracies and that minority governments have been fairly common results of the studied elections.

Secondly, we plot the average 20-day volatility on the days around the elections in our sample. This enables us to identify if, and when, the market starts pricing in the likely election outcome, which turns out to be approximately 20 trading days prior to the election day. We also plot the average cumulative return investors achieve around the election days in our election sample for different time frames, ranging from 60 days to 2 days before. Furthermore, we show the cumulative returns for two groups of elections, one in which populist extremists did not increase their share of parliamentary seats and one group of elections in which they did. According to these plots the market seems to negatively price in the imminent increase of populist extremist seat share in the parliament.

Thirdly, we run the main regression tests where the cumulative return of the national stock market index is our dependent variable. The independent variables are the above- mentioned election- and country specific factors. This analysis is moreover done for different time frames of cumulative returns around elections. Based on those regressions, it becomes clear that an increase in populist extremist seats share has a statistically significant negative effect on cumulative returns which is priced in by the market starting 40 to 20 days before the election. Furthermore, the same regressions are run for volatility as the dependent variable. We were able to identify that having a populist extremist party in the government post-election has a positive effect on volatility.

Lastly, we conduct robustness checks by regressing cumulative return against each of the studied variables individually. By doing this, we find that no other variable has an impact on cumulative return that is as significant as *change in seat share* does. We furthermore run the main regression while removing a varying percentage of the most extreme observations in terms of absolute change in parliamentary seats held by populist extremist parties. The result from this test suggests that it is the extreme changes in vote that account for most of the negative impact on return.

Based on these tests, we identify indications of a negative impact of the success of populist extreme parties on equity market returns. More importantly, it turns out that the change in populist extremist seat share in the national parliament does not only seem to have a negative impact, but also has the largest impact out of all factors that we considered. However, as described above, a lot of that impact seems to stem from the more extreme observations.

Moreover, the volatility plots and regressions indicate that elections in which populist extremist parties' power increased actually show lower volatility of returns than elections where their power remained the same or decreased. On the other hand, a populist extreme party finding its way into government post-election has a positive impact on volatility and a small positive impact on cumulative returns.

This paper is structured as follows. Section II describes previous literature related to the topics of the rise of populism, elections and stock markets, as well as populism in Europe. In section III a brief background on our research question is given and the hypotheses are defined. Section IV describes the data used and methodology applied. The results of the different tests are presented in section V, in section VI the implications of the findings are discussed and in section VII our conclusions are explained. Appendices are provided in the end of the paper.

## II. Related literature

### The rise of populism

Literature on extremist parties and politicians around the world, and particularly in Europe, is extensive within the field of political studies and sociology. The rise of radical movements during the last decades have spurred the research of this topic. A large part of the previously written articles focuses on right-wing populists and many of them investigate the source of supply of those parties. One of the most prominent authors in the field is the Dutch professor Cas Mudde, author of the book *Populist Radical Right Parties in Europe* (2007) and of several commonly cited articles. His most perceived paper is perhaps *The Populist Zeitgeist* (2004) in which Mudde explains his definition of populism and argues that populism is an ideology, however a thin-centred one, that can be combined with other ideologies such as nationalism, communism and the like. He further describes the populist view of the world and shows that populists are reformists and not revolutionists, i.e. that they accept practice of democracy. Furthermore, he argues that populism is present in the entire political spectrum and that mainstream parties also use populist rhetoric. Populism today seems to be a reaction of the populism of 1968. Today's populist voters want less participation and more leadership; they want a leader who know what the people want without having to be told. Finally, Mudde stresses that populism is a periodic phenomenon and will not always be present, but reasons that it might become a more regular feature of liberal democracies in the future.

In *Three decades of populist radical right parties in Western Europe: So what?* (2012), Mudde discusses the impact of Populist Radical Right Parties', PRRPs, on the political landscape in Europe over the last three decades. He does not find that the PRRPs have had a major impact on European politics in terms of people, parties and policies. He does, however, argue that there is a chance that they will become more influential in the future since mass media has become more tabloid focused, PRRPs have become more established in national politics and have mastered the transformation from successful opposition parties to government parties.

Muis and Immerzeel (2017) also study the success of populist radical right, PRR, parties. They argue that the rise of radical right populism can be explained by both supply and demand. The demand side, however, is not found to be enough to explain the populist upswing due to the fact that the demand should be similar in comparable regions but the support for PRR parties still differs substantially across regions. On the other hand, external supply stems from mainstream party convergence which leaves a gap in the political field, while the internal supply is ideology-

focused and the authors identifies the “winning concept” to be cultural conservatism in combination with protectionism and welfare focus.

## Populist parties and policies in Europe

In academic research, the consensus view suggests the existence of populism since the 1990s. Zaslove (2008), for instance, argues that populism was no “significant political force” until that decade, while Mudde (2004) identifies a period which he calls “populist *Zeitgeist*” that has been a feature of Western liberal democracies since the early 1990s. In recent years, however, Europe has seen an unprecedented rise of populism in its political landscape. Examples are the right-wing National Front (FN) in France, whose candidate Marine Le Pen came second (33.9 percent of votes) after now president Emmanuel Macron in the 2017 presidential election or the Alternative for Germany (AfD) that, after having only been founded in 2013, won a staggering 12.6 percent of the popular vote in the German federal elections.

While the phenomenon of populism is addressed by scholars, parties and media of any political spectrum, a common definition seldomly filters through. In order to conduct any kind of empirical study on the impact of populism, however, there has to be a definition that both points out the key underlying characteristics to the phenomenon, but at the same time leaves space to apply the concept onto a sufficient variety of different cases. This is crucial as populism is often viewed and understood too narrowly, for example as a purely right wing or anti-democratic issue. However, the core elements of populism are prominent both in right as well as left wing parties and the phenomenon is not necessarily in contradiction to democratic principles.

A great question is certainly what those characteristics are. We want to focus on definitions found in academic literature that perceive populism as an ideology. Others define populism as a movement (e.g. Roberts, 2006 or Jansen, 2011), as a style (Knight, 1998 or Jagers and Walgrave, 2007), as a discourse (Hawkins, 2009) or other. Most commonly, however, populism is viewed as an ideology, which is a thought we share. Canovan (1999) describes populism as an “appeal to ‘the people’ against both the established structure of power and the dominant ideas and values of society”. Similarly, Mudde (2004, 2007) perceives populism as a “thin-centered ideology that considers society to be ultimately separated into two homogenous and antagonistic camps, ‘the pure people’ versus ‘the corrupt elite,’ and which argues that politics should be the expression of the *volonté générale* (general will) of the people”. Lastly, Albertazzi and McDonnell (2008) call it an “ideology which pits a virtuous and homogenous people against a set of elites and dangerous ‘others’ who are together depicted as depriving (or attempting to deprive) the sovereign people of their rights, values, prosperity, identity and voice”.

While this is of course not an exhaustive and rather selective choice of definitions, two core elements stand out very clearly that also run like a common thread through other academic papers: The notion of “the people” and the confrontation with “the elite”. Indeed, the notorious populist extreme parties such as the ones mentioned above use these elements in their rhetoric as well as in their written manifestos. The right-wing populist Alternative for Germany (AfD), for instance, blames the maldevelopment of the past decades on the “small, powerful political oligarchy” and wants *Das Volk* to become the sovereign in their manifesto for the German federal election 2017. Therefore, populists share the attempt to depict voters/the population as a homogenous group whose will is (at least in part) disregarded by the corrupt, powerful elite and are extremely critical of political institutions, such as the EU in the AfD’s case. Consequently, even though populism is commonly perceived to be a part of liberal democracy, it is a valid claim that the ideology feeds off of the conflict between the two pillars of liberal democracy - the sovereign of the population and constitutional politics (Meny and Surel, 2002).

Summing up, it is hard to find a universal true definition of populism that would allow the concept to be applicable to every case it is relevant for. However, as argued above, there are some core elements that are arguably found within the actions of all notoriously populist extreme parties - the notion of “the people” and the opposition to some kind of “elite”.

### The impact of election outcomes on stock market activities

Many scholars have researched the effect of elections on the stock market with regards to different aspects, although a large share of their papers focus on the volatility of the market rather than returns. Furthermore, the papers focus on the impact of the general political orientation of parties on a left-right spectrum instead of whether they exhibit populist or radical tendencies.

In *Government Partisanship, Elections, and the Stock Market: Examining American and British Stock Returns, 1930-2000* (2005), Leblang and Mukherjee shed light on the impact of having a leftist versus having a rightist government on the stock market in both Great Britain and the U.S. Their findings suggest that in both countries, expected and actual right-wing victories result in a higher return and volatility which they explain by that right-wing parties, Republicans and Conservatives, are implementing more stock market friendly policies such as tax reductions.

A positive effect of having a right-wing government is further identified in several other papers, one of which is James H. Fowler’s *Elections and Markets: The Effect of Partisanship, Policy Risk, and Electoral Margins on the Economy* (2006). Fowler examines and expands the different implications of the Rational Partisan Theory and argues that in cases in which market expects Democrats to win either presidency or mid-term, interest rates increase. He further finds that the market is not

only averse to political changes (interest rate lower when incumbent party wins) but also prefers a narrow victory over a large margin victory.

Herron (2000) finds the implied volatility to be higher during a Labor government than that during Conservative governments in *Estimating the Economic Impact of Political Party Competition in the 1992 British Election*. Santa-Clara and Valkanov (2003) identify the opposite and claim that there is a positive relationship between Democrats being in the government and the overall performance of the American stock market. They base their study on data comprising 18 presidencies and regress market return against a range of election-related variables.

Jensen and Schmith (2005) further conduct a study in order to assess the market reaction to political events in the context of the presidential election of 2002 in Brazil. More specifically, pre-election poll data is used to conclude how changes in the expected probability of a political candidate winning office impacts the local stock market. Using time-series analysis, they estimate the impact of changes in the popularity of the four main presidential candidates on mean return and volatility in the Brazilian stock market. They find no evidence that the rise in popularity of left-wing trade unionist Luiz Ignacio de Silva had a statistically significant impact on the mean of the stock market. This comes somewhat surprising since, before the elections, scholars, pundits and financial market masterminds such as Warren Buffet predicted a heavy economic downturn in the case of an election of Lula. On the other hand, however, Jensen and Schmidt do find statistical evidence for a positive correlation between Lula's popularity and stock market volatility, which they trace back to the uncertainty of Lula's policies in a potential presidency (Candidate Uncertainty Hypothesis). Originally, they had hypothesized that an increase in popularity relative to other candidates and, accordingly, an increase in Lula's lead in the polls over his opponents, would rather decrease stock market volatility due to reduced uncertainty of the political outcome of the election (Election Uncertainty Hypothesis).

### Potential economic implications of populist policies

Acemoglu et al. (2013) develop a theoretical model of populism to explain why populist policies are implemented despite the fact that they ultimately cause undesirable economic developments. Their explanation is that politicians need to signal that they are independent from "the elite" and therefore endorse redistribution and interventionist policies that make it seem impossible that the politicians are captured by the elite.

While there are many theories of the reasons for the recent emergence of and the support for populism, relatively little time has been spent on shedding light on its impact on the economy. Dornbusch and Edwards (1990) provide an early explanation of why populist macroeconomic

policies have an adverse effect on the long-term state of the economy. They understand populist policies as a school of thought on economic management that stresses economic growth and income redistribution (mostly by large increases in real wages) and downplays the risk of inflation and deficit finance. According to Dornbusch and Edward's analysis, populist experiments usually evolve in four phases: Phase 1 is marked by the short-term success of the policies and therefore by high output growth, wages and employment. Phase 2 then sees the occurrence of bottlenecks due to the strong increase in demand and the reaction to the shortage of foreign exchange, which make price realignments and devaluations as well as exchange controls necessary. This is followed by phase 3, in which intensifying shortages, increased inflation and a widening foreign exchange gap lead to capital flight and demonetization of the country. Lastly, in period 4 with the economic failure of populist policies being obvious, stabilization under a new government will take place. At that time, real wages have declined to below the pre-policy level as investment is depressed and the manufacturing sector decapitalized.

This description of events as a consequence of populist policies is mostly motivated by the observation of left-wing populist governments in some Latin American states in the 20th century. The severity of the described events is rather unlikely to be seen in developed Western European countries as result of policies of the local populist parties. However, the policies described by Dornbusch and Edward share key elements with many of the plans proclaimed by European populists, and the economic mechanisms work the same way there (even though to a lesser extent due to those countries being more economically stable). Modern populist extremists also tend to focus on short-term effects of their proposed policies, which are often expansionary, i.e. involve increased spending and/or lower taxes. At the same time, they downplay the adverse long-term effects of such policies such as increased inflation and public debt and deny intertemporal budget constraints (EEAG, CESifo (2017), the Alternative for Germany (AfD), for instance, calls for a significant overall reduction of the tax ratio (e.g. reduction of VAT by 7 percentage points) but at the same time promises higher public contributions to the pension system in order to maintain pension levels in the course of rapid demographic change.

Furthermore, populist extremist policies tend to overemphasize on single and salient topics. In Europe, recently, two of such topics were immigration and international institutions, especially the European Union. Populists extremists also tend to claim to be able to solve many problems only with their focus topics. The Brexit campaign, for instance, promised to use an illusory 350 million pounds in EU contribution savings to solve the funding problems of the National Health System. The Alternative for Germany (AfD), who has in large parts centered their political manifesto on stopping immigration, portrays its core topic as a way to unburden the social security

system and guarantee the maintenance of pension levels despite the fact that the net financial contribution effect of immigration in Germany is highly ambiguous.

Many populist extremists also show hostility towards international economic trade, such as the French National Front's and the AfD's opposition to the Transatlantic Trade and Investment Partnership (TTIP) or the Comprehensive Economic and Trade Agreement (CETA). The long-term effects of free trade and economic integration are a highly-disputed topic and are, on a high level, believed to vary significantly between different countries. In general, however, export-oriented and industry-heavy countries tend to benefit from economic integration and labour mobility. Therefore, even though there is no universal truth that is valid for all countries with regards to the effect of open trade and economic integration, it is fair to argue that the economy of a country like Germany is likely to overall benefit from those. This shows that populist extremists feed on voters' fears and sorrows instead of focusing on creating long-term economic well-being of a country. This is true not only for the free trade topics, but, as explained above, also for expansionary policies, immigration matters and many more. Table I summarizes populist extremist policy characteristics and populist extremist topics.

Table I

**Policy characteristics and topics typical to populist politicians found in literature (not exhaustive)**

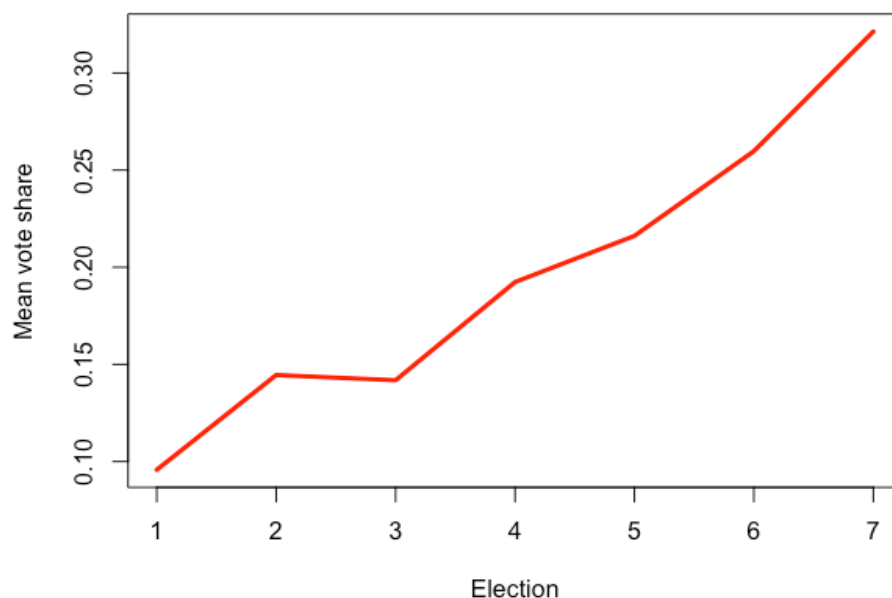
| Populist extremist policy characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Prominent populist extremist topics                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>○ Expansionary (more public spending or lower taxes) short-term positive effects; downplay of long-term negative effects (debt and inflation)</li> <li>○ Short-termism</li> <li>○ Denial of intertemporal budget constraints</li> <li>○ Failure to evaluate pros and cons of different policies and denial of trade-offs between them</li> <li>○ Focus on single and salient topic</li> <li>○ Overemphasis on negative effects of international economic exchange</li> <li>○ Opposition to checks and balances</li> <li>○ Blaming of immigration or foreigners</li> </ul> | <ul style="list-style-type: none"> <li>○ Immigration</li> <li>○ International trade/industry protection</li> <li>○ International institutions</li> <li>○ Public spending</li> <li>○ Health and elderly care</li> </ul> |

### III. Background and research hypotheses

In the past years, the political landscape in Europe has experienced substantial change. Graph I shows the share of votes received by populist extreme parties in the last seven elections in a sample of 15 European countries.<sup>3</sup> Although the graph does not include all European countries, it is obvious that there has been a trend of increased parliamentary success for populist extreme parties in Europe. In some countries, such as Hungary and Greece, populist extreme parties have in fact obtained a majority of seats in the parliament. Furthermore, there are countries that have more than one populist extreme party with significant voter support, for example one extreme-left and one extreme-right party. This is for instance the case in the Italian election of 2018 where the right-wing populist parties *Forza Italia* and *Lega Nord* received 14 and 17 percent of the votes respectively and the left-wing populist party *Movimento 5 Stelle* received 33 percent. An increased polarization with populist extreme parties on both ends of the political spectrum might bear the risk of difficulties in forming governments, which leads to political and therefore economic policy uncertainty.

Graph I

**Development of votes received by populist extreme parties over last three decades**



Graph I shows the average share of seats in the national parliament that populist extreme parties have received in the last seven elections in 15 European countries: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Sweden, Switzerland

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<sup>3</sup> Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Sweden, Switzerland

As described in the literature review, there is a number of characteristics that scholars have found to be typical for populist extremist policies. The impact of such policies on the economy certainly depends on how, and in which context, these are implemented. However, one can draw certain conclusions about the general impact of increased populist extremist parliamentary power on a nation's economy and thus on its stock market.

In general, the economic effect of expansionary policies is ambiguous and it is not clear if the logical market reaction would be positive or negative. On the one hand, investors could be pleased to see a focus on public investments as they stimulate the overall economy by employing more companies and workers (Keynes, 1936). Part of expansionary policies could also be tax cuts which might be well received by investors since it enables individuals to consume more and increases the profits of companies. A recent example of the market showing affirmation for a president whose policies indicate more future government spending is the stock market upswing following the election of Donald Trump in the United States 2016. The New York Times identified "the market's willingness to cast a positive eye on a Trump victory seems tied to the prospect of more government spending".<sup>4</sup>

On the other hand, one could argue that those stimulating effects are only of short-term nature and that the increased government spending will enlarge a country's debt burden and thereby harm the long-term development of an economy. After all, the intertemporal budget constraint requires all government expenses to be self-financing in the long-run. Decreased taxes on employment, for instance, can lead to more companies wanting to hire which in turn leads to more people working and thereby paying more taxes (Lundberg, 2016). A recent example of a negative market reaction to planned increased spending is the steep plunge of Italy's major index FTSE MIB on its populist government's announcement to further increase Italy's budget deficit.

As described above, by definition, populist extreme parties do not consider the financing of government spending to the same extent as their mainstream equivalents do. Thus, their short-term expansionary policies are not of a self-financing nature and are not specifically designed to achieve sustainable long-term economic development. Therefore, we expect the market to perceive populist extreme parties and their policies to have a rather negative impact on the overall economy of a nation, based on our argumentation above. From that, we derive our first hypothesis:

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<sup>4</sup> Landon, Thomas Jr., The New York Times, 2016, Why Stock Markets, Initially Shaken, Went Up After Trump's Victory, accessed 2018-10-15

**Hypothesis 1: Populist extreme parties gaining power in the national parliament has a negative impact on the nation's stock market index returns in the relevant period around an election.**

*H0: There is no correlation between the change in share of parliament seats received by a populist extreme party in an election and the national equity market index returns in the relevant period around the election.*

versus

*H1: There is a negative correlation between the change in share of parliament seats received by a populist extreme party in an election and the national equity market index returns in the relevant period around the election.*

Furthermore, as discussed above, many scholars have identified a significant positive effect of election uncertainty on volatility. Jensen and Schmith (2005) argue that the clearer the political standpoint on various topics of political parties - i.e. the more foreseeable expected (suggested) policies will be, the lower the volatility of stock market returns will be. This is in line with economic theory. As described above, populist extreme parties focus on singular topics and provide easy pseudo-solutions to complex issues. Therefore, the overall standpoint on the entire spectrum of political questions is much less clear than that of their non-populist counterparts. From that, we derive our second hypothesis:

**Hypothesis 2: Populist extreme parties gaining power in the national parliament increases the volatility of a nation's stock market index returns in the relevant period around the respective national election.**

*H0: There is no correlation between the change in share of parliament seats received by a populist extreme party in an election and the volatility of equity market index returns in the trading days surrounding the election.*

versus

*H1: There is a positive correlation between the change in share of parliament seats received by a populist extreme party in an election and the volatility of equity market index returns in the trading days surrounding the election.*

## IV. Data and methodology

### Data

#### Election data

Data of election outcomes and political parties was obtained from the *Parliaments and Governments Database*, ParlGov. ParlGov is a data base constructed by Holger Döring and Philip Manow of University of Bremen<sup>5</sup> that contains election data for all members of the European Union and most OECD countries. The dataset comprises election information of 37 countries and dates back more than 100 years, with the earliest election being the Belgian parliamentary election in 1900. In total, the dataset consists of approximately 640 elections and 1400 parties, including a wide range of different parameters some of which were particularly interesting for this study: Election type (e.g. European versus national parliament), election date, name of parties involved, share of votes and number of parliamentary seats obtained in the election, two dummy variables indicating whether a party became part of the government and whether the prime minister/head of government following the election was member of the party, respectively.

Even more interestingly, for every party involved in the respective election, the data set includes a numerical variable indicating its political orientation. The variable is an indicator of where on the political left-right scale the party in question is to be located, while a value of 0 represents the most leftist profile and 10 indicates the most rightist orientation.

#### Stock market data

This study intends to shed light on the effect of populist extreme parties and policies on financial market developments on a cross-European level. As a proxy for the overall equity market development that is as representative as possible for a given country, we considered respective country-specific indices. Based on the availability of those indices, the number of European countries included in our study amounts to 28. For some countries, e.g. Slovakia, data on the relevant country-specific stock market index is not available. For every country studied, the daily opening prices of the respective stock market indices were extracted from Bloomberg. The indices for every country were chosen on the basis of two criteria in descending order of importance: 1) commonness of usage/trade and 2) coverage of stocks of the respective index. The reasoning behind prioritizing 1) over 2) is that a higher frequency of trading and therefore higher liquidity in the asset ensures a relatively higher reactivity to any kind of events or announcements, which

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<sup>5</sup> Döring, Holger, and Manow, Philip, 2018, *Parliaments and governments database*, accessed 2018-10-03

makes any conclusions with regards to the effect of those on the stock market more accurate. A list of the indices used for the respective countries and their availability starting date can be found in Table II. Furthermore, in order to investigate the impact of populist extreme parties on volatility we extracted the 5-day, 10-day, 20-day, 30-day, 40-day, 50-day and 60-day Volatility data for all the relevant indices for the relevant time periods from Bloomberg. Those are calculated from the standard deviation of day to day logarithmic historical price changes. As an example, the 30-day volatility of an index equals the annualized standard deviation of the relative price change for the 30 most recent trading days closing price, expressed as a percentage.

Table II  
**National stock indexes used for this study**

| Country               | Index used     | Data from  | Country            | Index used   | Data from  |
|-----------------------|----------------|------------|--------------------|--------------|------------|
| <b>Austria</b>        | ATX Index      | 1986-01-08 | <b>Latvia</b>      | RIGSE Index  | 2000-01-03 |
| <b>Belgium</b>        | BEL20 Index    | 1991-01-02 | <b>Luxemburg</b>   | LUXXX Index  | 1999-01-04 |
| <b>Bulgaria</b>       | SOFIX Index    | 2000-10-24 | <b>Malta</b>       | MALTEX Index | 1995-12-27 |
| <b>Croatia</b>        | CROXEUR Index  | 2007-06-05 | <b>Netherlands</b> | AEX Index    | 1991-09-24 |
| <b>Czech Republic</b> | PX Index       | 1994-04-05 | <b>Poland</b>      | WIG20 Index  | 1994-06-06 |
| <b>Denmark</b>        | OMXC20CP Index | 2011-11-28 | <b>Portugal</b>    | PSI20 Index  | 1992-12-31 |
| <b>Estonia</b>        | TALSE Index    | 2000-03-17 | <b>Lithuania</b>   | VILSE Index  | 2005-08-08 |
| <b>Finland</b>        | HEX25 Index    | 1998-07-01 | <b>Romania</b>     | BET Index    | 1997-09-22 |
| <b>France</b>         | CAC Index      | 1987-07-09 | <b>Slovenia</b>    | SBITOP Index | 2003-04-01 |
| <b>Germany</b>        | DAX Index      | 1959-10-01 | <b>Spain</b>       | IBEX Index   | 1987-01-05 |
| <b>Greece</b>         | ASE Index      | 1987-01-02 | <b>Sweden</b>      | OMX Index    | 1986-12-18 |
| <b>Hungary</b>        | BUX Index      | 1991-01-02 | <b>UK</b>          | UKX Index    | 1986-04-01 |
| <b>Ireland</b>        | ISEQ Index     | 1983-01-05 | <b>Norway</b>      | OSEBX Index  | 1995-12-29 |
| <b>Italy</b>          | FTSEMIB Index  | 1997-12-31 | <b>Switzerland</b> | SMI Index    | 1988-07-01 |

Table II describes the national stock indexes used for this study and how far back the data for each index dates back

## Election sample

The time period overlaps between stock market and election data predetermined the number of elections used for this study. For all considered countries, the election data of the ParlGov dataset dated back considerably longer than the respective stock market index data. As a result, our study-relevant election sample, i.e. elections for which we have both election and stock market index data, consists of 192 elections, with the earliest one being the German federal election in 1961. The sample is summarized in the table below:

Table III  
**National parliament elections used for this study**

| Country        | # elections used | earliest election used | Country        | # elections used | earliest election used |
|----------------|------------------|------------------------|----------------|------------------|------------------------|
| Austria        | 10               | 1986-11-23             | Latvia         | 5                | 2002-10-05             |
| Belgium        | 7                | 1991-11-24             | Lithuania      | 3                | 2008-10-12             |
| Bulgaria       | 6                | 2001-06-18             | Luxembourg     | 4                | 1999-06-13             |
| Croatia        | 4                | 2007-11-25             | Malta          | 6                | 1996-10-26             |
| Czech Republic | 7                | 1996-06-01             | Netherlands    | 8                | 1994-05-03             |
| Denmark        | 6                | 1998-03-11             | Norway         | 6                | 1997-09-16             |
| Estonia        | 4                | 2003-03-02             | Poland         | 6                | 1997-09-21             |
| Finland        | 5                | 1999-03-21             | Portugal       | 7                | 1995-10-01             |
| France         | 7                | 1988-06-12             | Romania        | 5                | 2000-11-26             |
| Germany        | 16               | 1961-09-17             | Slovenia       | 5                | 2004-10-03             |
| Greece         | 13               | 1989-06-18             | Spain          | 9                | 1989-10-29             |
| Hungary        | 7                | 1994-05-29             | Sweden         | 8                | 1988-09-18             |
| Ireland        | 8                | 1987-02-17             | Switzerland    | 7                | 1991-10-20             |
| Italy          | 5                | 2001-05-13             | United Kingdom | 8                | 1987-06-11             |

Table III indicates which countries are used in this study, date of the first election used for this study in each country, and how many elections used by country

## Data for control variables

In addition to the election data obtained from ParlGov and the stock market data collected via Bloomberg, we created control variables relating to election outcomes based on the ParlGov data set (see in section V). Furthermore, yearly GDP per capita was collected from The World Bank's databank and quarterly GDP growth was obtained from OECD's data sources for every country

of our sample except for Bulgaria, Croatia and Malta. For Bulgaria and Croatia, yearly GDP growth, which was retrieved from the World Bank, was used as a proxy. Lastly, a control variable indicating if the country is a parliamentary democracy or not was created.

## Methodology

### Definition of populist extreme parties

Before conducting the empirical tests of this study shedding light on populist extreme parties, a definition of which parties are to be considered populist extreme had to be made. This categorization was performed based on both quantitative and qualitative criteria. On the one hand, we made use of the political orientation variable ranging from 0 to 10 available in the ParlGov data set. Cross-checking with a sample of parties commonly perceived as populist extreme, we determined that parties classified with a value lower than 1.5 and higher than 8.5 are to be considered populist extreme. We further ensured the accuracy of this classification by comparing our resulting sample with parties that are commonly identified as populist extreme by scholars such as Kopecký, Mudde, Muis and Immerzeel, as well as with the European Economic Advisory Group (EEAG)'s 2017 report on Populism and Economic Policy. Finally, despite taking into consideration several quantitative and qualitative sources, the final sample of populist extreme parties is, to a certain extent, also the result of subjective judgement. One pitfall of a purely numerical definition, for instance, is that parties and politicians can be populist without necessarily being extreme left or right. This can for example be seen in Italy where several parties are considered to be populist even though they have a relatively neutral position according to the numerical orientation variable (Rooduijn, 2017). Therefore, some parties that would not have been included based on the numerical cut-off such as Dansk Folkeparti and Perussuomalaiset, were added to our sample of populist extreme parties as those have many times been identified as such by several political scientists (e.g. Andersen et al., 2017; Kopecký and Mudde, 2002; Muis and Immerzeel, 2017).

### General approach

While some exploratory techniques are used in order to investigate our hypotheses, the main analytical focus of this paper lies in a number of regression tests. Overall, this paper tries to assess the impact of populist extreme parties on both volatility and return of the national equity markets around an election. While volatility based on different time frames and on all possible days was readily available to us through Bloomberg, a dependent variable capturing the effect on stock market return had to be constructed.

The underlying assumption of the study is the notion that information uncertainty is resolved on the day of the election, which will finally be priced in in any trading actions in the direct aftermath of the election. Therefore, for every election, we constructed the cumulated return resulting from the respective index value at the end of the first full trading day after the election over that of a point of time previous to the election. Naturally, we took into consideration on which day of the week the election took place to determine which day is the appropriate post-election trading day. If, for example, an election took place Sunday, the appropriate post-election index value is the following Tuesday's opening price. as well as for Saturday. If, however, an election was on a Wednesday, Friday's opening price is the appropriate post-election index value. This is consistent with our assumption that election results are becoming public after markets are closing on the respective day (not relevant for Saturday and Sunday) and that markets mostly trade and react to the election outcome on the trading day following the election.

Two pitfalls of this methodology are that 1) information regarding the outcome is in part available to observers before the actual election day in the form of for example surveys and 2) it is not obvious when such information would generally start to be priced in into market movements before an election. To mitigate and get an idea of the latter issue, we constructed the trajectory of cumulative returns and their volatility on all days for different time frames (n days before election day) up to the post-election trading day. Consequently, the cumulative return variable for time frame n of an election on election date t in country i is constructed as follows:

$$Cumulative\ return_{i,t,n} = \frac{Opening\ index\ value_{i,T} - Opening\ index\ value_{i,t-n}}{Opening\ index\ value_{i,t-n}} \quad (1.1)$$

where T is the second open trading day following the election

Furthermore, in order to assess the effect of populist extreme parties on equity market activities, an independent variable capturing the magnitude of the change in populist extremist impact between the two consecutive parliamentary periods around the respective election is necessary. We defined that variable as the difference between the total share of seats of all populist extreme parties in the parliament before an election and the total share of seats of all populist extreme parties in the parliament after an election. We believe that this the best proxy of influence of populist extreme parties. Therefore, for election E in country i, the explanatory variable *change in seat share* is constructed as follows:

$$changesharepop_{E,i} = sharepop_{E,i} - sharepop_{E-1,i} \quad (1.2)$$

Since the event window in this study is relatively narrow and includes the days directly preceding and following the election day, it is reasonable that a few other factors, both related and unrelated to the election, would have an impact on the index price. To pinpoint the drivers of election-induced returns, we have created a comprehensive and, based on similar studies, exhaustive dataset of explanatory variables. We expect those variables to give further insights into the political and socio-economic factors influencing the nature of election shocks. We considered the following explanatory variables:

- *Populist party in government* is a binary variable with value of one if a party categorised as populist extreme entered a government coalition following the election and zero otherwise. Being in a governing position gives a party much more power to implement its proposed policies and it is therefore reasonable that if the market takes into account the success of a populist extreme party, the reaction would be stronger if the populist extreme party will be part of a government.
- *Margin* is a continuous variable indicating the difference between the share of seats in the parliament held by the coalition/governing parties and the share of seats held by the opposition. Fowler (2006) among others shows the significance of margin as an explanatory variable. The reasoning behind why margin is important is that the market is averse to one party being overly powerful and thus being able to avoid making compromises and being subject to checks and balances by a strong opposition.
- *Incumbent party winner* is a binary variable which takes on the value of one if the party who sets the prime minister pre-election is also the party of the prime minister post-election. Fowler (2006) shows that the market is generally averse to political changes and therefore prefers the incumbent party winning.
- *Parliamentary democracy* is a binary variable that assumes the value one if the country of the election in question is a parliamentary democracy. Countries whose political system is a parliamentary democracy as opposed to a presidential democracy, derive a larger part of their law-making instances from parliamentary elections, which investors should consider in their reaction to the respective election outcome.
- *Minority government* is a binary variable that assumes the value one if the governing parties/coalition have less than 50 percent of the seats in the parliament and zero in case of more than 50 percent of the seats. The reasoning for including this variable is that minority governments require additional support from other parties in the parliament, which affects actionability and the implementation of legislation changes.

- *GPD per Capita* indicates the GDP per capita measured in current US Dollars of the respective country in the year of the considered election. We interpret this as a proxy for development of the country, which we think should have an impact on the reaction of investors to a populist extreme party gaining power in an election. One hypothesis of ours was that in countries that are more developed, in general more stable, an increase in power of populist extremists has a relatively lower expected negative impact on the future economic development of a country, while more fragile countries would suffer more economic damage from those.
- *Left or Right government* is a continuous variable from zero to ten and indicates the average political orientation of the governing parties on a spectrum from left to right, where zero represents the extreme left and ten the extreme right. The value is the weighted average orientation of all parties in the government taking into consideration their respective number of seats in the parliament. We include this variable to control for a possible reaction of investors to the general political orientation of the government following the election and thus its expected policies. Herron (2000), Fowler (2006) and others have identified that markets react to the overall political orientation of the government.
- *Left or Right parliament* is a continuous variable from zero to ten and indicates the average political orientation of the parliament parties on a spectrum from left to right, while zero represents the extreme left and ten the extreme right. The value is the weighted average orientation of all parties in the parliament taking into consideration their number of seats in the parliament. We include this variable to control for a possible reaction of investors to the general political orientation of the legislative following the election. Any legislation to be implemented has to pass the parliament. Herron (2000), Fowler (2006) and others have identified that markets react to the overall political orientation of the law-making bodies.
- *GDP growth* is a continuous variable that indicates the growth of the respective economy in the four quarters preceding the election. This variable is included to control for general economic trends that might affect the overall (short-term) returns around an election and potentially also influence investors' reaction to an election outcome.
- *Number of parties in government* indicates the number of parties that formed a government post-election. We included this variable since the number of parties that there are in a government has an effect on the effectiveness of implementing policies and the need for compromises / consensus in a government.

- *Change in parliament's left/right composition* is a continuous variable that can assume a value from minus ten to plus ten. It indicates the change in the weighted average political orientation (see above variable *Left or Right parliament*) of the parliament post-election compared to pre-election. We include this variable to control for a possible reaction of investors to the general political orientation of the legislative following the election. Any legislation to be implemented has to pass the parliament. Herron (2000), Fowler (2006) and others have identified that markets react to the overall political orientation of the law-making bodies.

### Analytical framework

As indicated above, the first analytical step in the study is the plotting of the mean across all studied elections both of the volatility and the cumulative returns for different time frames around the election day. This serves to determine a reasonable time window in which the market prices in information about election outcomes.

In a second step, we run several simple and multiple linear regressions including the above-mentioned variables. Thereby, we vary three things: we conduct the regression analyses 1) for different time frames as described above, 2) varying the number of explanatory variables included and 3) changing the range of observations included.

Equation 1.3 represents the basic test of this study, which regresses the cumulative return on the change of total seats share:

$$Cumulative\ return_{E,i,t,n} = \alpha + \beta * changesharepop_{E,i} + \varepsilon_i \quad (1.3)$$

where E defines the election, i the country, t the election date and considered n the time frame

Based on previous literature, it is however fair to assume that other variables also have an impact on the market reactions. Therefore, in order to avoid omitted variable bias, we include the other variables mentioned above as regressors in the regressions on cumulative return. Equation 2.1 represents the resulting extended multiple regression.

$$\begin{aligned} Cumulative\ return_{E,i,t,n} = & \alpha + \beta_1 * changesharepop_{E,i} + \beta_2 * Pop\ party\ in\ gov_{E,i} + \\ & \beta_3 * Margin\ win_{E,i} + \beta_4 * Incumbent\ gov\ party\ change_{E,i} + \beta_5 * LeftRightgov_{E,i} + \beta_6 * \\ & LeftRightparl_{E,i} + \beta_7 * Parliamentary\ democracy_{E,i} + \beta_8 * Minority\ Gov_{E,i} + \beta_9 * \\ & GDPCapita + \beta_{10} * C\Delta angeRig\Delta tLeftParl_{E,i} + \beta_{11} * NumberPartiesGov_{E,i} + \varepsilon_i \quad (2.1) \end{aligned}$$

## Robustness checks

In order to test whether any results of our regressions are mostly driven by extreme values we ran the extended regression while omitting a varying percentage of the most extreme elections with regards to absolute change in populist extreme seat share in our sample (e.g. the elections with the 5% most extreme observations of *change in seat share*).

Furthermore, in order to determine the significant impact of each control variable, and thereby try to detect a Type I error for the *change in seat share* variable, we ran a regression on the cumulative return against each separate variable in each time period. This enables us to identify whether any potential significance of the *change in seat share* variable in the main regression model could actually be caused by another variable in the model. If the *change in seat share* variable is correlated with another explanatory variable, there could be a spill-over effect of significance in the main regression, leading us to falsely reject the null hypothesis, a so-called Type I error.

Lastly, a number of statistical robustness checks were conducted in order to validate the results found. To test for heteroscedasticity a Breusch-Pagan test was performed on every regression, which indicates homoscedasticity for p-values above 0.05. If, on the other hand, p-values of the Breusch-Pagan test are fairly low, we assumed that there was a heteroscedasticity issue. In those cases, we applied white heteroscedasticity robust standard errors. We also plotted the residuals of the regressions in order to visually check for heteroscedasticity. A potential presence of multicollinearity was tested by calculating the Variance Inflation Factor, VIF, for each variable in the extended regressions. If the VIF factor was equal to or higher than four, multicollinearity was assumed to be a problem and one or several variables had to be removed. For econometric details of the robustness tests, see Appendix B (Wooldridge, 2012).

## V. Results

### Descriptive statistics

In Table IV, the descriptive statistics for all independent variables are displayed. Our main variable, *change in seat share*, ranges from a decrease of 26 percentage points to an increase of 42 percent points. Given the large sample of elections in which there was no populist extreme party running, the median for the *change in seat share* is zero while the mean is just over plus two percentage points. The variable *Populist party in government* also has a median of zero and a mean of just under 0.2. This could be interpreted as on average, one in five of the elections studied resulted in a populist extreme party becoming part of a government. However, there are elections that were followed by more than one populist extreme party in a government coalition, with the maximum of four parties. The median value of 0 which indicates that in most of the elections in the sample populist extreme parties did not manage to become a governing party.

One in four elections in the sample results in a minority government and the margin with which an election is won is on average around seven percentage points. Furthermore, the sample parliaments and governments were slightly more oriented towards the right side of the political spectrum. Moreover, in our sample it is most common to have two parties in the government, while the according maximum is seven. The change of political orientation of the parliament is generally not very radical and the median for this variable is virtually zero.

*GDP per capita* naturally varies quite substantially over the sample since our sample dates up to 50 years back and GDP across all countries has been growing quite significantly over the years. Secondly, there are still significant economic differences between the sample countries, especially between Western and Eastern European countries. On the other hand, *GDP growth* exhibits less variation. In our sample, it ranges from a minimum of minus four percent and a maximum of plus thirteen percent as we cover periods of economic downturns as well as growth periods.

Table IV  
Descriptive statistics of the explanatory variables

|             | <i>Change<br/>sharepop</i> | <i>Pop. party<br/>in gov.</i> | <i>Minority<br/>Margin win</i> | <i>Inc .gov.<br/>party<br/>change</i> | <i>Left/Right<br/>gov.</i> | <i>Left/Right<br/>parl.</i> | <i>GDP per capita</i> | <i>GDP<br/>growth</i> | <i>No. parties<br/>in gov.</i> | <i>Change in<br/>parl<br/>Left/Right</i> | <i>Parl.<br/>democracy</i> |
|-------------|----------------------------|-------------------------------|--------------------------------|---------------------------------------|----------------------------|-----------------------------|-----------------------|-----------------------|--------------------------------|------------------------------------------|----------------------------|
| No. obs     | 192                        | 192                           | 191                            | 192                                   | 192                        | 190                         | 192                   | 180                   | 182                            | 192                                      | 191                        |
| Minimum     | -0.25873                   | 0                             | -0.620112                      | 0                                     | 0                          | 2.978262                    | 3.739841              | 1668.162731           | -0.041358                      | 1                                        | -1.826707                  |
| Maximum     | 0.42487                    | 4                             | 0.98                           | 1                                     | 1                          | 8.223334                    | 7.109344              | 113625.1329           | 0.13106                        | 7                                        | 1.611051                   |
| 1. Quartile | -0.00042                   | 0                             | 0                              | 0                                     | 0                          | 4.2105                      | 4.906681              | 13089.943492          | 0.007666                       | 2                                        | -0.217815                  |
| 3. Quartile | 0.032923                   | 0                             | 0.190726                       | 1                                     | 1                          | 6.843251                    | 5.559054              | 40594.800743          | 0.043889                       | 3                                        | 0.230279                   |
| Mean        | 0.020532                   | 0.197917                      | 0.097292                       | 0.255208                              | 0.5625                     | 5.497775                    | 5.257256              | 28476.284313          | 0.02723                        | 2.380208                                 | 0.011188                   |
| Median      | 0                          | 0                             | 0.072289                       | 0                                     | 1                          | 5.46428                     | 5.274036              | 24215.686593          | 0.026935                       | 2                                        | 0.006009                   |
| Variance    | 0.007135                   | 0.327116                      | 0.052757                       | 0.191072                              | 0.247382                   | 2.22453                     | 0.266618              | 422310175.400394      | 0.00088                        | 1.441072                                 | 0.251584                   |
| Stdev       | 0.08447                    | 0.571941                      | 0.22969                        | 0.437118                              | 0.497375                   | 1.491486                    | 0.516351              | 20550.186749          | 0.02966                        | 1.200447                                 | 0.501582                   |

## Volatility and cumulative return plots

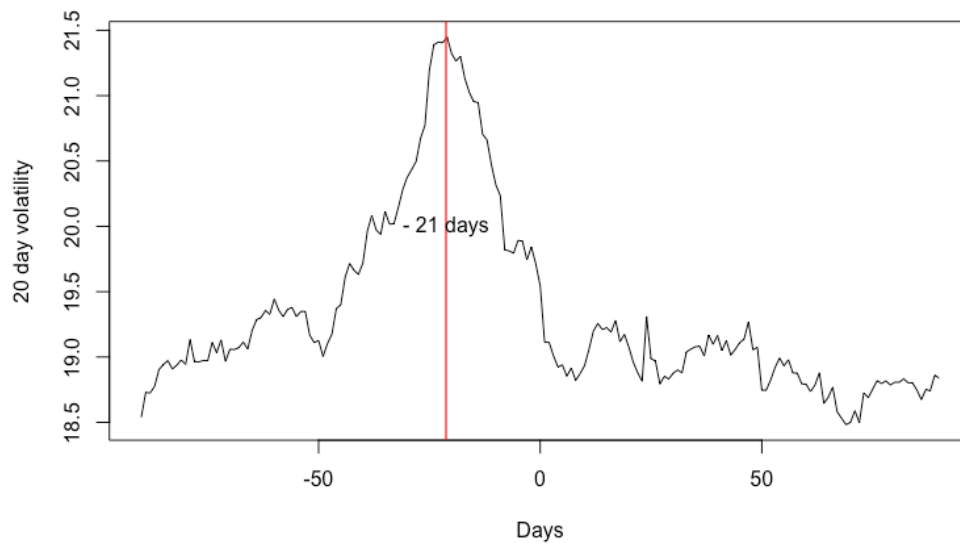
As explained above, the plots of volatility and cumulative return serve to provide a better understanding of the market behaviour leading up to elections and of whether and when the market is pricing in imminent election outcomes.

In order to identify when investors are pricing in information, volatility is a good indicator of the overall market activity. As new information becomes available, investors want to make use of it as fast as possible by either buying or selling. This leads to an increased market activity which in turn increases the volatility of the market (Bauwens, Ben and Giot, 2005). Graph III shows the average 20-day volatility 90 days prior to and after across all elections, whereby day zero marks the election day. The graph shows that volatility starts to increase sharply 50 trading days prior to the election until peaking at 21 trading days before, suggesting that this is the point in time when most pricing is done. Thereafter, it drops steadily until the election day which is in line with the notion that most election-related uncertainty is resolved (not all, however, since there can still be concerns regarding government formation). This finding suggests that if there are any pricing effects relating variables tested in this study, they should be most relevant during this period.

Graph IV plots the mean 20-day volatility in a time frame around election day for two groups of elections: 1) elections in which populist extreme parties gained parliamentary seat share and 2) elections in which those have not. Perhaps a little surprising, we see that the volatility around the former group of elections is on average lower than the volatility around the latter group of elections. While no statement with regards to statistical significance can be derived from the mere plots, this observation suggests that the null hypothesis of our second hypothesis is not to be rejected.

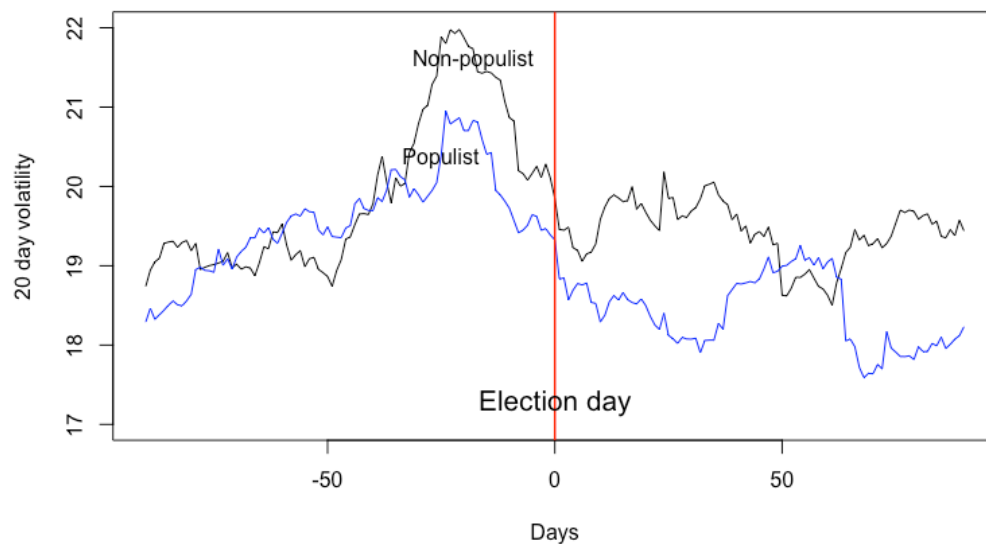
Given the insights gained from the volatility plots, we chose to investigate the cumulative return around the period in which most of the market activity and pricing in seem to occur.

Graph III  
**Average 20-day volatility; 90 days prior to and post-election day**



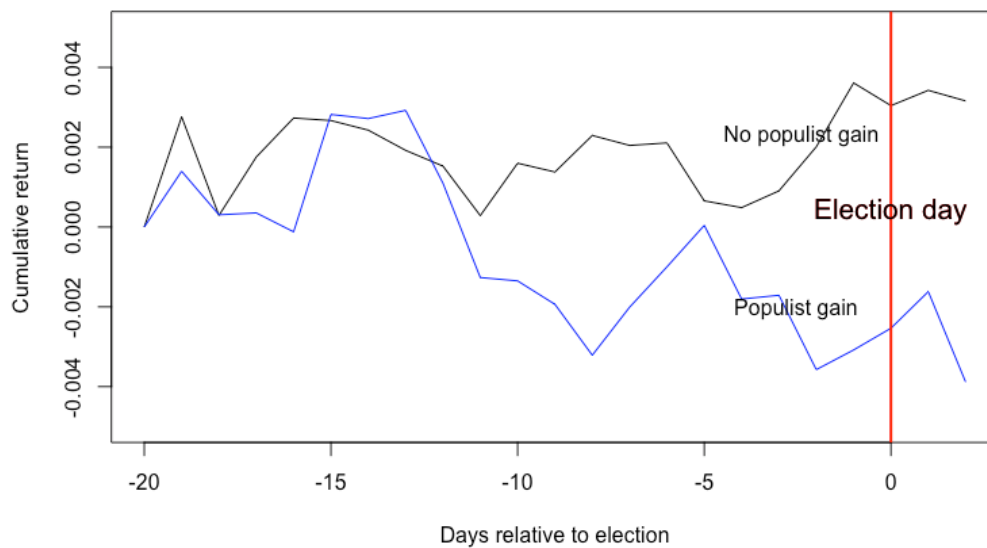
Graph III shows the average 20-day volatility across all sample elections over a 181-day period around the election day.

Graph IV  
**Average 20-day volatility for non-populist extr. elections vs. populist extr. elections**



Graph III shows the average 20-day volatility for both elections that resulted in an increase of populist extremist seat share and elections that did not over a 181 day period around the election day. The black line shows the average volatility for non-populist extreme elections while the blue line shows the average volatility for populist extreme elections gained seat share.

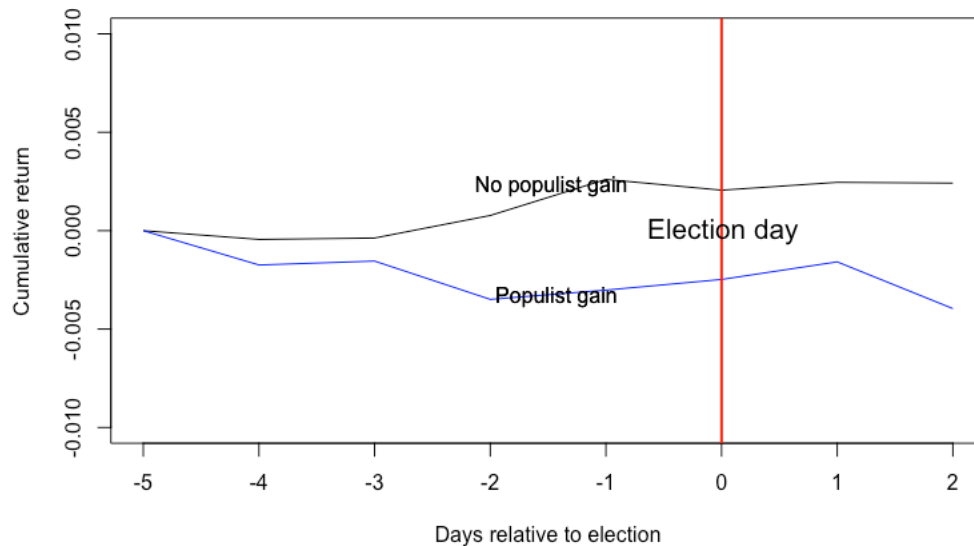
Graph V  
**Average 20-day cumulative return for non-populist elections and populist elections**



Graph V shows the average cumulative return of the national stock index over 20 days before the election. The black line shows the average volatility for elections where populist extreme parties did not gain seat share while the blue line shows the average volatility for elections where populist extreme parties did gain seat share.

Graph V somewhat confirms this and suggest that some pricing effect is happening around 20 days before the election, which is when the average cumulative returns of the two groups starts to diverge substantially. By the time of the election there is a large gap between the average cumulative return across elections in which populist extreme parties gained seats share, and the one across elections in which populist extreme parties did not. The observation of the former to be lower points us into the direction of rejecting the null hypothesis and supporting the alternative hypothesis. However, the confidence intervals around the average cumulative returns for single days are very large and do not support statistical significance of the mean cumulative return being higher for elections in which there was no increase in populist extreme share of seats in the parliament. Graph VI exhibits the same divergence of cumulative returns (based on the index values five days prior to the election) between the two groups of elections (populist and non-populist). Again, the difference was not found to be significant according to that methodology (see Appendix C).

Graph VI  
**Average 5-day cumulative return for non-populist extreme elections and populist extreme elections**



Graph VI shows the average cumulative return of the national stock index over 5 days before the election. The black line shows the average volatility for elections where populist extreme parties did not gain seat share while the blue line shows the average volatility for elections where populist extreme parties did gain seat share.

### Regression results

For the simple linear regression with only one independent variable and the shortest time frame (starting at the last trading day before the election), we observe that the *change in seat share* of populist extreme parties has a negative effect on the national index returns in the respective country. Although the coefficient of the variable is not very large, it is significant and has a relatively large explanatory power, namely two percent.

Comparing the simple regression results for different time windows, we find that significance and  $R^2$  are the largest for the regression of the cumulative return with starting point 20 days prior to election. For larger time windows, explanatory power decreases even though the coefficient remains strongly significant up until the regression with 50 days prior to the election as a starting point for the cumulative return measures. This is indication that there is a negative correlation between populist extreme parties gaining votes and the stock market return. Moreover, the relatively large  $R^2$  of the regressions of cumulative return based on time windows of 20, 30 and 40 days prior to the election could be interpreted to be in line with the findings from the volatility and cumulative return plots (Graph V and VI), which also indicate that the mentioned period captures a large part of the pricing-in of election-related information.

Table V  
Cumulative return regressed against *change in seat share*

|                         | <i>Dependent variable:</i> |                       |                        |                         |                         |                       |                       |                       |                       |                      |                       |
|-------------------------|----------------------------|-----------------------|------------------------|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|
|                         | Return 60<br>(1)           | Return 50<br>(2)      | Return 40<br>(3)       | Return 30<br>(4)        | Return 20<br>(5)        | Return 10<br>(6)      | Return 7<br>(7)       | Return 5<br>(8)       | Return 4<br>(9)       | Return 3<br>(10)     | Return 1<br>(11)      |
| `Change sharepop`       | -0.119<br>(0.086)          | -0.174**<br>(0.075)   | -0.183***<br>(0.067)   | -0.184***<br>(0.057)    | -0.165***<br>(0.051)    | -0.093**<br>(0.041)   | -0.077**<br>(0.037)   | -0.091**<br>(0.035)   | -0.069**<br>(0.032)   | -0.062*<br>(0.032)   | -0.055**<br>(0.026)   |
| Constant                | 0.005<br>(0.007)           | 0.0001<br>(0.006)     | -0.001<br>(0.006)      | -0.001<br>(0.005)       | 0.004<br>(0.004)        | 0.002<br>(0.004)      | 0.002<br>(0.003)      | 0.002<br>(0.003)      | 0.002<br>(0.003)      | 0.002<br>(0.003)     | 0.002<br>(0.002)      |
| Observations            | 192                        | 192                   | 192                    | 192                     | 192                     | 192                   | 192                   | 192                   | 192                   | 174                  | 192                   |
| R <sup>2</sup>          | 0.010                      | 0.028                 | 0.038                  | 0.052                   | 0.053                   | 0.026                 | 0.022                 | 0.034                 | 0.024                 | 0.021                | 0.023                 |
| Adjusted R <sup>2</sup> | 0.005                      | 0.023                 | 0.033                  | 0.047                   | 0.048                   | 0.021                 | 0.017                 | 0.029                 | 0.018                 | 0.015                | 0.018                 |
| Residual Std. Error     | 0.101 (df = 190)           | 0.087 (df = 190)      | 0.078 (df = 190)       | 0.066 (df = 190)        | 0.059 (df = 190)        | 0.048 (df = 190)      | 0.044 (df = 190)      | 0.041 (df = 190)      | 0.037 (df = 190)      | 0.038 (df = 172)     | 0.030 (df = 190)      |
| F Statistic             | 1.886 (df = 1; 190)        | 5.414** (df = 1; 190) | 7.536*** (df = 1; 190) | 10.458*** (df = 1; 190) | 10.591*** (df = 1; 190) | 5.082** (df = 1; 190) | 4.272** (df = 1; 190) | 6.740** (df = 1; 190) | 4.583** (df = 1; 190) | 3.650* (df = 1; 172) | 4.428** (df = 1; 190) |

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Regression results for the dependent variable Cumulative return over 60, 50, 40, 30, 20, 10, 7, 5, 4, 3 and 1 days

Table VI  
Cumulative return regressed against *change in seat share* and control variables

|                                | <i>Dependent variable:</i> |                         |                         |                         |                                      |                         |                        |                        |                        |                        |                        |
|--------------------------------|----------------------------|-------------------------|-------------------------|-------------------------|--------------------------------------|-------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                | Return 60<br><i>OLS</i>    | Return 50<br><i>OLS</i> | Return 40<br><i>OLS</i> | Return 30<br><i>OLS</i> | Return 20<br><i>coefficient test</i> | Return 10<br><i>OLS</i> | Return 7<br><i>OLS</i> | Return 5<br><i>OLS</i> | Return 4<br><i>OLS</i> | Return 3<br><i>OLS</i> | Return 1<br><i>OLS</i> |
|                                | (1)                        | (2)                     | (3)                     | (4)                     | (5)                                  | (6)                     | (7)                    | (8)                    | (9)                    | (10)                   | (11)                   |
| `Change sharepop`              | -0.098<br>(0.101)          | -0.125<br>(0.087)       | -0.155**<br>(0.078)     | -0.175***<br>(0.067)    | -0.175***<br>(0.058)                 | -0.086*<br>(0.049)      | -0.067<br>(0.045)      | -0.080*<br>(0.042)     | -0.062<br>(0.038)      | -0.062<br>(0.038)      | -0.046<br>(0.031)      |
| `Pop party in gov`             | -0.008<br>(0.015)          | -0.012<br>(0.013)       | 0.008<br>(0.012)        | 0.008<br>(0.010)        | 0.014**<br>(0.007)                   | 0.005<br>(0.007)        | 0.005<br>(0.007)       | 0.001<br>(0.006)       | 0.001<br>(0.006)       | -0.002<br>(0.006)      | -0.001<br>(0.005)      |
| `Margin win`                   | 0.026<br>(0.047)           | 0.027<br>(0.040)        | 0.013<br>(0.036)        | -0.005<br>(0.031)       | 0.026<br>(0.022)                     | 0.012<br>(0.023)        | 0.003<br>(0.021)       | -0.006<br>(0.019)      | -0.010<br>(0.018)      | -0.023<br>(0.018)      | -0.024*<br>(0.014)     |
| `Incumbent gov party change`   | 0.017<br>(0.018)           | 0.009<br>(0.015)        | 0.009<br>(0.014)        | 0.013<br>(0.012)        | 0.005<br>(0.010)                     | 0.001<br>(0.009)        | 0.004<br>(0.008)       | 0.005<br>(0.007)       | 0.005<br>(0.007)       | 0.009<br>(0.007)       | 0.003<br>(0.005)       |
| `Left_Right gov`               | 0.003<br>(0.007)           | 0.002<br>(0.006)        | 0.001<br>(0.005)        | -0.002<br>(0.005)       | -0.0004<br>(0.004)                   | 0.002<br>(0.003)        | -0.0001<br>(0.003)     | 0.001<br>(0.003)       | 0.001<br>(0.003)       | 0.002<br>(0.003)       | 0.001<br>(0.002)       |
| `Left_Right Parl`              | 0.025<br>(0.022)           | 0.017<br>(0.019)        | 0.016<br>(0.017)        | 0.011<br>(0.014)        | 0.006<br>(0.012)                     | 0.002<br>(0.010)        | 0.003<br>(0.010)       | 0.002<br>(0.009)       | 0.003<br>(0.008)       | 0.004<br>(0.009)       | 0.001<br>(0.007)       |
| `Parliamentary democracy`      | -0.016<br>(0.021)          | -0.020<br>(0.018)       | -0.015<br>(0.016)       | -0.012<br>(0.014)       | -0.012<br>(0.013)                    | -0.005<br>(0.010)       | -0.004<br>(0.009)      | -0.008<br>(0.009)      | -0.006<br>(0.008)      | -0.011<br>(0.008)      | -0.007<br>(0.006)      |
| `Minority Gov?`                | -0.001<br>(0.025)          | 0.007<br>(0.021)        | 0.005<br>(0.019)        | -0.004<br>(0.016)       | 0.012<br>(0.014)                     | -0.001<br>(0.012)       | -0.004<br>(0.011)      | -0.009<br>(0.010)      | -0.011<br>(0.009)      | -0.018*<br>(0.010)     | -0.012<br>(0.008)      |
| `GDP / Capita`                 | 0.00000<br>(0.00000)       | 0.00000<br>(0.00000)    | 0.00000<br>(0.00000)    | 0.00000<br>(0.00000)    | 0.00000<br>(0.00000)                 | 0.00000<br>(0.00000)    | 0.00000<br>(0.00000)   | 0.00000<br>(0.00000)   | -0.00000<br>(0.00000)  | -0.00000<br>(0.00000)  | 0.00000<br>(0.00000)   |
| `Number of parties Government` | -0.006<br>(0.007)          | -0.006<br>(0.006)       | -0.009<br>(0.006)       | -0.009*<br>(0.005)      | -0.006<br>(0.004)                    | -0.007*<br>(0.004)      | -0.005<br>(0.003)      | -0.004<br>(0.003)      | -0.002<br>(0.003)      | 0.0005<br>(0.003)      | -0.001<br>(0.002)      |
| `GDP growth`                   | 0.487*<br>(0.280)          | 0.518**<br>(0.241)      | 0.394*<br>(0.217)       | 0.287<br>(0.186)        | 0.154<br>(0.205)                     | 0.100<br>(0.135)        | 0.049<br>(0.124)       | -0.025<br>(0.116)      | -0.072<br>(0.106)      | -0.163<br>(0.118)      | -0.041<br>(0.085)      |
| `Change Parl L_R`              | -0.005<br>(0.021)          | -0.001<br>(0.018)       | -0.012<br>(0.016)       | -0.008<br>(0.014)       | -0.008<br>(0.014)                    | -0.0001<br>(0.010)      | -0.003<br>(0.009)      | -0.004<br>(0.008)      | -0.001<br>(0.008)      | 0.001<br>(0.008)       | -0.001<br>(0.006)      |
| Constant                       | -0.155<br>(0.106)          | -0.101<br>(0.091)       | -0.087<br>(0.082)       | -0.038<br>(0.071)       | -0.026<br>(0.064)                    | -0.010<br>(0.051)       | -0.004<br>(0.047)      | 0.001<br>(0.044)       | -0.006<br>(0.040)      | -0.015<br>(0.042)      | 0.006<br>(0.032)       |
| Observations                   | 177                        | 177                     | 177                     | 177                     |                                      | 177                     | 177                    | 177                    | 177                    | 159                    | 177                    |
| R <sup>2</sup>                 | 0.067                      | 0.087                   | 0.081                   | 0.094                   |                                      | 0.056                   | 0.037                  | 0.046                  | 0.041                  | 0.080                  | 0.048                  |
| Adjusted R <sup>2</sup>        | -0.001                     | 0.021                   | 0.014                   | 0.028                   |                                      | -0.013                  | -0.033                 | -0.023                 | -0.029                 | 0.004                  | -0.022                 |
| Residual Std. Error            | 0.104 (df = 164)           | 0.089 (df = 164)        | 0.080 (df = 164)        | 0.069 (df = 164)        |                                      | 0.050 (df = 164)        | 0.046 (df = 164)       | 0.043 (df = 164)       | 0.039 (df = 164)       | 0.039 (df = 146)       | 0.032 (df = 164)       |
| F Statistic                    | 0.983 (df = 12; 164)       | 1.308 (df = 12; 164)    | 1.208 (df = 12; 164)    | 1.426 (df = 12; 164)    |                                      | 0.816 (df = 12; 164)    | 0.525 (df = 12; 164)   | 0.666 (df = 12; 164)   | 0.588 (df = 12; 164)   | 1.058 (df = 12; 146)   | 0.683 (df = 12; 164)   |

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Regression results for the dependent variable Cumulative return over 60, 50, 40, 30, 20, 10, 7, 5, 4, 3 and 1 days

As described in the methodology part, the strong significance and explanatory power for the *change in seat share* variable found in the simple regression could be driven by other factors that need to be taken into consideration to avoid an omitted variable bias. Table VI shows the regression results for the extended regression that contains other explanatory variables as described in the methodology section.

The extended multiple regression confirms the results of the linear regression and finds a negative coefficient for the *change in seat share* variable that is significant for the 20-day, 30-day and 40-day time windows. For the other time frames we see a decrease in the significance for *change in seat share* even though two of them are still significant on the ten percent significance level.

A fairly surprising finding is that in the extended regression based on a 20-day time window the variable indicating the entrance of a populist extreme party in the government post-election has a significant positive effect on return. The coefficient of this variable is relatively small but one explanation of it being positive is that in the cases when populist extreme parties actually ended up being in government those parties were ex-ante accepted by other parties as potential coalition partners. The market arguably rewards the prospects of avoiding a long government formation, since the latter impede action ability of the politics of a country. The recent examples in Germany and Sweden illustrate that having a strong populist extreme party that is not considered as a coalition partner by established parties can lead to a very long process of forming a government after an election.<sup>67</sup>

A somewhat related logic can be applied when trying to explain the finding that the coefficient for the number of parties in government post-election has a negative impact on national equity market returns, which is significant for the 30-day time window. A coalition made up of several parties is usually the result of a rather long government formation process. Additionally, having several parties in a governing coalition implies the necessity of more compromises between parties and therefore longer law-making procedures. On the other hand, this should at least equally be true for minority governments that generally suffer from a lower action ability as they require support from additional parties in the parliament. However, we cannot identify any significant coefficient for the dummy variable indicating minority governments, regardless of the applied time window.

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<sup>6</sup> Eckart, Conze, 2017, Das alte Weimarer Drama?, Zeit, November 29, accessed 2018-11-30

<sup>7</sup> Carlsson Tenitskaja, Alexandra, 2018, Ny regering: Regeringsbildningen 2018 - detta har hänt, Dagens Nyheter, November 22, accessed 2018-11-26

As one would expect, GDP growth has a large positive and significant coefficient for the regressions based on the largest time windows. Over longer periods of time, the overall economic trend is driving the cumulative returns as we measure them. It is, however, somewhat surprising that GDP growth is only significant at the 10 percent level for the 40-day and 60-day time windows. None of the other variables in the regression have significant coefficients and the low adjusted  $R^2$ s suggest that they do not have much explanatory power even though the regular  $R^2$ s are almost 10 percent for several of the time frames.

In addition to the tests done on cumulative return, we ran regressions on different measures of volatility around the elections. The results identify *Populist party in government* as the most significant variable that has a positive coefficient in the regressions on both the 90-day and 60-day volatility. This could be interpreted to be in line with the hypothesis that an increase in populist extremist power increases volatility. However, we find no significance for the *change in seat share* variable for any of the volatility types and cannot draw any conclusions regarding its effect on volatility. Therefore, the null hypothesis of our second hypothesis is not to be rejected.

It is important to note that the findings of the volatility regressions are only significant for the longest volatility types. Other factors, that are out of the scope of this study, may impact these long volatilities.

### Results of robustness checks

Table VIII shows that the coefficient of the *change in seat share* variable in the extended regressions on cumulative return is only significant if, at maximum, the three most extreme percent of elections with regards to change in populist extreme seat share are excluded from the regressions. The reduction of the sample size is unlikely to serve as an explanation for the reduced significance of the coefficient for the *change in seat share* variable as we observe that *Populist party in government* is still significant for all regressions. Therefore, the regression results rather suggest that the negative impact of an increase in populist extreme seat share on the cumulative return of national equity markets is to a substantial extent driven by the changes in populist extreme seat share of higher magnitude.

Table VII  
Volatility regressed against *change in seat share* and control variables

|                                | <i>Dependent variable:</i> |                       |                      |                      |
|--------------------------------|----------------------------|-----------------------|----------------------|----------------------|
|                                | VOLATILITY_90D             | VOLATILITY_60D        | VOLATILITY_30D       | VOLATILITY_20D       |
|                                | (1)                        | (2)                   | (3)                  | (4)                  |
| `Change sharepop`              | -2.763<br>(10.532)         | -5.164<br>(10.984)    | 2.953<br>(12.132)    | 13.695<br>(13.119)   |
| `Pop party in gov`             | 3.826**<br>(1.568)         | 5.110***<br>(1.634)   | 3.056*<br>(1.805)    | 1.287<br>(1.952)     |
| `Margin win`                   | 2.961<br>(4.924)           | 4.299<br>(5.117)      | 4.334<br>(5.652)     | 4.436<br>(6.112)     |
| `Incumbent gov party change`   | 1.202<br>(1.869)           | 1.242<br>(1.948)      | 1.812<br>(2.152)     | 1.280<br>(2.327)     |
| `Left_Right gov`               | -0.663<br>(0.755)          | -0.838<br>(0.784)     | -0.202<br>(0.866)    | 0.308<br>(0.936)     |
| `Left_Right Parl`              | -0.768<br>(2.280)          | -0.349<br>(2.375)     | -2.038<br>(2.623)    | -2.887<br>(2.836)    |
| `Minority Gov?`                | 0.509<br>(2.657)           | -0.337<br>(2.757)     | -0.228<br>(3.045)    | -0.945<br>(3.293)    |
| `GDP / Capita`                 | -0.0001<br>(0.00004)       | -0.0001<br>(0.00005)  | -0.0001<br>(0.00005) | -0.0001<br>(0.0001)  |
| `Number of parties Government` | -0.619<br>(0.790)          | -1.079<br>(0.823)     | -0.985<br>(0.909)    | -0.605<br>(0.984)    |
| `Parliamentary democracy`      | 1.929<br>(2.242)           | 2.706<br>(2.313)      | 4.392*<br>(2.555)    | 4.195<br>(2.763)     |
| `GDP growth`                   | -38.421<br>(29.602)        | -32.384<br>(30.627)   | -53.077<br>(33.827)  | -67.902*<br>(36.582) |
| `Change Parl L_R`              | 1.207<br>(2.170)           | 2.017<br>(2.263)      | 1.963<br>(2.499)     | 1.969<br>(2.703)     |
| Constant                       | 29.428***<br>(11.177)      | 28.159**<br>(11.627)  | 32.795**<br>(12.842) | 34.794**<br>(13.888) |
| Observations                   | 171                        | 172                   | 172                  | 172                  |
| R <sup>2</sup>                 | 0.088                      | 0.109                 | 0.084                | 0.076                |
| Adjusted R <sup>2</sup>        | 0.019                      | 0.042                 | 0.015                | 0.007                |
| Residual Std. Error            | 10.830 (df = 158)          | 11.297 (df = 159)     | 12.477 (df = 159)    | 13.493 (df = 159)    |
| F Statistic                    | 1.271 (df = 12; 158)       | 1.629* (df = 12; 159) | 1.221 (df = 12; 159) | 1.096 (df = 12; 159) |

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Regression results for four dependent variables; volatility of 90, 60, 30 and 20 days

Table VIII  
Cumulative return regressed against *change in seat share* with different levels of extreme values excluded

|                                | <i>Dependent variable:</i> |                      |                      |                      |
|--------------------------------|----------------------------|----------------------|----------------------|----------------------|
|                                | Return 90 %,               | Return 95 %,         | Return 96 %          | Return 97 %          |
|                                | <i>coefficient</i>         |                      |                      | <i>OLS</i>           |
|                                | (1)                        | (2)                  | (3)                  | (4)                  |
| `Change sharepop`              | -0.099<br>(0.106)          | -0.167*<br>(0.088)   | -0.153*<br>(0.084)   | -0.156**<br>(0.071)  |
| `Pop party in gov`             | 0.017***<br>(0.007)        | 0.019***<br>(0.007)  | 0.016**<br>(0.007)   | 0.017*<br>(0.009)    |
| `Margin win`                   | 0.025<br>(0.023)           | 0.029<br>(0.023)     | 0.024<br>(0.023)     | 0.023<br>(0.028)     |
| `Incumbent gov party change`   | 0.001<br>(0.011)           | 0.004<br>(0.010)     | 0.004<br>(0.010)     | 0.005<br>(0.011)     |
| `Left_Right gov`               | 0.001<br>(0.005)           | 0.0001<br>(0.005)    | -0.00001<br>(0.004)  | 0.0003<br>(0.004)    |
| `Left_Right Parl`              | 0.003<br>(0.013)           | 0.0005<br>(0.013)    | 0.002<br>(0.013)     | 0.002<br>(0.014)     |
| `Parliamentary democracy`      | -0.009<br>(0.013)          | -0.006<br>(0.013)    | -0.010<br>(0.013)    | -0.009<br>(0.013)    |
| `Minority Gov?`                | 0.008<br>(0.014)           | 0.009<br>(0.014)     | 0.009<br>(0.014)     | 0.010<br>(0.015)     |
| `GDP / Capita`                 | 0.00000<br>(0.00000)       | 0.00000<br>(0.00000) | 0.00000<br>(0.00000) | 0.00000<br>(0.00000) |
| `Number of parties Government` | -0.006<br>(0.004)          | -0.006<br>(0.004)    | -0.007<br>(0.004)    | -0.006<br>(0.005)    |
| `GDP growth`                   | 0.065<br>(0.223)           | 0.148<br>(0.215)     | 0.168<br>(0.214)     | 0.164<br>(0.167)     |
| `Change Parl L_R`              | -0.017<br>(0.017)          | -0.009<br>(0.016)    | -0.005<br>(0.016)    | -0.005<br>(0.013)    |
| Constant                       | -0.010<br>(0.072)          | -0.002<br>(0.070)    | -0.007<br>(0.070)    | -0.009<br>(0.065)    |

The regressions of cumulative return against each of the variable separately yielded some interesting results. For the two longest considered time frames, we see once more that GDP growth has a very large impact on the cumulative return with a coefficient of more than 0.5 and significance at the five percent level. This is, as previously mentioned, consistent with expectations. In the 50-day period we also find a small positive coefficient for the *Left/Right parliament* variable. This indicates that the market seems to prefer a right-wing parliament over a left-wing equivalent which is consistent with previous literature. Overall, the control variables used do not have much of an impact on the return relative to the *change in seat share* variable, even when used as individual regressors. This suggests that *change in seat share* for populist extreme parties is in fact a very

influential factor when it comes to the market reaction related to election outcomes. The results of the single variable regressions are shown in Appendix A.

For the Breusch-Pagan test, we assumed homoscedasticity in the case of test p-values being equal to or larger than 0.05. This was the case for all the regressions except from the extended 20-day regressions and the cut-off regression. To account for heteroscedasticity in the cases with Breusch-Pagan p-values lower than 0.05 we used White heteroscedasticity robust standard errors.

The Variance Inflation Factors for the tested variables can be found in Appendix B. If an included variable had a VIF of four or higher it was removed. Thus, in the final main regression of this study there was no indication of a multicollinearity problem.

## VI. Discussion

### Pricing in of information / market activity around elections

The volatility plots from section V suggest that a substantial part of the election-related trading activities is happening some 20-30 days before an election. This is an important aspect to consider when trying to identify the effect of populist extreme parties gaining power in elections on stock market activities and helps to determine a suitable event window or at least a reasonable range for those for this paper. After all, a lot of information of a possible election outcome is already available to investors in form of surveys and the like. We can, for instance, derive from the plots that looking at an extremely narrow event window would omit some of the effect any expected election outcome in fact has on investors behaviour.

A pitfall of looking at such an event window would therefore be that it would be likely to mostly capture the surprise effects resulting from the difference between the actual election outcome and the expected outcome right before the election based on polls. On the other hand, a too large event window runs the risk of capturing the effects of other economically important events, despite the control variables controlling for some of those. Hence, defining the right event window was a trade-off between including the stock market activities actually related to elections and isolating as much as possible other interfering incidents. We can see in the volatility plots that volatility drops again after the election. This is in line with economic theory, since the uncertainty is resolved and information about the outcome of the election is released. It is also in line with the findings of many papers that have shed light on the increased volatility that accompanies political elections (see Literature review).

Graph IV plots the volatility for both the group of elections during which populist extreme parties have gained seat share in the parliament and the ones in which that has not been the case. Somewhat surprisingly, it contradicts our hypothesis 2, as in fact the mean volatility across all elections of the former group is lower than that of the latter group (even though the difference is not significant). Therefore, we cannot reject the null hypothesis of our second hypothesis. A possible interpretation of this finding is that investors have a strong opinion of the (presuming negative) impact of populist extreme parties compared to elections during which there are only established parties driving the changes for a shift in parliamentary seats. Theoretically, this reduces the uncertainty of future economic outcomes influenced by legislation passed by the parliament, even if those are expected to have a rather negative impact.

## Impact of populist extreme parties on cumulative return

The regression results of this study show that an increase in populist extreme party votes indeed seems to have a negative impact on the national equity market return leading up to the election. We find significant, negative coefficients in the regressions based on time frames starting at 40, 30 and 20 days prior to the election. Therefore, for those event windows, the null hypothesis that *change in seat share* does not have an impact on return can be rejected and the alternative hypothesis of our hypothesis 1 is accepted. The negative market reaction to an imminent increase in power of populist extreme parties shows that investors generally agree with the financial and popular press regarding bad potential economic effects of those populist extreme parties.

One important finding is that much of the significance of the *change in seat share* variable seems to stem from the more extreme observations which, makes it more difficult to draw general conclusions from the results. Nonetheless, the coefficient is consistently negative and highly significant, implying that the market would react strongly negatively in case of a large increase in populist extreme seats in parliament. A derived question at this point is of course why the effect is mainly significant for the more extreme election outcomes. We argue that a reasonable explanation is that investors do not consider small changes in the parliamentary seat share of populist extreme parties to become a substantial threat to the national economy as compared to a more radical change. Small changes in seat share could go hand in hand with the populist extreme party not being large and influential from the start, which naturally would mean that they are less of a risk. On the other hand, the populist extreme party could already have a large share of parliamentary seats, which would already be priced in before the election period and a small change would not be heavily considered by investors. In either case, the market reaction would understandably be more negligible than if the *change in seat share* would be more substantial.

The volatility plots that there was in fact less volatility around elections in which populist extreme parties gained support compared to ones in which they did not. Nevertheless, the variable *Populist party in government* increases volatility. Furthermore, although small, *Populist party in government* had a significant positive effect on return in the 20-day timeframe. This, however, is only true for the multiple regression, in which we also include change in seats share, which, in turn, has a larger significant negative effect on the returns. When regressing returns only on the *Populist party in government* variable, the latter shows no significant effect. An interpretation of that is that looking at cases in which populist extreme parties have increased their seats shares, the market prefers the case in which the part(ies) in question have in fact made it into the government. A fairly

straightforward explanation of this could be that those populist extreme parties that get into government are in fact considered less extreme than those who do not. This does not necessarily mean that they are in fact more moderate than other populist extreme parties but that this image generally exists in the population and society. If the party seems decent enough to be accepted by other parties that are keen on keeping voters' trust for future elections, chances are that the party is decent enough not to be seen as a great financial risk by the investor community, either.

Moreover, the descriptive statistics show that populist extreme parties have on average increased their seat shares by just over two percent points in the elections studied while they only made it into government in less than 20 percent of the elections. This suggests that it is relatively difficult for a populist extreme party to enter a government coalition despite having increased voter support and share of parliamentary seats significantly. In recent elections in Sweden and Germany the populist extreme parties were among the largest in the resulting parliament in the respective country but none of the other parties in parliament were willing to cooperate with them, leading to great difficulties to form a government. One other reasonable explanation to why we see a positive effect of having a populist extreme party in government could therefore also be that in the respective cases, the difficulty to form a government did per se not exist.

To summarize; there is a relatively large negative effect of populist extreme parties gaining seat share in parliament on the cumulative returns in national equity markets but only if that increase is fairly large. On the other hand, the increase of populist extremist seats share has no significant effect on volatility. Additionally, having a populist extreme party in government increases volatility and there is a small positive effect on return. Based on these findings, we conclude that investor behaviour is mostly affected by substantial changes in populist extremist share and when there is such a change the market reaction is negative. This reaction may be caused both by the potential policies that the populist extreme party would (not) support in parliament but also because by the fact that its size in parliament might increase the difficulty of forming a government if no other parties want to govern with the populist extreme party. This leads to our reasoning that the strengthening of a populist extreme party that is to a reasonable extent accepted by other parties and potentially considered for inclusion in a government could have a positive effect on cumulative return. The very fact that the populist extreme party is accepted by other parties could imply that it is not seen to as extreme which could also explain why the effect on return is positive.

## Economic impact

Based on our regression results, we have reached the result that the strengthening of populist extreme forces does, as hypothesized, indeed have a negative effect on the cumulative returns around elections statistically. The question that remains is what the practical, real-world implications of those findings are. Should investors care about the continuing emergence of populist extreme parties in Europe? The significant parameters for *change in seat share* in our models applying the appropriate event study window range somewhere between -0.18 and -0.16. This means that on average, all else equal, a 1 percentage point increase of overall populist extremist seat share in a parliament as a result of an election causes the cumulative return on the local equity markets to be 0.16-0.18 percentage points lower compared to the case in which the overall seat share remains the same.

If an investor invests, for example, EUR 10,000 in a local index-based ETF one month before the election, he or she would make EUR 16-18 less on his investment per percentage point increase in overall populist extremist seat share. On the other hand, she or he would make EUR 16-18 more on his investment per percentage point decrease in overall populist extremist seat share. In this case we will consider an election in which populist extremists gain (lose) 5 percentage points in the national parliament. In such a case, an investor would, on average make 0.8-0.9 percent less (more) return, or EUR 80-90 less (more) in our constructed example. This is, especially considering the relatively short assumed time horizon, indeed a significant economic impact. To put this into relation, the MSCI World index has, since its inception, produced annualized average returns of 7.75 percent. In an average year, the strengthening of a populist extreme party in an election could therefore impact more than 10 percent of the return volume of investors.

## VII. Conclusion

Populism in Europe has been on the rise in past decades and has had a significant impact on the political landscape and society. This paper sheds light on the perception of equity market participants on the impact of such developments on the overall economic development of a country and therefore its stock markets. While we obtain mixed findings, we can identify a somewhat negative impact of the strengthening of populist extreme parties in the national parliaments on national equity markets. Firstly, this confirms the widely acknowledged view that politics in fact influences stock market activities and that the rise of extreme populism could have a noticeable impact on the long-term economic development of a country. Secondly, the findings are not only relevant for the average investor regarding the economics of his or her investment decisions, but should also give new thought of food to national and supranational political bodies and organizations that have embarked on a fight to curb populist extreme forces. Lastly, as this study is by no means exhaustive, we hope that this paper spurs further studies in the under-researched field of the economic implications of populist extreme parties in Europe and worldwide.

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# Appendix A

## Cumulative Average Return regressed against each variable individually for different time windows

| Each variable at 60 days      |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|-------------------------------|---------------------|-----------------------|----------------------|----------------------|-----------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------------|---------------------|
|                               | Dependent variable: |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|                               | CAR                 |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|                               | (1)                 | (2)                   | (3)                  | (4)                  | (5)                   | (6)                 | (7)                 | (8)                 | (9)                 | (10)                  | (11)                        | (12)                |
| Incumbent gov party change`   | 0.006 (0.015)       |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Margin win`                   |                     | 0.010 (0.032)         |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Pop party in gov`             |                     |                       | -0.010 (0.013)       |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Left_Right gov`               |                     |                       |                      | 0.009* (0.005)       |                       |                     |                     |                     |                     |                       |                             |                     |
| Left_Right Parl`              |                     |                       |                      |                      | 0.031** (0.014)       |                     |                     |                     |                     |                       |                             |                     |
| Parliamentary democracy`      |                     |                       |                      |                      |                       | -0.015 (0.019)      |                     |                     |                     |                       |                             |                     |
| Minority Gov?                 |                     |                       |                      |                      |                       |                     | -0.002 (0.017)      |                     |                     |                       |                             |                     |
| GDP / Capita`                 |                     |                       |                      |                      |                       |                     |                     | 0.00000 (0.00000)   |                     |                       |                             |                     |
| Number of parties government` |                     |                       |                      |                      |                       |                     |                     |                     | -0.002 (0.006)      |                       |                             |                     |
| GDP growth`                   |                     |                       |                      |                      |                       |                     |                     |                     |                     | 0.540** (0.256)       |                             |                     |
| Increase                      |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       | -0.006 (0.016)              |                     |
| Change Parl L_R`              |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             | 0.020 (0.015)       |
| Constant                      | -0.0002 (0.011)     | 0.003 (0.008)         | 0.005 (0.008)        | -0.044 (0.028)       | -0.162** (0.074)      | 0.015 (0.017)       | 0.003 (0.008)       | -0.006 (0.013)      | 0.007 (0.016)       | -0.010 (0.010)        | 0.007 (0.014)               | 0.002 (0.007)       |
| Observations                  | 192                 | 191                   | 192                  | 190                  | 192                   | 191                 | 192                 | 180                 | 192                 | 182                   | 192                         | 191                 |
| R <sup>2</sup>                | 0.001               | 0.001                 | 0.003                | 0.016                | 0.026                 | 0.003               | 0.0001              | 0.003               | 0.0003              | 0.024                 | 0.001                       | 0.010               |
| Adjusted R <sup>2</sup>       | -0.004              | -0.005                | -0.002               | 0.011                | 0.020                 | -0.002              | -0.005              | -0.002              | -0.005              | 0.019                 | -0.004                      | 0.004               |
| Residual Std. Error           | 0.101 (df = 190)    | 0.101 (df = 189)      | 0.101 (df = 190)     | 0.101 (df = 188)     | 0.100 (df = 190)      | 0.102 (df = 189)    | 0.101 (df = 190)    | 0.104 (df = 178)    | 0.101 (df = 190)    | 0.102 (df = 180)      | 0.101 (df = 190)            | 0.101 (df = 189)    |
| F-Statistic                   | 0.146 (df = 1; 190) | 0.095 (df = 1; 189)   | 0.649 (df = 1; 190)  | 3.081* (df = 1; 188) | 4.980** (df = 1; 190) | 0.635 (df = 1; 189) | 0.012 (df = 1; 190) | 0.608 (df = 1; 178) | 0.060 (df = 1; 190) | 4.447** (df = 1; 180) | 0.151 (df = 1; 190)         | 1.814 (df = 1; 189) |
|                               |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       | *p<0.1; **p<0.05; ***p<0.01 |                     |
| Each variable at 50 days      |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|                               | Dependent variable: |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|                               | CAR                 |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
|                               | (1)                 | (2)                   | (3)                  | (4)                  | (5)                   | (6)                 | (7)                 | (8)                 | (9)                 | (10)                  | (11)                        | (12)                |
| Incumbent gov party change`   | -0.002 (0.013)      |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Margin win`                   |                     | -0.0002 (0.028)       |                      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Pop party in gov`             |                     |                       | -0.019* (0.011)      |                      |                       |                     |                     |                     |                     |                       |                             |                     |
| Left_Right gov`               |                     |                       |                      | 0.006 (0.004)        |                       |                     |                     |                     |                     |                       |                             |                     |
| Left_Right Parl`              |                     |                       |                      |                      | 0.023* (0.012)        |                     |                     |                     |                     |                       |                             |                     |
| Parliamentary democracy`      |                     |                       |                      |                      |                       | -0.019 (0.017)      |                     |                     |                     |                       |                             |                     |
| Minority Gov?                 |                     |                       |                      |                      |                       |                     | 0.006 (0.015)       |                     |                     |                       |                             |                     |
| GDP / Capita`                 |                     |                       |                      |                      |                       |                     |                     | 0.00000 (0.00000)   |                     |                       |                             |                     |
| Number of parties government` |                     |                       |                      |                      |                       |                     |                     |                     | -0.004 (0.005)      |                       |                             |                     |
| GDP growth`                   |                     |                       |                      |                      |                       |                     |                     |                     |                     | 0.571** (0.223)       |                             |                     |
| Increase                      |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       | -0.010 (0.014)              |                     |
| Change Parl L_R`              |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       |                             | 0.014 (0.013)       |
| Constant                      | -0.002 (0.010)      | -0.003 (0.007)        | 0.0003 (0.007)       | -0.037 (0.024)       | -0.124* (0.065)       | 0.012 (0.015)       | -0.005 (0.007)      | -0.009 (0.012)      | 0.005 (0.014)       | -0.018** (0.009)      | 0.004 (0.012)               | -0.004 (0.006)      |
| Observations                  | 192                 | 191                   | 192                  | 190                  | 192                   | 191                 | 192                 | 180                 | 192                 | 182                   | 192                         | 191                 |
| R <sup>2</sup>                | 0.0001              | 0.00000               | 0.015                | 0.011                | 0.018                 | 0.007               | 0.001               | 0.003               | 0.003               | 0.035                 | 0.003                       | 0.006               |
| Adjusted R <sup>2</sup>       | -0.005              | -0.005                | 0.010                | 0.006                | 0.013                 | 0.001               | -0.004              | -0.003              | -0.003              | 0.030                 | -0.002                      | 0.001               |
| Residual Std. Error           | 0.089 (df = 190)    | 0.088 (df = 189)      | 0.088 (df = 190)     | 0.088 (df = 188)     | 0.088 (df = 190)      | 0.088 (df = 189)    | 0.089 (df = 190)    | 0.091 (df = 178)    | 0.088 (df = 190)    | 0.089 (df = 180)      | 0.088 (df = 190)            | 0.088 (df = 189)    |
| F-Statistic                   | 0.019 (df = 1; 190) | 0.00004 (df = 1; 189) | 2.964* (df = 1; 190) | 2.138 (df = 1; 188)  | 3.466* (df = 1; 190)  | 1.283 (df = 1; 189) | 0.179 (df = 1; 190) | 0.448 (df = 1; 178) | 0.483 (df = 1; 190) | 6.585** (df = 1; 180) | 0.530 (df = 1; 190)         | 1.219 (df = 1; 189) |
|                               |                     |                       |                      |                      |                       |                     |                     |                     |                     |                       | *p<0.1; **p<0.05; ***p<0.01 |                     |

| Each variable at 40 days           |                     |                     |                     |                     |                     |                     |                     |                      |                     |                      |                     |                     |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|----------------------|---------------------|---------------------|
|                                    | Dependent variable: |                     |                     |                     |                     |                     |                     |                      |                     |                      |                     |                     |
|                                    | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | CAR<br>(7)          | (8)                  | (9)                 | (10)                 | (11)                | (12)                |
| Incumbent gov party<br>change      | 0.0004 (0.012)      |                     |                     |                     |                     |                     |                     |                      |                     |                      |                     |                     |
| Margin win                         |                     | -0.011 (0.025)      |                     |                     |                     |                     |                     |                      |                     |                      |                     |                     |
| Opp party in gov                   |                     |                     | -0.002 (0.010)      |                     |                     |                     |                     |                      |                     |                      |                     |                     |
| Left_Right gov                     |                     |                     |                     | 0.004 (0.004)       |                     |                     |                     |                      |                     |                      |                     |                     |
| Left_Right Parl                    |                     |                     |                     |                     | 0.014 (0.011)       |                     |                     |                      |                     |                      |                     |                     |
| Parliamentary<br>democracy         |                     |                     |                     |                     |                     | -0.013 (0.015)      |                     |                      |                     |                      |                     |                     |
| Minority Gov?                      |                     |                     |                     |                     |                     |                     | 0.007 (0.013)       |                      |                     |                      |                     |                     |
| GDP / Capita                       |                     |                     |                     |                     |                     |                     |                     | 0.00000<br>(0.00000) |                     |                      |                     |                     |
| Number of parties<br>in government |                     |                     |                     |                     |                     |                     |                     |                      | -0.006 (0.005)      |                      |                     |                     |
| GDP growth                         |                     |                     |                     |                     |                     |                     |                     |                      |                     | 0.390* (0.201)       |                     |                     |
| Change<br>change Parl L_R          |                     |                     |                     |                     |                     |                     |                     |                      |                     |                      | -0.008 (0.013)      |                     |
| Constant                           |                     |                     |                     |                     |                     |                     |                     |                      |                     |                      |                     | -0.002 (0.012)      |
| Observations                       | -0.005 (0.009)      | -0.003 (0.006)      | -0.004 (0.006)      | -0.024 (0.022)      | -0.080 (0.059)      | 0.006 (0.013)       | -0.007 (0.007)      | -0.012 (0.010)       | 0.010 (0.013)       | -0.015* (0.008)      | 0.001 (0.011)       | -0.005 (0.006)      |
| Adjusted R <sup>2</sup>            | 0.00001             | 0.001               | 0.0002              | 0.005               | 0.009               | 0.004               | 0.001               | 0.005                | 0.009               | 0.020                | 0.002               | 0.0002              |
| Adjusted R <sup>2</sup>            | -0.005              | -0.004              | -0.005              | -0.001              | 0.003               | -0.001              | -0.004              | -0.001               | 0.003               | 0.015                | -0.003              | -0.005              |
| Residual Std. Error                | 0.079 (df = 190)    | 0.079 (df = 189)    | 0.079 (df = 190)    | 0.079 (df = 188)    | 0.079 (df = 190)    | 0.079 (df = 189)    | 0.079 (df = 190)    | 0.081 (df = 178)     | 0.079 (df = 190)    | 0.080 (df = 180)     | 0.079 (df = 190)    | 0.080 (df = 189)    |
| Statistic                          | 0.001 (df = 1; 190) | 0.206 (df = 1; 189) | 0.043 (df = 1; 190) | 0.858 (df = 1; 188) | 1.643 (df = 1; 190) | 0.754 (df = 1; 189) | 0.255 (df = 1; 190) | 0.895 (df = 1; 178)  | 1.656 (df = 1; 190) | 3.754* (df = 1; 180) | 0.408 (df = 1; 190) | 0.042 (df = 1; 189) |

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

| Each variable at 30 days           |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |                     |                     |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
|                                    | Dependent variable: |                     |                     |                     |                     |                     |                     |                      |                     |                     |                     |                     |
|                                    | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | CAR<br>(7)          | (8)                  | (9)                 | (10)                | (11)                | (12)                |
| Incumbent gov party<br>change      | 0.004 (0.010)       |                     |                     |                     |                     |                     |                     |                      |                     |                     |                     |                     |
| Margin win                         |                     | -0.014 (0.021)      |                     |                     |                     |                     |                     |                      |                     |                     |                     |                     |
| Opp party in gov                   |                     |                     | -0.002 (0.009)      |                     |                     |                     |                     |                      |                     |                     |                     |                     |
| Left_Right gov                     |                     |                     |                     | -0.001 (0.003)      |                     |                     |                     |                      |                     |                     |                     |                     |
| Left_Right Parl                    |                     |                     |                     |                     | 0.004 (0.010)       |                     |                     |                      |                     |                     |                     |                     |
| Parliamentary<br>democracy         |                     |                     |                     |                     |                     | -0.012 (0.013)      |                     |                      |                     |                     |                     |                     |
| Minority Gov?                      |                     |                     |                     |                     |                     |                     | 0.004 (0.011)       |                      |                     |                     |                     |                     |
| GDP / Capita                       |                     |                     |                     |                     |                     |                     |                     | 0.00000<br>(0.00000) |                     |                     |                     |                     |
| Number of parties<br>in government |                     |                     |                     |                     |                     |                     |                     |                      | -0.007 (0.004)      |                     |                     |                     |
| GDP growth                         |                     |                     |                     |                     |                     |                     |                     |                      |                     | 0.224 (0.174)       |                     |                     |
| Change<br>change Parl L_R          |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     | 0.002 (0.011)       |                     |
| Constant                           |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |                     | -0.008 (0.010)      |
| Observations                       | -0.007 (0.007)      | -0.003 (0.005)      | -0.004 (0.005)      | -0.001 (0.019)      | -0.027 (0.050)      | 0.005 (0.012)       | -0.006 (0.006)      | -0.011 (0.009)       | 0.011 (0.011)       | -0.010 (0.007)      | -0.006 (0.009)      | -0.004 (0.005)      |
| Adjusted R <sup>2</sup>            | 0.001               | 0.002               | 0.0003              | 0.0002              | 0.001               | 0.005               | 0.001               | 0.005                | 0.013               | 0.009               | 0.0002              | 0.004               |
| Adjusted R <sup>2</sup>            | -0.004              | -0.003              | -0.005              | -0.005              | -0.004              | -0.0004             | -0.005              | -0.001               | 0.008               | 0.004               | -0.005              | -0.002              |
| Residual Std. Error                | 0.068 (df = 190)    | 0.068 (df = 189)    | 0.068 (df = 190)    | 0.068 (df = 188)    | 0.068 (df = 190)    | 0.068 (df = 189)    | 0.068 (df = 190)    | 0.070 (df = 178)     | 0.068 (df = 190)    | 0.069 (df = 180)    | 0.068 (df = 190)    | 0.068 (df = 189)    |
| Statistic                          | 0.156 (df = 1; 190) | 0.409 (df = 1; 189) | 0.050 (df = 1; 190) | 0.032 (df = 1; 188) | 0.196 (df = 1; 190) | 0.920 (df = 1; 189) | 0.112 (df = 1; 190) | 0.898 (df = 1; 178)  | 2.597 (df = 1; 190) | 1.654 (df = 1; 180) | 0.046 (df = 1; 190) | 0.668 (df = 1; 189) |

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

| Each variable at 20 days     |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|------------------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|-----------------------------|---------------------|
|                              | Dependent variable: |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|                              | CAR                 |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|                              | (1)                 | (2)                 | (3)                 | (4)                  | (5)                 | (6)                 | (7)                 | (8)                 | (9)                  | (10)                | (11)                        | (12)                |
| Incumbent gov party range    | 0.002 (0.009)       |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Margin win                   |                     | 0.003 (0.019)       |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Opp party in gov             |                     |                     | 0.006 (0.008)       |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Left_Right gov               |                     |                     |                     | -0.0001 (0.003)      |                     |                     |                     |                     |                      |                     |                             |                     |
| Left_Right Parl              |                     |                     |                     |                      | 0.001 (0.009)       |                     |                     |                     |                      |                     |                             |                     |
| Parliamentary democracy      |                     |                     |                     |                      |                     | -0.013 (0.011)      |                     |                     |                      |                     |                             |                     |
| Minority Gov?                |                     |                     |                     |                      |                     |                     | 0.004 (0.010)       |                     |                      |                     |                             |                     |
| GDP / Capita                 |                     |                     |                     |                      |                     |                     |                     | 0.00000 (0.00000)   |                      |                     |                             |                     |
| Number of parties government |                     |                     |                     |                      |                     |                     |                     |                     | -0.004 (0.004)       |                     |                             |                     |
| GDP growth                   |                     |                     |                     |                      |                     |                     |                     |                     |                      | 0.112 (0.156)       |                             |                     |
| Increase                     |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     | 0.0001 (0.010)              |                     |
| Change Parl L_R              |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             | -0.006 (0.009)      |
| Constant                     | -0.001 (0.007)      | 0.001 (0.005)       | -0.001 (0.005)      | 0.001 (0.017)        | -0.006 (0.045)      | 0.011 (0.010)       | -0.001 (0.005)      | -0.008 (0.008)      | 0.009 (0.010)        | -0.002 (0.006)      | 0.0003 (0.008)              | 0.001 (0.004)       |
| Observations                 | 192                 | 191                 | 192                 | 190                  | 192                 | 191                 | 192                 | 180                 | 192                  | 182                 | 192                         | 191                 |
| R <sup>2</sup>               | 0.0003              | 0.0001              | 0.003               | 0.00000              | 0.0001              | 0.007               | 0.001               | 0.010               | 0.005                | 0.003               | 0.00000                     | 0.002               |
| Adjusted R <sup>2</sup>      | -0.005              | -0.005              | -0.002              | -0.005               | -0.005              | 0.002               | -0.004              | 0.005               | -0.0003              | -0.003              | -0.005                      | -0.003              |
| Residual Std. Error          | 0.061 (df = 190)    | 0.060 (df = 189)    | 0.061 (df = 190)    | 0.060 (df = 188)     | 0.061 (df = 190)    | 0.061 (df = 189)    | 0.061 (df = 190)    | 0.062 (df = 178)    | 0.061 (df = 190)     | 0.062 (df = 180)    | 0.061 (df = 190)            | 0.061 (df = 189)    |
| Statistic                    | 0.059 (df = 1; 190) | 0.027 (df = 1; 189) | 0.610 (df = 1; 190) | 0.0003 (df = 1; 188) | 0.021 (df = 1; 190) | 1.291 (df = 1; 189) | 0.147 (df = 1; 190) | 1.822 (df = 1; 178) | 0.939 (df = 1; 190)  | 0.514 (df = 1; 180) | 0.0002 (df = 1; 190)        | 0.457 (df = 1; 189) |
| Note:                        |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     | *p<0.1; **p<0.05; ***p<0.01 |                     |
| Each variable at 10 days     |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|                              | Dependent variable: |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|                              | CAR                 |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
|                              | (1)                 | (2)                 | (3)                 | (4)                  | (5)                 | (6)                 | (7)                 | (8)                 | (9)                  | (10)                | (11)                        | (12)                |
| Incumbent gov party range    | -0.005 (0.007)      |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Margin win                   |                     | 0.002 (0.015)       |                     |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Opp party in gov             |                     |                     | 0.0003 (0.006)      |                      |                     |                     |                     |                     |                      |                     |                             |                     |
| Left_Right gov               |                     |                     |                     | 0.002 (0.002)        |                     |                     |                     |                     |                      |                     |                             |                     |
| Left_Right Parl              |                     |                     |                     |                      | 0.007 (0.007)       |                     |                     |                     |                      |                     |                             |                     |
| Parliamentary democracy      |                     |                     |                     |                      |                     | -0.003 (0.009)      |                     |                     |                      |                     |                             |                     |
| Minority Gov?                |                     |                     |                     |                      |                     |                     | -0.002 (0.008)      |                     |                      |                     |                             |                     |
| GDP / Capita                 |                     |                     |                     |                      |                     |                     |                     | 0.00000 (0.00000)   |                      |                     |                             |                     |
| Number of parties government |                     |                     |                     |                      |                     |                     |                     |                     | -0.005* (0.003)      |                     |                             |                     |
| GDP growth                   |                     |                     |                     |                      |                     |                     |                     |                     |                      | 0.099 (0.125)       |                             |                     |
| Increase                     |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     | -0.0002 (0.008)             |                     |
| Change Parl L_R              |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     |                             | 0.001 (0.007)       |
| Constant                     | 0.003 (0.005)       | 0.0003 (0.004)      | 0.00004 (0.004)     | -0.012 (0.013)       | -0.036 (0.036)      | 0.003 (0.008)       | 0.001 (0.004)       | -0.005 (0.006)      | 0.013 (0.008)        | -0.003 (0.005)      | 0.0002 (0.007)              | 0.0003 (0.004)      |
| Observations                 | 192                 | 191                 | 192                 | 190                  | 192                 | 191                 | 192                 | 180                 | 192                  | 182                 | 192                         | 191                 |
| R <sup>2</sup>               | 0.002               | 0.0001              | 0.00001             | 0.005                | 0.005               | 0.001               | 0.0003              | 0.005               | 0.017                | 0.003               | 0.00000                     | 0.0002              |
| Adjusted R <sup>2</sup>      | -0.003              | -0.005              | -0.005              | -0.0001              | 0.0001              | -0.005              | -0.005              | -0.001              | 0.012                | -0.002              | -0.005                      | -0.005              |
| Residual Std. Error          | 0.049 (df = 190)    | 0.048 (df = 189)    | 0.049 (df = 190)    | 0.048 (df = 188)     | 0.049 (df = 190)    | 0.049 (df = 189)    | 0.049 (df = 190)    | 0.050 (df = 178)    | 0.048 (df = 190)     | 0.050 (df = 180)    | 0.049 (df = 190)            | 0.049 (df = 189)    |
| Statistic                    | 0.446 (df = 1; 190) | 0.021 (df = 1; 189) | 0.002 (df = 1; 190) | 0.987 (df = 1; 188)  | 1.023 (df = 1; 190) | 0.116 (df = 1; 189) | 0.057 (df = 1; 190) | 0.834 (df = 1; 178) | 3.300* (df = 1; 190) | 0.630 (df = 1; 180) | 0.001 (df = 1; 190)         | 0.029 (df = 1; 189) |
| Note:                        |                     |                     |                     |                      |                     |                     |                     |                     |                      |                     | *p<0.1; **p<0.05; ***p<0.01 |                     |

| Each variable at 7 days     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                             | Dependent variable: |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                             | CAR                 |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                             | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                 | (9)                 | (10)                | (11)                | (12)                |
| Incumbent gov party range   | -0.001 (0.006)      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Margin win                  |                     | 0.002 (0.014)       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Opp party in gov            |                     |                     | 0.002 (0.006)       |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right gov              |                     |                     |                     | 0.0002 (0.002)      |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right Parl             |                     |                     |                     |                     | 0.002 (0.006)       |                     |                     |                     |                     |                     |                     |                     |
| Parliamentary democracy     |                     |                     |                     |                     |                     | -0.004 (0.008)      |                     |                     |                     |                     |                     |                     |
| Minority Gov?               |                     |                     |                     |                     |                     |                     | -0.004 (0.007)      |                     |                     |                     |                     |                     |
| GDP / Capita                |                     |                     |                     |                     |                     |                     |                     | 0.00000 (0.00000)   |                     |                     |                     |                     |
| Number of parties overnment |                     |                     |                     |                     |                     |                     |                     |                     | -0.004 (0.003)      |                     |                     |                     |
| GDP growth                  |                     |                     |                     |                     |                     |                     |                     |                     |                     | 0.044 (0.113)       |                     |                     |
| Unemployment                |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | -0.0003 (0.007)     |                     |
| Change Parl L_R             |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | -0.004 (0.006)      |
| Constant                    | 0.001 (0.005)       | 0.0003 (0.003)      | -0.0002 (0.003)     | -0.0004 (0.012)     | -0.012 (0.033)      | 0.003 (0.007)       | 0.001 (0.004)       | -0.002 (0.006)      | 0.009 (0.007)       | -0.001 (0.005)      | 0.0003 (0.006)      | 0.0003 (0.003)      |
| Observations                | 192                 | 191                 | 192                 | 190                 | 192                 | 191                 | 192                 | 180                 | 192                 | 182                 | 192                 | 191                 |
| Adjusted R <sup>2</sup>     | 0.0003              | 0.0001              | 0.0004              | 0.00003             | 0.001               | 0.001               | 0.002               | 0.001               | 0.010               | 0.001               | 0.00001             | 0.002               |
| Adjusted R <sup>2</sup>     | -0.005              | -0.005              | -0.005              | -0.005              | -0.004              | -0.004              | -0.004              | -0.004              | 0.005               | -0.005              | -0.005              | -0.003              |
| Residual Std. Error         | 0.044 (df = 190)    | 0.044 (df = 189)    | 0.044 (df = 190)    | 0.044 (df = 188)    | 0.044 (df = 190)    | 0.044 (df = 189)    | 0.044 (df = 190)    | 0.045 (df = 178)    | 0.044 (df = 190)    | 0.045 (df = 180)    | 0.044 (df = 190)    | 0.044 (df = 189)    |
| Statistic                   | 0.050 (df = 1; 190) | 0.016 (df = 1; 189) | 0.075 (df = 1; 190) | 0.005 (df = 1; 188) | 0.145 (df = 1; 190) | 0.211 (df = 1; 189) | 0.330 (df = 1; 190) | 0.263 (df = 1; 178) | 1.945 (df = 1; 190) | 0.151 (df = 1; 180) | 0.002 (df = 1; 190) | 0.399 (df = 1; 189) |

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

| Each variable at 5 days     |                     |                      |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |
|-----------------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|
|                             | Dependent variable: |                      |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |
|                             | CAR                 |                      |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |
|                             | (1)                 | (2)                  | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                 | (9)                 | (10)                 | (11)                | (12)                |
| Incumbent gov party range   | 0.001 (0.006)       |                      |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |
| Margin win                  |                     | 0.0002 (0.013)       |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     |
| Opp party in gov            |                     |                      | -0.001 (0.005)      |                     |                     |                     |                     |                     |                     |                      |                     |                     |
| Left_Right gov              |                     |                      |                     | 0.0002 (0.002)      |                     |                     |                     |                     |                     |                      |                     |                     |
| Left_Right Parl             |                     |                      |                     |                     | 0.001 (0.006)       |                     |                     |                     |                     |                      |                     |                     |
| Parliamentary democracy     |                     |                      |                     |                     |                     | -0.008 (0.008)      |                     |                     |                     |                      |                     |                     |
| Minority Gov?               |                     |                      |                     |                     |                     |                     | -0.006 (0.007)      |                     |                     |                      |                     |                     |
| GDP / Capita                |                     |                      |                     |                     |                     |                     |                     | 0.00000 (0.00000)   |                     |                      |                     |                     |
| Number of parties overnment |                     |                      |                     |                     |                     |                     |                     |                     | -0.003 (0.002)      |                      |                     |                     |
| GDP growth                  |                     |                      |                     |                     |                     |                     |                     |                     |                     | 0.001 (0.106)        |                     |                     |
| Unemployment                |                     |                      |                     |                     |                     |                     |                     |                     |                     |                      | -0.005 (0.007)      |                     |
| Change Parl L_R             |                     |                      |                     |                     |                     |                     |                     |                     |                     |                      |                     | -0.004 (0.006)      |
| Constant                    | -0.001 (0.005)      | 0.0004 (0.003)       | 0.0002 (0.003)      | -0.001 (0.011)      | -0.008 (0.031)      | 0.006 (0.007)       | 0.002 (0.003)       | -0.001 (0.005)      | 0.006 (0.007)       | -0.0001 (0.004)      | 0.004 (0.006)       | 0.0002 (0.003)      |
| Observations                | 192                 | 191                  | 192                 | 190                 | 192                 | 191                 | 192                 | 180                 | 192                 | 182                  | 192                 | 191                 |
| Adjusted R <sup>2</sup>     | 0.0001              | 0.00000              | 0.0003              | 0.0001              | 0.0003              | 0.005               | 0.004               | 0.0001              | 0.006               | 0.00000              | 0.004               | 0.003               |
| Adjusted R <sup>2</sup>     | -0.005              | -0.005               | -0.005              | -0.005              | -0.005              | 0.0002              | -0.001              | -0.006              | 0.0004              | -0.006               | -0.002              | -0.003              |
| Residual Std. Error         | 0.041 (df = 190)    | 0.041 (df = 189)     | 0.041 (df = 190)    | 0.041 (df = 188)    | 0.041 (df = 190)    | 0.041 (df = 189)    | 0.041 (df = 190)    | 0.043 (df = 178)    | 0.041 (df = 190)    | 0.042 (df = 180)     | 0.041 (df = 190)    | 0.041 (df = 189)    |
| Statistic                   | 0.022 (df = 1; 190) | 0.0003 (df = 1; 189) | 0.049 (df = 1; 190) | 0.014 (df = 1; 188) | 0.063 (df = 1; 190) | 1.037 (df = 1; 189) | 0.844 (df = 1; 190) | 0.020 (df = 1; 178) | 1.072 (df = 1; 190) | 0.0001 (df = 1; 180) | 0.683 (df = 1; 190) | 0.503 (df = 1; 189) |

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

| Each variable at 4 days      |                     |                       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|------------------------------|---------------------|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                              | Dependent variable: |                       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                              | CAR                 |                       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                              | (1)                 | (2)                   | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                 | (9)                 | (10)                | (11)                | (12)                |
| Incumbent gov party range    | 0.003 (0.006)       |                       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Margin win                   |                     | 0.0001 (0.012)        |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Opp party in gov             |                     |                       | -0.001 (0.005)      |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right gov               |                     |                       |                     | 0.001 (0.002)       |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right Parl              |                     |                       |                     |                     | 0.004 (0.005)       |                     |                     |                     |                     |                     |                     |                     |
| Parliamentary democracy      |                     |                       |                     |                     |                     | -0.007 (0.007)      |                     |                     |                     |                     |                     |                     |
| Minority Gov?                |                     |                       |                     |                     |                     |                     | -0.007 (0.006)      |                     |                     |                     |                     |                     |
| GDP / Capita                 |                     |                       |                     |                     |                     |                     |                     | -0.00000 (0.00000)  |                     |                     |                     |                     |
| Number of parties government |                     |                       |                     |                     |                     |                     |                     |                     | -0.002 (0.002)      |                     |                     |                     |
| GDP growth increase          |                     |                       |                     |                     |                     |                     |                     |                     |                     | -0.029 (0.097)      |                     |                     |
| Change Parl L_R              |                     |                       |                     |                     |                     |                     |                     |                     |                     |                     | -0.005 (0.006)      |                     |
| Constant                     | -0.001 (0.004)      | 0.001 (0.003)         | 0.001 (0.003)       | -0.004 (0.010)      | -0.018 (0.028)      | 0.007 (0.006)       | 0.003 (0.003)       | 0.002 (0.005)       | 0.005 (0.006)       | 0.002 (0.004)       | 0.004 (0.005)       | 0.001 (0.003)       |
| Observations                 | 192                 | 191                   | 192                 | 190                 | 192                 | 191                 | 192                 | 180                 | 192                 | 182                 | 192                 | 191                 |
| R <sup>2</sup>               | 0.001               | 0.00000               | 0.0001              | 0.001               | 0.002               | 0.005               | 0.007               | 0.0001              | 0.002               | 0.0005              | 0.003               | 0.00002             |
| Adjusted R <sup>2</sup>      | -0.004              | -0.005                | -0.005              | -0.004              | -0.003              | 0.00000             | 0.001               | -0.006              | -0.003              | -0.005              | -0.002              | -0.005              |
| Residual Std. Error          | 0.038 (df = 190)    | 0.038 (df = 189)      | 0.038 (df = 190)    | 0.038 (df = 188)    | 0.038 (df = 190)    | 0.038 (df = 189)    | 0.038 (df = 190)    | 0.039 (df = 178)    | 0.038 (df = 190)    | 0.039 (df = 180)    | 0.038 (df = 190)    | 0.038 (df = 189)    |
| Statistic                    | 0.225 (df = 1; 190) | 0.00003 (df = 1; 189) | 0.024 (df = 1; 190) | 0.274 (df = 1; 188) | 0.472 (df = 1; 190) | 1.000 (df = 1; 189) | 1.253 (df = 1; 190) | 0.020 (df = 1; 178) | 0.469 (df = 1; 190) | 0.090 (df = 1; 180) | 0.575 (df = 1; 190) | 0.003 (df = 1; 189) |

ote: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

| Each variable at 3 days      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                              | Dependent variable: |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                              | CAR                 |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                              | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                 | (9)                 | (10)                | (11)                | (12)                |
| Incumbent gov party range    | 0.007 (0.006)       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Margin win                   |                     | 0.002 (0.012)       |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Opp party in gov             |                     |                     | -0.001 (0.005)      |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right gov               |                     |                     |                     | 0.002 (0.002)       |                     |                     |                     |                     |                     |                     |                     |                     |
| Left_Right Parl              |                     |                     |                     |                     | 0.005 (0.006)       |                     |                     |                     |                     |                     |                     |                     |
| Parliamentary democracy      |                     |                     |                     |                     |                     | -0.011 (0.007)      |                     |                     |                     |                     |                     |                     |
| Minority Gov?                |                     |                     |                     |                     |                     |                     | -0.010 (0.007)      |                     |                     |                     |                     |                     |
| GDP / Capita                 |                     |                     |                     |                     |                     |                     |                     | -0.000 (0.00000)    |                     |                     |                     |                     |
| Number of parties government |                     |                     |                     |                     |                     |                     |                     |                     | 0.001 (0.002)       |                     |                     |                     |
| GDP growth increase          |                     |                     |                     |                     |                     |                     |                     |                     |                     | -0.092 (0.108)      |                     |                     |
| Change Parl L_R              |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | -0.007 (0.006)      |                     |
| Constant                     | -0.004 (0.004)      | 0.0004 (0.003)      | 0.0004 (0.003)      | -0.008 (0.011)      | -0.027 (0.029)      | 0.009 (0.006)       | 0.003 (0.003)       | 0.0004 (0.005)      | -0.001 (0.006)      | 0.002 (0.004)       | 0.005 (0.005)       | 0.0004 (0.003)      |
| Observations                 | 174                 | 173                 | 174                 | 172                 | 174                 | 173                 | 174                 | 162                 | 174                 | 164                 | 174                 | 173                 |
| R <sup>2</sup>               | 0.009               | 0.0001              | 0.0001              | 0.004               | 0.005               | 0.014               | 0.013               | 0.00002             | 0.0003              | 0.004               | 0.007               | 0.001               |
| Adjusted R <sup>2</sup>      | 0.003               | -0.006              | -0.006              | -0.001              | -0.001              | 0.008               | 0.007               | -0.006              | -0.005              | -0.002              | 0.001               | -0.004              |
| Residual Std. Error          | 0.038 (df = 172)    | 0.038 (df = 171)    | 0.038 (df = 172)    | 0.038 (df = 170)    | 0.038 (df = 172)    | 0.038 (df = 171)    | 0.038 (df = 172)    | 0.039 (df = 160)    | 0.038 (df = 172)    | 0.039 (df = 162)    | 0.038 (df = 172)    | 0.038 (df = 171)    |
| Statistic                    | 1.520 (df = 1; 172) | 0.025 (df = 1; 171) | 0.022 (df = 1; 172) | 0.767 (df = 1; 170) | 0.852 (df = 1; 172) | 2.409 (df = 1; 171) | 2.250 (df = 1; 172) | 0.003 (df = 1; 160) | 0.055 (df = 1; 172) | 0.719 (df = 1; 162) | 1.204 (df = 1; 172) | 0.230 (df = 1; 171) |

ote: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Each variable at 1 day

|                                    | Dependent variable: |                     |                     |                     |                     |                     |                     |                      |                     |                     |                             |                     |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|-----------------------------|---------------------|
|                                    | Return              |                     |                     |                     |                     |                     |                     |                      |                     |                     |                             |                     |
|                                    | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                  | (9)                 | (10)                | (11)                        | (12)                |
| Incumbent gov party<br>change      | 0.001 (0.004)       |                     |                     |                     |                     |                     |                     |                      |                     |                     |                             |                     |
| Margin win                         |                     | -0.010 (0.010)      |                     |                     |                     |                     |                     |                      |                     |                     |                             |                     |
| Opp party in gov                   |                     |                     | -0.001 (0.004)      |                     |                     |                     |                     |                      |                     |                     |                             |                     |
| Left_Right gov                     |                     |                     |                     | 0.0001 (0.001)      |                     |                     |                     |                      |                     |                     |                             |                     |
| Left_Right Parl                    |                     |                     |                     |                     | 0.001 (0.004)       |                     |                     |                      |                     |                     |                             |                     |
| Parliamentary<br>democracy         |                     |                     |                     |                     |                     | -0.006 (0.006)      |                     |                      |                     |                     |                             |                     |
| Minority Gov?                      |                     |                     |                     |                     |                     |                     | -0.004 (0.005)      |                      |                     |                     |                             |                     |
| GDP / Capita                       |                     |                     |                     |                     |                     |                     |                     | 0.00000<br>(0.00000) |                     |                     |                             |                     |
| Number of parties<br>in government |                     |                     |                     |                     |                     |                     |                     |                      | -0.001 (0.002)      |                     |                             |                     |
| GDP growth                         |                     |                     |                     |                     |                     |                     |                     |                      |                     | -0.020 (0.079)      |                             |                     |
| Increase<br>change Parl L_R        |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     | -0.004 (0.005)              | -0.002 (0.004)      |
| Constant                           | 0.0002 (0.003)      | 0.002 (0.002)       | 0.001 (0.002)       | 0.0004 (0.008)      | -0.002 (0.023)      | 0.005 (0.005)       | 0.002 (0.003)       | -0.0004<br>(0.004)   | 0.004 (0.005)       | 0.001 (0.003)       | 0.004 (0.004)               | 0.001 (0.002)       |
| Observations                       | 192                 | 191                 | 192                 | 190                 | 192                 | 191                 | 192                 | 180                  | 192                 | 182                 | 192                         | 191                 |
| Adjusted R <sup>2</sup>            | 0.0001              | 0.006               | 0.001               | 0.00003             | 0.0001              | 0.005               | 0.003               | 0.001                | 0.002               | 0.0004              | 0.004                       | 0.001               |
| Adjusted R <sup>2</sup>            | -0.005              | 0.0004              | -0.005              | -0.005              | -0.005              | 0.0002              | -0.002              | -0.005               | -0.003              | -0.005              | -0.002                      | -0.004              |
| Residual Std. Error                | 0.031 (df = 190)    | 0.030 (df = 189)    | 0.031 (df = 190)    | 0.031 (df = 188)    | 0.031 (df = 190)    | 0.031 (df = 189)    | 0.031 (df = 190)    | 0.032 (df = 178)     | 0.031 (df = 190)    | 0.032 (df = 180)    | 0.031 (df = 190)            | 0.031 (df = 189)    |
| Statistic                          | 0.026 (df = 1; 190) | 1.073 (df = 1; 189) | 0.126 (df = 1; 190) | 0.006 (df = 1; 188) | 0.019 (df = 1; 190) | 1.038 (df = 1; 189) | 0.560 (df = 1; 190) | 0.146 (df = 1; 178)  | 0.426 (df = 1; 190) | 0.066 (df = 1; 180) | 0.696 (df = 1; 190)         | 0.232 (df = 1; 189) |
| Note:                              |                     |                     |                     |                     |                     |                     |                     |                      |                     |                     | *p<0.1; **p<0.05; ***p<0.01 |                     |

## Appendix B

### Robustness check methods

#### *Breusch-Pagan test for heteroscedasticity*

1. From original regression model estimated by Ordinary Least Squared method, obtain the squared residuals,  $\hat{u}^2$
2. Run regression  $\hat{u}^2 = d_0 + d_1X_1 + d_2X_2 + \dots + d_kX_k + \text{error}$ , and keep  $R_{\hat{u}^2}^2$
3. Compute the p-values from the Lagrange multiplier,  $LM = n \times R_{\hat{u}^2}^2$  using the chi-squared distribution

#### *Variance Inflation Factor*

$$Var(\hat{\beta}_j) = \frac{\sigma^2}{SST} \cdot VIF_j$$

| Variable                   | VIF      |
|----------------------------|----------|
| Change sharepop            | 1.128331 |
| Pop. party in gov.         | 1.210847 |
| Margin win                 | 1.983125 |
| Inc. gov. party change     | 1.266689 |
| Left/Right gov.            | 1.832963 |
| Left/Right parl.           | 2.091510 |
| Parl. democracy            | 1.166467 |
| Minority gov.              | 1.898075 |
| GDP per capita             | 1.158639 |
| GDP growth                 | 1.331927 |
| No. parties in gov.        | 1.104194 |
| Change in parl. Left/Right | 1.743476 |

## Appendix C

### Confidence intervals

| Days relative to election                                      | -5    | -4     | -3     | -2     | -1     | 0      | +1     | +2     |
|----------------------------------------------------------------|-------|--------|--------|--------|--------|--------|--------|--------|
| mean cumulative return<br>populist extreme elections           | 0.00% | -0.04% | -0.04% | 0.08%  | 0.26%  | 0.21%  | 0.25%  | 0.24%  |
| mean cumulative return<br>non-populist extreme<br>elections    | 0.00% | -0.17% | -0.15% | -0.35% | -0.30% | -0.25% | -0.16% | -0.40% |
| lower confidence interval<br>populist extreme elections        | 0.00% | -2.37% | -3.39% | -3.67% | -5.23% | -5.23% | -5.24% | -6.86% |
| upper confidence interval<br>populist extreme elections        | 0.00% | 2.02%  | 3.08%  | 2.97%  | 4.63%  | 4.73%  | 4.92%  | 6.07%  |
| lower confidence interval<br>non-populist extreme<br>elections | 0.00% | -2.79% | -4.48% | -4.94% | -6.58% | -6.92% | -7.12% | -8.84% |
| upper confidence interval<br>non-populist extreme<br>elections | 0.00% | 2.70%  | 4.41%  | 5.09%  | 7.10%  | 7.33%  | 7.61%  | 9.33%  |