ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor Thesis International Economics

Bridging the gap between Left and Right

Should we also demonstrate for more diversity in political coalitions?

Name student: Friso Roos

Student ID number: 484538

Supervisor: Suzanne Bijkerk

Second assessor:

Date final version:

Most research into the determinants of voters' satisfaction towards their government coalition focusses on economic factors such as unemployment, economic development and inflation. I propose an extension to this research by including the political distance between the parties involved in the coalition government. The aim is to determine whether more diverse government coalitions lead to more satisfaction among voters. A theoretical model is constructed to combine theory and empirics. The theoretical model indicates that if the amount of uninformed voters is sufficiently high, voters utility is higher with a diverse coalition government rather than a one-party government. Data of several European countries in the period 2002-2018 is analyzed with an OLS regression and ordered probit regression including several control variables. The analysis reviews that more diverse government coalition indeed result in higher satisfaction among voters. This observation could lead to reflection on the political systems around the world.

Keywords: *government coalition; political distance; voters' satisfaction; Europe; empirical model; theoretical model*

Table of Content

I. Introduction

All over Europe the number of political parties have been increasing. More parties take part in elections and consequently more parties get elected to take a seat in national parliaments. In the period 2015-2017 there have been elections in 23 European Union member states and 31 new political parties entered into national parliaments (Weissenbach & Rahat, 2018).

This will also have consequences for the governments that will be formed after the elections are held. In many European countries coalition governments are formed after the elections, only in some countries political parties are able to obtain the absolute majority of the votes. Given the increase of minority parties in parliament it seems reasonable that in the coming years the average number of political parties in a government coalition will increase as well. As the number of parties involved in those government coalitions will increase, the coalitions governments will most likely also consist of parties with increasingly politically divers ideologies.

According to the committee decision making literature an increase in the number of informed committee members increases the probability of making the correct decision (Concordet, 1785). But when the committee exists of heterogenous agents, the decision making could become less informative (Persico, 2000). There seems thus to be a trade-off, on the one hand the increase in informed members increases the probability of making the correct decision, however if the members become increasingly heterogenous this probability might decrease.

Political parties in a coalition with very different ideological views have to make big concessions to govern. As a result compromises must be made, which could disappoint the supporters of the political parties and as a result the satisfaction with regard to the coalition government might decrease. If parties have similar political ideologies, less concessions have to be made and therefore the satisfaction will be higher. However, the increase in diversity in political ideologies can also lead to more informed decision making and thus raise the quality of decisions. Together with the observation described above – that the number of political parties is increasing – this leads to the following research question:

Are European citizens more satisfied with their government in the period 2002-2018, if the government coalition consist of more ideologically distant political parties?

To answer this question I take the following approach: (i) using a theoretical model I determine why and under which conditions voters might be more satisfied (or not) with a coalition government; and (ii) through empirical data analysis I test whether these conditions and the hypothesis following from the theoretical model holds for European countries in the period 2002-2018.

The results from the theoretical model indicate that if the amount of uninformed voters are sufficiently high the satisfaction of the voters (measured as their utility) is higher compared to their satisfaction if there would be a one-party government coalition (either left-winged or right-winged). Moreover, the theoretical models shows that if the amount of voters with a preference for either left- or right-winged parties is sufficiently high, the overall utility might be higher with either a left- or a right-winged coalition rather than a coalition government. To take an extreme example, if there are only voters with left-winged preferences, than a coalition with left-winged parties will yield a higher utility than a coalition government containing both left- and right-winged parties.

The results from the empirical data analysis provide evidence that in the period 2002-2018 in European countries a higher divergence in the political ideologies of the political parties that are part of the coalition government is associated with an increase in the satisfaction of the voters towards their governments. These results are robust for the inclusion of several control variables and are found using both an Ordinary Least Squares (OLS) regression method and an ordered probit method to analyze the data.

Therefore, both findings together seem to indicate that the number of uninformed voters was sufficiently high in the period 2002-2018, resulting in an increase in the voters' satisfaction when the divergence of political ideologies in the coalition increases. It could also indicate that the number of either left- or right-winged voters in European countries during that period was not sufficiently high to render a higher satisfaction with a one-party coalition relative to a coalition government. It seems reasonable to think that the cost of getting informed has increased with the increase in the number of political parties. Voters have to learn the political ideology of more political parties and they have more parties to choose from. As a result the amount of uninformed voters might have increased and therefore satisfaction might be higher with a coalition government rather than a one-party coalition.

To elaborate on the research question it is required to realize that coalition governments require compromise to be able to govern and this could result in policies that

will find limited support among supporters of the parties that entered into the coalition. Given that all policy is set based on compromises, a country can end up with unwanted policies and therefore the satisfaction of voters will decrease. However, there is also room for an alternative hypothesis. The increase in political parties in the government coalition could also lead to more insights and discussion which could increase the quality of decision making and therefore lead to more satisfaction among voters. This line of reasoning substantiates the research question.

I will follow the latter and hypothesize that the quality of the decision making process increases due to (diverse) discussion and use of more (diverse) information by the political parties in the coalition government. I believe that this mechanism is stronger and more relevant than the opposite in which the more diverse coalition governments would lead to unwanted compromise policies. Moreover, I believe – as explained above – that the increase in the number of political parties have increased the costs of becoming informed and as the theoretical model shows, if the number of uninformed parties is sufficiently high the voters' satisfaction will be higher with a coalition government relative to a one-party coalition. Therefore this hypothesis also follows directly from the theoretical model.

Hypothesis: *An increase in the political divergence of the coalition government is associated with an increase in the voters' satisfaction.*

The outcome of this research is socially relevant as it may show that more diverse government coalitions receive more or less confidence from voters, which might give incentives for strategic voting in order to either end up with political diverse coalitions and increase the popularity (and hopefully quality) of the decisions by these governments or refrain from them.

Moreover the last five years have been characterized by divergence, riot and polarization in many countries that aren't governed by coalition governments. The United Kingdom is often governed by one party that obtains an absolute majority in the elections and this country has been divided ever since the Brexit-vote. The United States has a two-party political system and also in that country there is a great divergence between the elite and the

middle class, white and black Americans, democrats and republicans (and even within these parties). If coalition governments give rise to better decisions and therefore more satisfaction, this might constitute an argument to think about changes of the political system in these countries to bridge the ideological gaps and unify the country and to increase the understanding between the now divided groups. A simple solution would be to improve the opportunities for new parties to enter into parliament and consequently into national governments. If leaders from politically distance parties are able to participate together in coalitions this might give rise to more understanding among their supporters.

However, this research focusses only on European countries and on coalition governments, therefore countries with two party systems are left out of this research. Nevertheless the findings of this research might be interesting to evaluate a two party system in the future and perhaps to start thinking about possible improvements of these systems.

This paper contributes to the theory of committee decision making because the theory is now applied to a political context as opposed to decision making within a private or public entity. To my knowledge this has not been done before and therefore is an extension to the existing literature in this field of study. Moreover most of the existing literature on this subject is theoretical, while this research is also empirical. This study also contributes to the literature that has been written on the drivers of popularity of coalition governments. This last line of literature has focused mainly on economic factors such as economic development, unemployment and inflation. This is – again to my knowledge – the first time that research focusses on the effect of the composition of the government coalition on the popularity of such a coalition.

The outline of the paper is as followed. The next section discusses related literature. Section III discusses the theoretical model. In Section IV I discuss the data. Section V presents the methodology and models to analyze the data. In section VI I discus the results. And I conclude in section VII.

II. Related Literature

A. Committee decision making

As mentioned, this paper relates to two main streams of literature. First, the theory of committee decision making. Extensive research has been done into the effect of increasing the number of agents in the committee, but also the effect of increasing the heterogeneity of

the committee. For instance Condorcet already in 1785 showed that increasing the number of informed agents in the committee increases the probability of making the appropriate decision. However, in certain circumstances increasing the number of committee members would lead to reduced incentives to acquire information and therefore could reduce the quality of the decision (Persico, 2004; Martinelli, 2002). Persico (2000) on the other hands shows that this finding also holds when the heterogeneity of agents in the committees increases.

Cai (2001) contributes to this research. He finds that when information acquisition is costly and unobservable and the committee exists of agents with conflicting interests, the optimal committee size would be small(er) because of information distortion. The idea is that conflicting interests could lead to misrepresentation of information. The reason is that information by committee members with different preferences might not be as informative as to the case when these distortions do not exist. This would be more relevant at the start of a new term by the government coalition and towards the end of the term, in the middle of the term government coalitions tend to show unity (Sagarzazu & Klüver, 2017). It has to be noted that in the model of Cai committee agents have to learn about their preferences, it seems possible that this could also be applied to government coalitions, because political parties do not always know what their supporters want. However, even in the case they do know, it seems reasonable they could have an incentive to manipulate information to obtain a favorable decision.

Li, Rosen and Suen (2001) show that the quality of committee decisions increases when the members of the committee have similar preferences. Heterogeneity would decrease the probability of making the correct decision. When the interests diverge more, there is more room for disagreement, which increase the incentive to provide misleading information. This is confirmed by the findings of Swank and Visser (2008).

However, Cai (2001) also shows that when there are more conflicting interests in the committee, participation incentives increase. Cai shows that when the positive participation effects dominate the distortionary information effects, social surplus could increase when the heterogeneity of the committee increases. In that case, committee member will acquire more information that would increase the probability of making the correct decision. It thus seems that heterogeneity of the committee has a conflicting effect on the decision making process. Whether it increases or decreases the probability of making the correct decision

partly depends on which factor dominates; the participation effect or the misrepresentation of information effect.

Doraszelski, Gerardi and Squintani (2003) show that these problems might be mitigated when pre-vote there is an exchange of views, which could lead to a better decision in case of conflicting interests. This seems plausible with government coalitions.

When reputational concerns are important, the *a priori* unconventional decision becomes more attractive and committees show an united front (Visser & Swank, 2008). This – as mentioned before – coincides with the finding of Sagarzazu and Klüver, who show that in the middle of the coalition term the coalition tends to act more united. If a coalition party acts in its own interest it would hurt its reputation as a reliable coalition partner, and put pressure on the coalition which might end up in a breakup.

Moreover Visser and Swank show that reputational concerns – which are of course very important for political parties involved in coalitions – could lead to manipulation of information and strategically voting if the preferences of the member inclined to vote differs considerably from the member casting the decisive vote.

Laver and Budge (1992) show that government coalitions in (Western-)Europe are confronted with a conflict of interest. On the one hand they need to adhere to the promises they made during the elections, on the other hand often governments coalitions are formed because no single party gets the majority of the votes, meaning that very different parties will enter into a government coalition and therefore have to come to a sort of compromise on the government policy. In short, coalition government parties are confronted with a conflict of interest between their own party policy and keeping the coalition together to govern a country. Sagarzazu and Klüver also exploit this conflict of interest.

In the context of committee decision making this relates to research by Austen-Smith and Feddersen (2002). They construct a model in which members have a common and a private interest, similar to the conflict of interest explained above. They analyze what might be the best decision rule in such a committee and find that a majority rule, rather than an unanimity rule generally induces more information revelation. This is because an unanimity rule tends to keep the status quo into place (as only one person has to vote against, to keep the status quo into place), this gives committee member who are in favor of changing the status quo strong incentives to misrepresent information. Majority rules, balance the incentives of those who are in favor of change and those who aren't.

As said this research relates to the conflict of interest that political parties face, when they have entered into a government coalition. This research is increasingly interesting and relevant because many government policies are set on the basis of a majority rule. For instance the Standing Orders for the Cabinet (*Regelement van orde van de ministerraad*) determines that the cabinet (*ministerraad*) in the Netherlands decides based on a majority rule in which every minister can cast one vote. This would therefore mitigate the problem that committee members have a strong incentive to misrepresent information. Which would lead to better decisions and therefore higher satisfaction. Figure 2.1 in appendix A shows the development of the satisfaction in the Netherlands and shows that the satisfaction is on a relatively high level and has an increasing trend.

All this literature gives rise to an interesting theory. If one applies the theory of committee decision making to government coalitions, the increase in the amount of political parties in coalition governments could increase the probability of correct decision making by those coalitions, however increasing the heterogeneity could lead to less informed decision (if the distortion effect dominates) and thus lower the probability of making the correct decision and therefore might lead to less voter satisfaction.

In the context of committee decision making it seems reasonable to assume that the committee has (at least partially) a common goal. However the goals of parties that are involved in coalition government might differ. Goals of political parties can be opposing by nature. When this is the case there are two conflicting factors at work. First of all, political parties have an incentive to misrepresent information to guide the decision towards the goal they have. Of course this lowers the probability of making the correct decision. However, and this is the second factor at work, other parties involved in the coalition government realize this and thus feel the incentive to acquire more information, this is called the participation effect. This participation effect increases the probability of making the correct decision (Cai, 2001). *A priori* it is hard to predict which of these two forces would prevail, meaning whether coalition governments would make more or less good decision is hard to predict, which could be reflected accordingly in the voters' satisfaction.

Therefore there are two possibilities. Either the participation effect dominates, meaning that more correct decision will be made and therefore the voters' satisfaction will be higher. Or the distortionary information effect dominates meaning that increasing the heterogeneity of the coalition government would result in more wrong decisions and

therefore the voters' satisfaction would decrease. In the context of my research I believe the participation effect will dominate the misrepresentation effect. Because all the parties in the coalition government do somehow work towards the same goal and that is governing the country in the best way possible. Therefore I believe that members will participate to increase the probability of making the correct decision, rather than distorting the entire process. Especially in the more severe crisis situation, as the current COVID-19 pandemic this is highly visible. It seems like the members of the coalition government are more engaged in the current government and the interests of the country than their own political party.

In general this research adds to the existing literature on committee decision making because this theory will now be applied to a whole different context, namely that of political decision making in a coalition government. Moreover most of the research mentioned above and thus the research done on committee decision making is theoretical literature. In this paper the theory is empirically tested by analyzing the political distance between parties and the effects on popularity of government coalitions.

B. Determinants of voters' satisfaction

Also this paper relates to the literature that is written on the determinants of voters' confidence in government coalitions. Anderson (1995) investigates whether the popularity of coalition governments in the Netherlands and Denmark is influenced by the economic development in those countries. He finds that voters will shift away their trust to other parties in the coalition, dependent on how competent the involved parties are in dealing with the economic development. This is also confirmed by Dorussen and Taylor (2001) who did a case study in the Netherlands for the period 1970-1999. Bellucci and Lewis-Beck (2011) estimate a model including lagged variables and find strong evidence that government coalition popularity reacts to changes in the economic development.

This literature relates to a different and more complex version of the responsibility hypothesis or a reward-punishment model. This simply means that positive economic development will result in more satisfaction and bad economic development in less satisfaction.

However in more complex political systems (including in the case of coalitions) the popularity reacts less strong to the perception of economic development than when simple political systems are in place, because it's harder to hold individual parties responsible for

those developments (Nannestad & Paldam, 1993; Paldam, 1981).

Renaud and Van Winden (1987) stress that apart from general economic development (increase in income/GDP) also inflation and unemployment affects the popularity of coalition parties, based on analyzing data in the Netherlands. Again, those factors influence the parties involved in the coalition in a different way, making it wrong to handle a coalition as a homogenous entity. Whether voters want a reduction in inflation and the magnitude of this possible reduction in inflation (which would then increase their satisfaction) depends also on the value of unemployment and vice versa. Generally speaking a higher unemployment and inflation decrease the popularity of the government coalition. A finding which is in line (although applied to other circumstances) with the research of Lewis-Beck (1980) who finds that the popularity of the French President and Prime-Minister decreases when the inflation and unemployment increase.

A general finding in democracies is that economic circumstances are very important for the popularity of any government. Voters hold the government responsible for the economic conditions and reward or punish the government accordingly (Lewis-Beck & Stegmaier, 2000).

Apart from these control variables that are measured at the country level, the characteristics of the individual voter might also influence the voting behavior. Research indicates that women are more likely to vote for left-winged parties (Giger, 2009; Norris, 1996), also men are more likely to vote for extreme right-winged parties (Spierings & Zaslove, 2017). Moreover woman are in general less likely to vote (Inglehart & Norris, 2000; Kostelka, Blais, & Gidengil, 2018), meaning that the turnout among women is lower. This would mean that the gender of a voter could influence the satisfaction towards the government coalition. As woman are less likely to vote, is seems plausible that their preferred party is less likely to be part of the coalition government and therefore could lower their satisfaction. This seems even more likely when the coalition government is right-winged.

High income also has an effect on the voting behavior, high income people are more likely to vote for conservative parties (Arunachalam & Watson, 2016). Also high income people are less likely to vote for radical right parties, however low income groups are more likely to vote for those parties (Han, 2016). Similar to the gender control variable, high income people are also more likely to vote (Simeonova, Akee, Holbein, Copeland, & Costello, 2018), therefore it seems reasonable that their preferred party will be part of the government coalition and

therefore their satisfaction towards the government coalition will be higher.

Apart from gender and income, also education is an important determinant of the voting behavior. Low educated people are more likely to vote for extreme right parties (Wille & Bovens, 2018), whilst high educated people are more likely to vote for liberal and progressive parties. Similar to the other two before mentioned control variables higher educated people are also more likely to vote (Statistics Sweden, 2015; Kramer, 2020), this again would increase the probability that their preferred party is part of the coalition government and therefore it seems likely that their satisfaction is higher.

Finally age could also influence the satisfaction of voters. First of all it seems plausible that age would positively correlate with both education and income. Next to that older voters are also more prone to vote for conservative parties (Swank & Eisinga, 1999; Johnston, Jones, & Manley, 2018), therefore it would be plausible that age influences the satisfaction, especially if it constitutes of more conservative parties. Moreover older people are also more inclined to vote in the first place (Centraal Bureau voor de Statistiek, 2017; Burn-Murdoch, 2016), raising the probability that their preferred party is part of the coalition government which could also increase the satisfaction.

C. Classification of political parties

Finally, this paper also relies heavily on the literature written about the classification of political parties into certain categories by experts and associated numbers on a scale from zero till ten. Most of this research is based on the ideas of Castles and Mair (1983). They came up with the idea to let experts place all the political parties on a scale, which ranges from zero till ten. Where zero stands for an Ultra-Left party and ten stands for an Ultra-Right party. Hubert and Inglehart (1995) perform a similar research, but also tend to answer certain question involved in the difference between left- and right-winged parties. For instance they also try to establish which substantive issues define whether a political party is either left- or right-winged. A very similar research to the research done by Castles and Mair has been done more recently in 2010 and 2014 by Polk et. al.

Table 2.1: Expected sign of popularity of coalition governments determinants

Popularity determinant	Expected effect on popularity	Related literature

Economic development	+	(Anderson, 1995; Dorussen & Taylor, 2001; Belluci & Lewis-Beck, 2011)
Inflation	-	(Renaud & van Winden, 1987; Lewis-Beck, 1980)
Unemployment	-	(Renaud & van Winden, 1987; Lewis-Beck, 1980)
Gender (women)	-	(Inglehart & Norris, 2000; (Kostelka, Blais, & Gidengil, 2018)
Income	+	(Simeonova, Akee, Holbein, Copeland, & Costello, 2018)
Education	+	(Statistics Sweden, 2015; Kramer, 2020)
Age	+	(Centraal Bureau voor de Statistiek, 2017; Burn-Murdoch, 2016)

III. The Theoretical Model

In this subsection I elaborate on a model that will theoretically support my hypothesis that more politically diverse coalition governments are associated with a higher voters' satisfaction. Moreover, the theoretical model will help to understate under which circumstances and why the voters' satisfaction is higher when there is a coalition government relative to a one-party government. For now consider a country with three political parties. For simplicity I = {1,2,3}, each party I can be left-winged or right-winged {l,r}. A party is left-winged with probability *p* and thus right-winged with probability (1-*p*).

There are *n* voters, each voter can have a preference for a left-winged or a right-winged party. The preference of the voters is indicated by v ∈ {l,r}. A voter has a preference for a left-winged party with a probability *q* and thus for a right-winged party with probability (1-*q*).

There are α informed voters who know which parties are left-winged and which parties are right-winged. The informed voters vote according to their preference. If a voter has a left-winged preference, the voter will vote for the left-winged party. If there are two parties that meet their preferences equally satisfactory, these voters divide their votes randomly over these parties. There are (1-α) uninformed voters, these voters vote randomly. If no party meets the preferences of the voter perfectly than I assume the voters will choose to vote randomly for one of the three parties. This follows from the fact that I assume that no voter can choose not to vote.

If after the voting none of the political parties has the (absolute) majority of the votes, they have to form a coalition with more than 50 percent of the votes. After the coalition is formed, this government has to implement left-winged, right-winged policy or a compromise policy. We assume that a left-winged coalition always implements a left-winged policy decision, while a right-winged coalition always implements a right-winged policy decision. If the coalition consists of one left-winged party and one right winged-party the policy decision will be a compromise (1/2*l* + 1/2*r*). The implemented policy in that case is equal to p={l,r,1/2r+1/2l}.

If the policy implemented by the government meets the preferences of the voters, he or she has utility equal to 0, if the policy decision is the opposite from his preference he or she receives utility < 0. Here "meets the preference of the voter" could be read as making the "right" decision from the perspective of the voter, which also means that "right" could be different for different voters.

The timeline in this model is as follows: (i) the policy stance of the party's q, the preference of voters v and the amount of uninformed and informed voters is given (determined by nature); (ii) all voters vote. This can either be for a left-winged or a right-winged party; (iii) after the voting procedure, the political parties have to form a coalition (given that none of the parties on their own got more than 50 percent of the votes and thus has an absolute majority). This coalition can either be left-winged, right-winged or constitute a compromise. Parties receive benefit b>0 from being in a coalition; (iii) the coalition needs to implement a policy decision, which again can either be left-winged, right-winged or a compromise depending on the sort of coalition; and (iv) payoffs realize.

To solve this model we have to take the utility functions of both economic actors into account: the voters and the political parties. The political parties derive utility from

participating in the (coalition) government, whilst the voters derive utility from policy decisions which are "right" or in other words match their policy preferences. We end up with the following utility functions:

$$U_{informed}(p,q,v) = -|v-p|$$

$$U_{uninformed}(p,q,v) = -|1/2l + 1/2r - p|$$

$$U_{parties}(L,R) = -|q-p|+sb$$

S is the probability of being in a coalition, the difference between the policy decision that is implemented and the preference of the voters matters. If the policy decision perfectly reflects the preference there is no difference, and hence the utility of the voter will equal zero (-|l-l|=0). However, when the difference is too large, the utility will be negative (-|l-r|<0). In this model the vote does not depend of the actions of the political parties.

III.I The Analysis

There are four sorts of possible coalition governments which are all labelled below in table 3.1 together with their probabilities.

Table 3.1: Probabilities for each set of combinations of political parties

Combination of political parties	(L,L,L)	(L,L,R)	(L,R,R)	(R,R,R)
Probability of occurrence	p^3	$3(p^2(1-p))$	$3(p(1-p)^2)$	$(1-p)^3$

Adding these probabilities above add up to 1. For instance if p = 0.4. $(0.4)^3 + 3((0.4)^2(0.6) + 3((0.4)(0.6)^2) + (0.6)^3 = 1$.

Parties can only form a coalition when the combined number of votes is larger than 1/2. I explore three different sets of coalitions: (i) a left-winged; (ii) a right-winged; and (iii) a compromise. I will only examine a coalition existing of two parties, because I assume that there is always an opposition.

III.II Same Party Political Landscape

III.II.i Only Left-wing Parties

With probability p^3 or (1-p)^3 the political landscape only consists of left-wing or right-wing parties. In these cases a coalition will always consist of two left-wing or right-wing parties. The policy they implement is hence also a left-wing or a right-wing policy with certainty.

Table 3.2.1.1: Number of votes for every political party in world with only left-winged parties

Political ideology of party	**L**	**L**	**L**
Number of informed votes	1/3α qn	1/3α qn	1/3α qn
Number of uninformed votes	1/3(1-α)n	1/3(1-α)n	1/3(1-α)n
Total amount of votes	1/3αqn+1/3(1-α)n	1/3αqn+1/3(1-α)n	1/3αqn+1/3(1-α)n

The above table shows that in the world with only left-winged voters each party receives one third of the votes. For the left-winged voters each party is equally preferred and therefore votes are evenly distributed among the parties. For the right-winged parties each party is equally not preferred, but as there are no right-winged parties the votes are again evenly distributed among those parties. The uninformed voters, vote at random and therefore also distribute their votes evenly among the three parties.

We will now consider the utility of the different voters. Right-wing voters (number of voters (1-q) alpha n) will have an expected utility -|r-l|< 0. They will have a negative utility because their preference is not met by the policy decision of the government coalition. The left-wing voters (number of voters q alpha n) will have an expected utility of zero. This is because their preference will always be met by the policy decision of the coalition government. The coalition government will always be left-winged and therefore will always implement left-winged policy decisions. The final category is the uninformed voters (numbers of voters is (1-alpha)n) their expected utility equals -1/2|r-l| < 0.

The combined expected utility in this case equals: – (1/2α – αq +1/2)n|r-l|. This combined expected utility is smaller than zero if (1/2α – αq +1/2) > 0 or q < ½ ((1+α)/α). So if

the number of left winged voters in the population is smaller than ½ ((1+α)/α) the combined expected utility will be negative. Voters will thus not be happy with this outcome, this seems logic as there are no right-winged parties in this world and therefore right-winged voters will not be happy with this outcome. If the number of left-winged voters in the population is sufficiently high they of course will be happy, because there are three parties which match their preferences and therefore the expected total utility will be non-negative. However, some further (mathematical) thinking leads us to the conclusion that this condition will always be met. For any alpha and q between 0 and 1, this condition will always be met. Therefore the combined expected utility in this model will always be negative. Indicating that the amount of left-winged voters is never sufficiently high to lead to a positive utility.

III.II.ii Only Right-wing Parties

Table 3.2.2.1: Number of votes for every political party in world with only right-winged parties

Political ideology of party	R	R	R
Number of informed votes	1/3(1-q)αn	1/3(1-q)αn	1/3(1-q)αn
Number of uninformed votes	1/3(1-α)n	1/3(1-α)n	1/3(1-α)n
Total amount of votes	1/3(1-q)αn +1/3(1-α)n	1/3(1-q)αn +1/3(1-α)n	1/3(1-q)αn +1/3(1-α)n

The above table shows that in the world with only right-winged voters each party receives one third of the votes. For the right-winged voters each party is equally preferred and therefore votes are evenly distributed among the parties. For the left-winged parties each party is equally not preferred, but as there are no left-winged parties the votes are again evenly distributed among those parties. The uninformed voters, vote at random and therefore also distribute their votes evenly among the three parties.

Again I will consider the expected utility of three categories of voters. Left-winged voters (q alpha n) will have an expected (negative) utility equal to - |l-r| < 0. Of course they

will have a negative utility because their preference will never be met by the policy decisions of the coalition government. Right-winged voters (alpha (1-q) n) will have an expected utility equal to zero (-|r-r| = 0). Also this is logic as every party in this world will be able to meet the preference of the voter. The uninformed voters ((1-alpha)n) will vote randomly (as an assumption), their expected utility equals -½ |l-r| < 0.

The combined expected utility in this case equals: - (- 1/2α + ½ + qα)n|l-r|. Therefore the combined expected utility is smaller than zero if (- 1/2α + ½ + qα) > 0 or q > ½ ((α-1)/α). If the number of left-winged voters in the population is larger than ½ ((α-1)/α) the combined expected utility will be negative. Voters will therefore again be not happy with this outcome, again this seems logic because in this case the number of left-winged voters is sufficiently high but there are no left-winged parties to vote for in this state of the world. However, if the number of right-winged voters is sufficiently high which will be the case whenever q < ½ ((α-1)/α) than the expected utility will be positive. Again interpretation is straightforward, there are enough right-winged voters and they can divide their votes among three parties which meet their preference. Again some further mathematical thinking leads to the conclusion that due to the fact that both alpha and q are always between zero and one this condition will also be always met. Therefore both combined expected utilities in the world with only one political party will always be negative.

III.III Political Landscape with Left and Right-wing Parties

In this section I will explore the state of the world in which there are different parties for which voters can vote. So there are either two left-winged and one right-winged party or there are two right-winged parties and one left-winged party. So this is the landscape in which political parties have different political views. I will use the same assumptions as above, so there are informed and uninformed voters and if the preferences are not met by the political parties than voters will vote randomly. Let's first explore the world in which the majority of the parties is left-winged.

III.III.i Majority Left-wing Parties

Table 3.3.1.1: Number of votes for every political party in world with majority left-winged parties

Political ideology of party	L	L	R
Number of informed votes	1/2α qn	1/2α qn	(1-q)αn
Number of uninformed votes	1/3(1-α)n	1/3(1-α)n	1/3(1-α)n
Total amount of votes	1/2αqn +1/3(1-α)n	1/2αqn +1/3(1-α)n	(1-q)αn +1/3(1-α)n

First of all I will calculate the conditions under which a left-winged coalition exists, afterwards I will focus on the conditions necessary for a compromise (L,R) coalition to exist. For a coalition to exist it is necessary that it receives at least 50% + 1 of the votes, so the number of received votes by the coalition needs to be larger than ½n. If $q > (2\alpha-1/2)/3\alpha$ then there will exist a left-winged coalition as the number of votes is large enough for a left-winged coalition to exist.

If the above mentioned condition is met then the expected utility of right-winged voters (alpha (1-q)n) equals: $-|r-l| < 0$. They will have a negative utility because their preference is not met by the policy decision of the government coalition. The left-winged voters (number of voters q alpha n) will have an expected utility of zero. This is because their preference will always be met by the policy decision of the coalition government. The final category is the uninformed voters (numbers of voters is (1-alpha)n) their expected utility equals $-1/2|r-l| < 0$.

The combined expected utility in this case equals: $-(1/2\alpha - \alpha q + 1/2)n|r-l|$. This combined expected utility is smaller than zero if $(1/2\alpha - \alpha q + 1/2) > 0$ or $q < ½ ((1+\alpha)/\alpha)$. So if the number of left winged voters in the population is smaller than $½ ((1+\alpha)/\alpha)$ the combined expected utility will be negative. Voters will thus not be happy with this outcome, this seems logic as there are no right-winged parties in this coalition government and therefore right-winged voters will not be happy with this outcome. If the number of left-winged voters in the population is sufficiently high they of course will be happy, because the coalition government will implement left-winged policy. In short the expected utilities will be similar to the situation in which there are only left-winged parties and there is thus a left-winged coalition. Similar to before the latter restriction on q will always be met, however the first restriction on q (for the

left-winged coalition to exist) is not necessary fulfilled.

Now I will derive the conditions under which a compromise coalition (L,R) will exist. Also for this coalition to exist it is necessary to receive more than 50% of the votes. If $q < (2\alpha+1)/3\alpha$ then the compromise coalition government (L,R) will exist. If this condition is met than the policy implemented will be a compromise equal to 1/2l + 1/2r. The expected utility of the left-winged voters (q alpha n) will equal $-|l - (1/2l + 1/2r)| < 0$. The expected utility of the right-winged voters (alpha (1-q) n) will equal $-|r - (1/2l + 1/2r)| < 0$. However the expected utility of the uninformed voters will equal zero. Because the group as a whole votes randomly so on average the group is satisfied with a compromise policy.

The combined utility of the voters in this world is: $-q\alpha n|1/2l - 1/2r| - (1-q)\alpha n|1/2r - 1/2l|$ so because q and alpha are both between zero and one, the above expression will always be negative. However it could be that above expressions is bigger (in absolute value) than the total expected utility in the case of a left-winged coalition. So if $-q\alpha n|1/2l - 1/2r| - (1-q)\alpha n|1/2r - 1/2l| > -(1/2\alpha - \alpha q + 1/2)n|r-l|$ than the expected utility will be larger in the situation with the coalition government compared to the situation with the left-winged coalition. This is the case if $q < 1/2\alpha$. This is actually a very nice result. It shows that when α increases q the condition will be met for small values of q (if α increases the condition will hold for smaller values of q). The opposite also holds true, if the number of uninformed voters increases, so (1-α) increases (or α declines) than the condition is more lenient. Thus if α declines the coalition government will yield higher expected utility even for high numbers of left-winged voters. Figure 3.3.1 plots the line $1/2\alpha$ for different values of α, the axis are slightly larger than 1 for clearer visualisation. I bring in remembrance that both q and α have values in the [0,1] interval. On the basis of figure 3.3.1 I formulate three propositions.

Proposition 1: If $\alpha < 0.5$, thus if the amount of uninformed voters is larger than the amount of informed voters, the expected utility of voters is higher with a coalition government than with a left-winged cabinet.

Proposition 2: If $\alpha > 0.5$ and $q < 1/2\alpha$, thus the amount of informed voters is larger than the amount of uninformed voters, but the amount of left-winged voters is smaller than $1/2\alpha$ (second condition: $q < 1/2\alpha$ is met) then the expected utility will also be higher with a coalition government than with a left-winged cabinet.

Proposition 3: If $\alpha > 0.5$ and $q > 1/2\alpha$, thus the amount of informed voters is larger than the amount of uninformed voters, but the amount of left-winged voters is larger than $1/2\alpha$ (second condition: $q > 1/2\alpha$ is met) then the expected utility will be higher with a left-winged cabinet than with a coalition government.

In this world, the outcome in terms of expected utility thus depends on the amount of uninformed relative to informed voters and the amount of left-winged relative to right-winged voters. If the amount of uninformed voters is sufficiently large ($\alpha < 0.5$) than the expected utility will be larger with a coalition government than with a left-winged cabinet. If the amount of informed voters is larger than the amount of uninformed voters ($\alpha > 0.5$) then it will depend on the amount of left-winged relative to right-winged voters to determine whether the expected utility is larger with a coalition government relative to a left-winged cabinet. If $q < 1/2\alpha$ (proposition 2) than the expected utility is larger with a coalition government than with a left-winged cabinet. If, however, $q > 1/2\alpha$ (proposition 3) then the expected utility will be larger with a left-winged cabinet than with a coalition government. The reason for this latter conclusion is simply that the amount of informed left-winged voters is sufficiently large that they will always prefer a left-winged policy rather than a compromise policy by a coalition government.

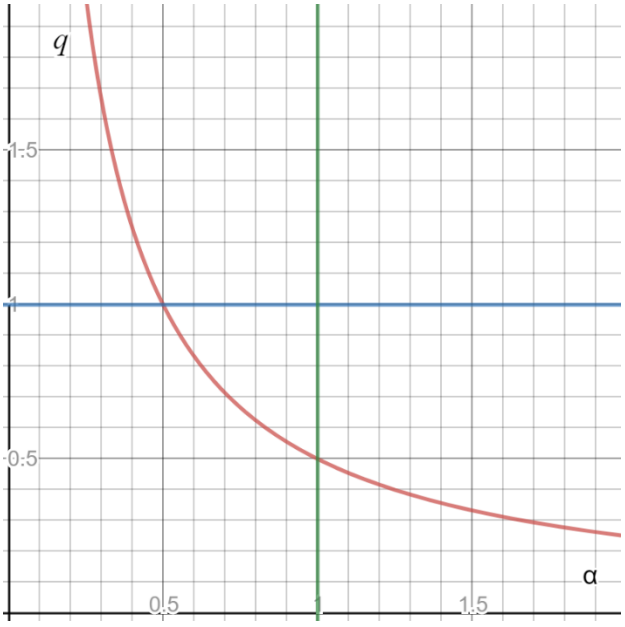

Figure 3.3.1 Plot of $1/2\alpha$ for different values of alpha

III.III.ii Majority Right-wing Parties

Table 3.3.1: Number of votes for every political party in world with majority right-winged parties

Political ideology of party	L	R	R
Number of informed votes	αqn	1/2α(1-q)n	1/2α(1-q)n
Number of uninformed votes	1/3(1-α)n	1/3(1-α)n	1/3(1-α)n
Total amount of votes	αqn+1/3(1-α)n	1/2α(1-q) n+1/3(1-α)n	1/2α(1-q) n+1/3(1-α)n

Now I will calculate the conditions under which a right-winged coalition exists, afterwards I will focus on the conditions necessary for a compromise (L,R) coalition to exist. For a coalition to exist it is necessary that it receives at least 50% + 1 of the votes, so the number of received votes by the coalition needs to be larger than ½n. If $q < (\alpha+1/2)/3\alpha$ then there will exist a right-winged coalition as the number of votes is large enough for a right-winged coalition to exist.

If the above mentioned condition is met then the expected utility of right-winged voters (alpha (1-q)n) equals zero. This is because their preference will always be met by the policy decision of the coalition government. The left-wing voters (number of voters q alpha n) will have an expected utility $-|l-r| < 0$. The final category is the uninformed voters (numbers of voters is (1-alpha)n) their expected utility equals $-1/2|l-r| < 0$.

The combined expected utility in this case equals: $-(-1/2\alpha + ½ + q\alpha)n|l-r|$. Therefore the combined expected utility is smaller than zero if $(-1/2\alpha + ½ + q\alpha) < 0$ or $q > ½ ((\alpha-1)/\alpha)$. If the number of left-winged voters in the population is larger than $½ ((\alpha-1)/\alpha)$ the combined expected utility will be negative. Voters will therefore again be not happy with this outcome, this seems logic because in this case the number of left-winged voters is sufficiently high but there is no left-winged policy decision. However, if the number of right-winged voters is sufficiently high which will be the case whenever $q < ½ ((\alpha-1)/\alpha)$ than the expected utility will be non-negative. Again interpretation is straightforward, there are enough right-winged

voters and the policy decisions meet their preferences. In short the expected utilities will be similar to the situation in which there are only rights-winged parties and there thus will be a right-winged coalition. So again the latter condition on q is always met.

Now I will derive the conditions under which a compromise coalition (L,R) will exist. Also for this coalition to exist it is necessary to receive more than 50% of the votes. If $q > 1/3(\alpha -1)/\alpha$ then the compromise coalition government (L,R) will exist. If this condition is met than the policy implemented will be a compromise equal to 1/2l + 1/2r. The expected utility of the left-winged voters (q alpha n) will equal $-|l – (1/2l + 1/2r)| < 0$. The expected utility of the right-winged voters (alpha (1-q) n) will equal $-|r – (1/2l + 1/2r)| < 0$. However the expected utility of the uninformed voters will equal zero. Because the group as a whole votes randomly so on average the group is satisfied with a compromise policy.

The combined utility of the voters in this world is: $-q\alpha n|1/2l – 1/2r| - (1-q)\alpha n|1/2r – 1/2l|$ so if $-q\alpha n|1/2l – 1/2r| - (1-q)\alpha n|1/2r – 1/2l| > - (- 1/2\alpha + ½ + q\alpha)n|l-r|$ than the combined expected utility in the coalition government situation is larger than in the situation in which there is a right-winged government coalition. This is the case when $q > (2\alpha -1)/2\alpha$. If this condition is satisfied the total expected utility will be larger with the coalition government compared to the situation in which there is a right-winged government coalition. Similar to the result in paragraph 3.3.1 this is a nice result. It shows that if α increases the condition is harder to be met. When α increases q has to be larger for the expected utility to be larger in the compromise coalition government compared to the right-winged coalition. On the other hand if the number of uninformed voters (1-α) increases, so α becomes smaller the condition will be met more easily. In this case the expected utility will be larger in the coalition government for smaller values of q. Figure 3.3.2 plots $(2\alpha -1)/2\alpha$ for different values of α. Again bringing in remembrance that both α and q have values in the [0,1] interval we can easily see that for any value of $\alpha < 0.5$ the condition $q > (2\alpha -1)/2\alpha$ will always be met. Similar to before only for values of α between 0.5 and 1 it is possible that the condition does not hold.

On the basis of figure 3.3.2 three proposition can be formulated:

Proposition 1: If $\alpha < 0.5$, thus if the amount of uninformed voters is larger than the amount of informed voters, the expected utility of voters is higher with a coalition government than with a right-winged cabinet.

Proposition 2: If $\alpha > 0.5$ and $q > (2\alpha - 1)/2\alpha$, thus the amount of informed voters is larger than the amount of uninformed voters, but the amount of left-winged voters is larger than $(2\alpha - 1)/2\alpha$ (second condition: $q > (2\alpha - 1)/2\alpha$ is met) then the expected utility will also be higher with a coalition government than with a right-winged cabinet.

Proposition 3: If $\alpha > 0.5$ and $q < (2\alpha - 1)/2\alpha$, thus the amount of informed voters is larger than the amount of uninformed voters, but the amount of left-winged voters is smaller than $(2\alpha - 1)/2\alpha$ (second condition: $q < (2\alpha - 1)/2\alpha$ is met) then the expected utility will be higher with a right-winged cabinet than with a coalition government.

In this world, the outcome in terms of expected utility thus again depends on the amount of uninformed relative to informed voters and the amount of left-winged relative to right-winged voters. If the amount of uninformed voters is sufficiently large ($\alpha < 0.5$) than the expected utility will be larger with a coalition government than with a right-winged cabinet. If the amount of informed voters is larger than the amount of uninformed voters ($\alpha > 0.5$) then it will depend on the amount of left-winged relative to right-winged voters to determine whether the expected utility is larger with a coalition government relative to a left-winged cabinet. If $q > (2\alpha - 1)/2\alpha$ (proposition 2) than the expected utility is larger with a coalition government than with a right-winged cabinet. If, however, $q < (2\alpha - 1)/2\alpha$ (proposition 3) then the expected utility will be larger with a right-winged cabinet than with a coalition government. The reason for this latter conclusion is simply that the amount of informed right-winged voters is sufficiently large that they will always prefer a right-winged policy rather than a compromise policy by a coalition government and therefore the expected utility will be larger with a right-winged cabinet rather than a compromise coalition government.

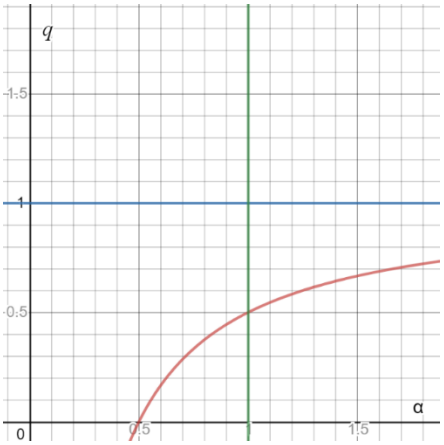

Figure 3.3.2 Plot of (2α -1)/2α for different values of α

III.IV Model Results

The above model learns us a couple of things. First of all, q and α are both very important parameters. So the amount of informed relative to uniformed voters and the amount of left-winged relative to right-winged voters have proven to be decisive for the total expected utility of the population. In the first world with only left-winged voters we can draw a relatively straight forward conclusion. If $q < ½ ((1+α)/α)$ the total expected utility of voters will be negative, this is due to the fact that only left-winged coalitions are feasible, but the amount of left-winged voters is never large enough, so the amount of right-winged (and uninformed voters) is large enough for the total expected utility to be negative. As I have also shown above this condition will always be negative, meaning that the amount of left-winged voters will never be large enough.

In the second world with only right-winged voters the total expected utility will be negative whenever $q > ½ ((α-1)/α)$. Also this condition makes sense, if the amount of left-winged voters is sufficiently large the total expected utility will be negative because only right-winged coalition governments can exist and therefore only right-winged policies will be implemented. Also this condition will always be met, therefore total expected utility will always be negative.

It becomes more interesting when we introduce the possibility for a compromise (either (L,R) or (R,L)) coalition government to exist. Depending on whether there is a majority of left-winged or right-winged parties it is possible for certain values of q and α that the total expected utility of all voters will be larger with a coalition government than with either a left-winged or right-winged coalition government. This is in line with the hypothesis described in the introduction of this thesis.

When there is a majority of left-winged parties the total expected utility will be larger when there is compromise government if $q < 1/2α$. As shown this condition is always met when $α < 0.5$, so if the amount of informed voters is sufficiently small. If the amount of left-winged voters is sufficiently small the expected utility will also be larger with the coalition government compared to the left-winged coalition, otherwise the left-winged coalition government will preferred. Similar to the situation in which there are only left-winged parties this is of course due to the fact that in that case there are relatively many left-winged voters.

When there is a majority of right-winged parties the total expected utility will be larger

with a coalition government whenever the condition $q > (2\alpha - 1)/2\alpha$ is met. Again this condition is always met for values of $\alpha < 0.5$, so if the amount of informed voters is sufficiently small. However, if the amount of left-winged voters is sufficiently large the condition will also be met. Of course this is, again similar to the case in which there are only right-winged parties, due to the fact that there are relatively many left-winged voters and they can either chose between a compromise government (and thus policy) or a right-winged policy, clearly they will prefer the compromise policy over the right-winged policy as it is closer to their preferred policy.

So the above discussion implies the following, whenever the amount of uninformed voters is larger than half of the voters (stipulated differently when the amount of informed voters is less than half of the voters) the total expected utility will always be larger with a compromise government coalition relative to a one-party coalition (either left-winged or right-winged). This is due to the fact that on average the compromise government coalition will be better at serving the needs of the uninformed voters than either one of the one-party coalitions. Moreover when the amount of voters that has a preference for the party that is present in majority is sufficiently low, then the expected utility will also be larger for the compromise government coalition than for the one-party coalition. Also this conclusion makes sense as the compromise policy will be (slightly) closer to their preferred policy than the one-party policy.

For policy purposes, the conclusion of this model is actually rather interesting. In many voter models, voting is modelled as being costly. One can think of the cost of actually voting, but also the time and effort it takes to inform oneself. As a consequence when costs are sufficiently high, some voters will remain uninformed, because costs are larger than benefits. If the amount of uninformed voters is sufficiently large than the above model shows us that the expected utility will be larger with the compromise government relative to the one-party government. This might be one interesting explanation for the increase of coalition governments with a larger variance in political views; possibly due to the increase of the number of political parties the costs of getting informed have increased over the years. As a consequence the costs might exceed the benefits of getting informed for voters and therefore the amount of uninformed voters has increased (or due to the increase in political parties people are no longer sure whether they prefer a left- or right-winged policy, this can also be seen as voters being “uninformed” about their preferences). The model learns us that an

increase in coalition governments with more political diverse parties is a logical consequence of this increase in costs of getting informed. After all, the theoretical model learns us that if the amount of uninformed voters is sufficiently large, the expected utility will be larger with a coalition government than with a left- or right-winged cabinet.

The other option could be that perhaps some parties on the same side of the left-right spectrum are so big (or otherwise highly present) but the number of voters having a preference for the policy of those parties is sufficiently small that a compromise government coalition (perhaps including those big parties) lead to a higher expected utility relative to the situation in which those parties on the same side of the left-right spectrum form a coalition.

IV. Data

To analyze the popularity of government coalitions with diverse political parties I will use three databases. The first database is the European Social Survey (ESS) which contains information on the popularity of governments coalitions. The ESS is repeated every two years and is held in various European countries since 2002. It is a cross-national survey that tries to track several characteristics of various European populations. To measure the popularity of government coalitions the following question from the survey is being used: “Now thinking about the [country] government, how satisfied are you with the way it is doing its job?”. This is the only question asked about the current government of a certain country. The response to this question is categorized in eleven different categories ranging from zero till ten. Zero corresponds to “extremely dissatisfied” and ten corresponds to “extremely satisfied”. Therefore the dependent variable is ordered in a natural way (similar to poor, good, excellent). This question was already part of the first ESS that was held in 2002. The ESS contains many other variables, some of which will be used as control variables.

Because this is survey data, this gives rise to the problem of subjective data. Those surveys only measure what people perceive, but that is not necessarily the same as the real situation. Moreover the measurement error could correlate with a large set of characteristics and behavior, this could give rise to omitted variable problems (Bertrand & Mullainathan, 2001).

Systemic biases could lead to systematic errors measurements (Tversky & Kahneman, 1974). More particular in surveys, response biases could influence the answers subjects give, resulting in measurement errors and therefore also negatively influencing the results

(Furnham, 1986; Nederhof, 1985). In the ESS this would mean that European citizens report their view of their satisfaction with regards to the government coalition, however this need no to be their true satisfaction. Divergences between the perceived and true satisfaction may come from the way the question is posed or the different answer categories. These biases that arise from the perceived data cannot be mitigated. However the advantage of the ESS dataset is the large number of observations, which mitigates other problems. Non-systemic biases like outliers are mitigated by the law of large numbers. The data becomes more representative due to the large amount of observations.

The second database is the database of ParlGov. This database contains the political parties involved in coalition governments since the early 1900's until now for countries all around the world. For European countries the first observation is on the 27th of May 1900 for Belgium and the last observation is on the 29th of February 2020 for Slovakia. This database also contains a measure on how left- or right-winged those parties are. It is possible to extract which parties were part of which governments in the period between 2002 and 2018 and those parties can then be linked to their corresponding ideology measure (and consequently the difference between ideologies of the coalition parties) on the scale from zero till ten.

This measure is based on the idea that experts can order different political parties on a scale from zero till ten. As mentioned before zero stands for an Ultra-Left party and ten stands for an Ultra-Right Party. Castles and Mair came up with idea for the first time in 1983. Since then this research has been done several times to update the data, mostly to include new political parties (Hubert & Inglehart, 1995; Bakker et al., 2010; Bakker et al., 2014).

The ideological political distance between coalition parties will be measured as the difference in their associated numbers by the experts. So if x_i is the ideological measure of party i (on a scale of zero till ten), then my measure for ideological heterogeneity of a coalition is the variance between the x_i's of all the involved parties (all the i's) and this constitutes my independent variable, namely the difference in political ideology. The variation is calculated as followed:

$$s^2 = \frac{\sum(x_i - \bar{x})^2}{n}$$

s^2 indicates the variance. As stated above x_i is the measure for the political ideology of party i on a scale from zero till ten. $\bar{x}$ indicates the average of all the x_i's that are part of a coalition

government. n is the number of parties involved in the coalition government.

So if for example there is a three party coalition, and the x_i's of those parties are 4, 6 and 8, then the average is 6. Then the formula would be as followed $((4-6)^2 + (6-6)^2 + (8-6)^2)/3 = 8/3$.

The variation between these numbers will give us an idea of the political distance between the coalition parties, one can see this variation as a proxy for the ideological political distance between the involved coalition parties. And in this way we can measure whether an increase in the variation is associated with more or less satisfaction towards the coalition government.

Of course from this database some countries and years need to be filtered. That is because I am only interested in countries that have a coalition government in the years 2002 till 2018. Countries that do not have a coalition in a those years are thus dropped out of the dataset. Also countries that do not have a measure for either the political ideological distance or the satisfaction in a certain year are being dropped out of the database.

The ParlGov database also includes the number of seats of the national parliament that every party has won in the elections. The number of seats in the parliament might also influence the satisfaction of the voters. It seems reasonable to think that a government coalition with more seats in the national parliament also has a higher satisfaction as it represents a larger fraction of the voters.

Gender is part of the ESS database and is measured per individual. The variable is measured as a numeric variable, where 1 indicates that the respondent is a male and 2 indicates that the person is a female. Similar to gender, also the highest level of education is part of the ESS. Which ranges from not completed primary school to having a doctoral degree and all the different categories are transferred into numbers to make the analysis more useful. Higher numbers indicate a higher level of education. The income is also measured in the ESS as a number ranging from one till twelve. Each number indicates the decile to which the respondent believes him/herself to be part of. For instance the number 4 indicates that the respondents believes to be part of the 4th decile. Numbers above ten indicate the respondent does not know to which decile it belongs. Finally age is being measured in the ESS survey as the age of the respondent measured in years.

The three other control variables (unemployment, inflation and economic development) will be retrieved from the databases of Eurostat. Eurostat is the European

Bureau of Statistics and therefore provides a lot of reliable data for European countries on different matters including the three above mentioned control variables.

The economic development will be proxied by using the GDP of the countries involved. The GDP and unemployment will be measured in absolute values. The GDP will be measured in million euros. Unemployment will be measured in thousands. And inflation will be measured as the annual consumer price index.

Eventually all this data(bases) will result in two different sets of data that I will analyze. I will create a dataset in which all the data is measured as an average. So the satisfaction of a certain coalition government in a certain country and year will be measured as an average, and also all the control variables will be measured as an average to correspond to this.

The other dataset will include the satisfaction of all the individuals that filled in the survey, in this dataset the control variables will be measured as the difference between the two years in which the survey is being held. In this case the control variables measure the change or development in the specific variables, which on a theoretical basis also seems to be able to influence the satisfaction of voters. After all, satisfaction of voters is more likely to be shaped by the change in their wealth (in a broad sense), whilst the effect of their average wealth seems less clear.

V. Methodology

Two different method will be used to analyze the data. The first method is a simple Ordinary Least Squares (OLS) linear regression including several control variables. The second method used is an ordered probit regression. The ordered probit model was first used in the political science by McKelvey and Zavoina (1975). Both methods are being used because there is still an ongoing discussion in econometric literature which of these models is the best fit to analyze ordered data (Peel, Goode & Moutinho, 1998; Anderson, 1984; McCullagh, 1980; Noreen, 1988). In the following two subsections both models will be presented, I will start with the OLS model in section V.I and in section V.II I will discuss the ordered probit model.

V.I Ordinary Least Squares Regression

I want to estimate the effect of political distance between parties involved in coalition governments on the satisfaction among voters towards the coalition government. The first approach used, is a simple OLS regression. I will estimate a regression equation of the following form:

$$y_{i,t,c} = \alpha + \beta_1 x_{1,t,c} + \beta_2 x_{2,i,t,c} + \ldots + \epsilon_{i,t,c} \quad (1)$$

where $i \in I$ indexes individuals, $t \in T$ indexes years and $c \in C$ indexes countries. Where t includes the years 2002 up till 2018, with a one year gap between years, thus in total there are 9 different time indicators. Appendix B includes a list of all the countries involved in this research. My dependent variable $y_{i,t,c}$ is the satisfaction towards the coalition government, as perceived (or indicated in the survey) by an individual i, at point t and living in country c.

α represent the regression constant, i.e. the value of the dependent variable when the independent variable(s) take a value of zero. The β's represent the regression coefficients, which will indicate the slope of the regression line. Finally $\epsilon_{i,t,c}$ represents the error term.

My key explanatory variable is $x_{1,t,c}$, which measures the political distance between the political parties involved in the coalition government, at time t in country c. This variable is measured by computing the variance between the political parties, where their political ideology (on a scale from Ultra-Left till Ultra-Right) has been transformed into numbers by experts based on the beforementioned research.

This simple linear OLS regression might be prone to omitted variables. Therefore I include several control variables as mentioned at the end of the related literature section, which could affect both the popularity of coalition governments as well as the political distance between parties. Some of the variables included like economic development might make the stance of different political parties more extreme and therefore affecting the distance between the parties involved in the coalition government.

Moreover the model might be subject to reverse causality. As the popularity of the coalition government decreases it might be the case that parties involved in the coalition start to stress the differences between the parties, making the political distance between the parties bigger. However, one can question whether this really increases the ideological distance between the parties or that this is just a mere strategy to win voters at the next election.

Also coalition governments often govern for several years, whilst the satisfaction is only measured at one point in time, therefore it's impossible to determine how the satisfaction developed in between the two years in which it was measured. Therefore it might

be that the satisfaction is influenced right before it was measured, by either a very positive or a very negative event. Also it seems plausible that the satisfaction might be higher at the start of the coalition government, because voters have voted for certain parties. And at the beginning of the term, the coalition government hasn't been able to break any campaign promises or make any wrong decisions. Towards the end of the term the probability that voters are disappointed with the results of the coalition government or with one single party in the coalition government seems to be higher. All this could lead to a biased measurement of the dependent variable.

$x_{2,i,t,c}$ indicate the control variables that will be included: economic development, unemployment, inflation, seats of the coalition government, gender, age, income and education. These variables are included because they potentially affect the voting behavior of individuals but also the popularity of certain governments. Economic development affects the popularity of coalition governments, voters shift away their trust from certain parties in the government coalition towards other in the coalition dependent on how competent the involved parties are perceived in dealing with the economic development (Anderson, 1995; Dorussen & Taylor, 2001). This is also confirmed by a case study in Germany (Enkelmann, 2013). To proxy economic development the GDP of certain countries over the time the coalition government is in office is included as a control variable, either as average or the change. Research in the Netherlands showed that inflation and unemployment also effect the popularity of coalition governments (Renaud & van Winden, 1987). This is also found by Whitely (1984). Therefore these two variables are also included as control variables, similar to the GDP they will also be included over the time between the different survey rounds, again either as the change in between the two measurements or the average. As explained before the number of seats might influence the satisfaction as more voters feel represented by the government coalition. The individual characteristics of the voters are included as this influences the probability that they will vote, and therefore whether their preferred party is part of the coalition government and therefore might influence their satisfaction.

Of course one has to realize that including these control variables does not mean that the omitted variable problem has been solved at once. There could still be other variables which affect both the popularity and the political distance of the parties involved in het coalition government. However, current research doesn't provide with any more variables that possibly influence the popularity of coalition governments.

To adjust for the fact that there are several variables that are hard to measure at the country level, I will also include a model specification using country-fixed effects. The country fixed effects will control for characteristics of countries that remain relatively stable over the time period 2002-2018, for example the culture in the country which might in turn influence the satisfaction of voters. If for instance the culture in a country is such that there is a lot of suspicion towards the government, this might bias the results if we don't control for this.

Basically this means that I allow the intercept for every country to be different, or in the individual data for every individual. Moreover all time-invariant variables (which might be hard to measure) are implicitly being captured by including these country-fixed effects.

Because I have data over a period of sixteen years it's also possible to include time-fixed effects which will capture the influence of the aggregate time-series trend. So these time-fixed effects captures the influence of variables that change over time and influence all the units of observation in a given year in the same way, for instance population growth or other demographic factors. Also by including these fixed-effects we try to limit the omitted variables problem.

The time-fixed effects eliminates omitted variable bias caused by excluding unobserved variables that evolve over time but are constant across observations. This would also include the more general trend in voters' satisfaction over a certain period of time in a specific country.

Moreover a simple OLS regression doesn't take into account that the dependent variable in this case is an ordered variable. Therefore it is possible with an OLS regression to estimate outcomes above ten or below zero even though the data doesn't contain these values. Therefore I will also estimate an ordered probit model to take this order into account. This ensures that no values below zero or above ten can be estimated. However, theoretically the marginal effects (slopes) won't differ that much and therefore both methods will be used and be compared with one another.

V.II Ordered probit

As mentioned before the data on the dependent variable, namely the popularity of the coalition government is ordered. There is a clear underlying naturally ordered preference scale (extremely dissatisfied till extremely satisfied). Therefore satisfaction is an ordinal dependent variable. The distance between the different outcomes is different as one can obviously see

from a simple example. The distance between extremely dissatisfied and extremely satisfied (from zero till ten) is ten, while the distance between extremely dissatisfied and neutral (from zero till five) is only five.

A disadvantage of the OLS regression is that it would be possible to estimate outcomes that do not appear in the data. For instance theoretically it would be possible to obtain a constant which is below zero, or outcomes that reach above ten. The ordered probit regression ensures that this cannot happen. Moreover the ordered probit model takes into account that the responses to the survey question are ordered. An advantage of the OLS regression is that it often requires less observations, which (as can be seen below) might therefore be more useful to analyze the first dataset. The marginal effects are often very similar between OLS and ordered probit regressions.

The second approach therefore will be to use an ordered probit model to estimate the effect of political distance between parties involved in a government coalition on the popularity of the coalition. With an ordered probit model I estimate the chance for different outcomes, therefore marginal effect indicate the change in chance. So in short, the aim of the research stays the same, but it might be interesting to compare the outcomes between these two models. I will estimate an equation of the following form:

$$y_{i,c,t} = \beta_1 x_{1,t,c} + \beta_2 x_{2,t,c} \ldots + \epsilon_{i,t,c} \quad (2)$$

the indices have the same meaning as in the OLS regression. In this regression $y_{i,c,t}$ $(-\infty < y_{i,c,t} < \infty)$ indicates individual i's response to the statement and this can take on – as mentioned before – the values between zero and ten. As noted before this model describes probabilities of certain outcomes.

The β's represent the regression coefficients, however the interpretation of these coefficient will be different compared to the OLS regression. Only the sign of the regression coefficient can be interpreted in the sense that it indicates whether an one unit increase in the independent variable leads to a higher (positive sign) or lower (negative sign) probability to be in the higher or lower outcome groups. In the case of the ordered probit regression, one has to compute the marginal effects to interpret the change in the chance in $y_{i,c,t}$ when $x_{1,t,c}$ increases one unit. Finally, $\epsilon_{i,t,c}$ represents the error term, which is assumed to be

independent of $x_{1,t,c}$. Moreover we have to assume that the error term follows a standard normal distribution.

Just as in the OLS regression $x_{1,t,c}$ measures the political distance between the political parties involved in the coalition government, at time t in country c and is my key explanatory variable.

Similar $x_{2,t,c}$ indicates the control variables that will be included. These will be the same control variables as included in the OLS regression.

The true satisfaction of individuals is not observed, for instance individuals cannot indicate that they are 50% satisfied with the government. Their satisfaction is ordered in certain categories. However there is a certain relationship between individual i's satisfaction and the reported response to the question. That relation is the following:

$$
\begin{aligned}
&y_{i,t,c} = 1 \text{ if } -\infty < y^*_{i,t,c} < k_1 \qquad (3)\\
&y_{i,t,c} = 2 \text{ if } k_1 < y^*_{i,t,c} < k_2\\
&y_{i,t,c} = 3 \text{ if } k_2 < y^*_{i,t,c} < k_3\\
&.\\
&.\\
&.\\
&y_{i,t,c} = 10 \text{ if } k_9 < y^*_{i,t,c} < \infty
\end{aligned}
$$

The parameters k are known cut of points. If j indicate the number of different categories then $j-1$ indicate the number of cut of points, k. In my database there are 11 different responses possible (different categories), therefore there are 10 cut of points.

To estimate the parameters of the model the likelihood will be maximized. Let $P_i(y)$ indicate the probability that individual i responds y. This probability is equal to:

$$P_i(y) = P(k_{y-1} < y^*_{i,t,c} < k_y) = \mathbf{\Phi}(k_y - \beta_1 x_{1,t,c} + \beta_2 x_{2,t,c} \dots) - \mathbf{\Phi}(k_{y-1} - \beta_1 x_{1,t,c} + \beta_2 x_{2,t,c} \dots) \qquad (4)$$

where $\mathbf{\Phi}(.)$ is the standard normal cumulative distribution function. The log-likelihood function then becomes:

$$\log L = \sum_i \ln[P_i(y)] = \sum_i \ln[\mathbf{\Phi}(k_y - \beta_1 x_{1,t,c} + \beta_2 x_{2,t,c} \dots) - \mathbf{\Phi}(k_{y-1} - \beta_1 x_{1,t,c} + \beta_2 x_{2,t,c} \dots)] \qquad (5)$$

Figure 4.1 represent this visually in the case where there are 5 different categories (responses) and thus 4 cut of points.

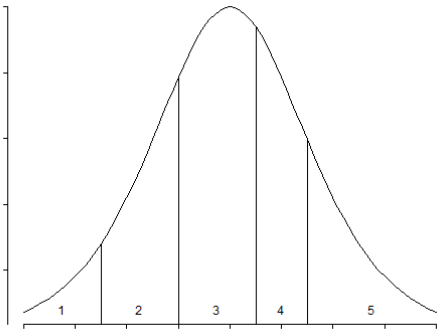

Figure 5.1. Log Likelihood with an ordered response including 5 different categories

VI. Results

Now that the used methods are explained, I will apply the methods to the two different datasets. The first subsection reports summary statistics. In the second subsection I will present the OLS results. The third subsection reports the results of the ordered probit regression. In the fourth and final subsection I will address some problems related to these methods.

VI.I Summary Statistics

I start by reporting some summary statistics of the data, these can be seen in table 6.1.1 and 6.1.2 below.

Table 6.1.1 Summary statistics of the main variables per year per country (average)

Variables	Observations	Mean	Minimum	Maximum
Variance in political ideology of each coalition	270	2.7143	0.0005	17.4363
Voters' satisfaction of governments	167	4.2393	0.0958	6.5979
Economic development (GDP, in million €)	236	416298	7409.75	3294680
Inflation (%)	236	90.1387	54.805	107.4

Unemployment (in thousands)	237	662.8264	4.55	4408.1
Seats of the coalition government	274	127.1679	18	504
Gender	146	1.5337	1.447368	1.640429
Income	139	5.3956	0.8203	8.6613
Education	149	3.6022	1.8820	4.8525
Age	151	48.1442	42.19347	54.55439

This table visualizes some summary statistics when the satisfaction and thus also the control variables are measured as averages per year per country and is therefore the most simple representation of the data. Nevertheless this table already reveals interesting information about the data. First of all in the nine rounds of the European Social Survey, the survey was held 184 times in different countries at different times. Meaning that per round a little bit over 20 countries remained after all the data was filtered.

The mean of the variance in political ideology of the coalition governments is relatively low. This seems to indicate that the spread of the data isn't too big. However, more interesting in this case are the minimum and maximum. First, the minimum is very close to zero, which indicates that there is a coalition government in the data that consist of two (or more) very similar parties with respect to their political ideology. Those parties can of course be on either side of the left-right spectrum. The maximum is relatively large, and this is a very interesting observation for my research, because it indicates that there is at least one government coalition that consist of two (or more) political parties that have very diverse political ideologies.

Figure 6.1.1 in appendix C shows the development of the average voters' satisfaction overtime. Although the margins are relatively small, it is striking that the average satisfaction hits an ultimate low just after 2010, which could be related to the euro crisis. However since then it is increasing and it is now at the highest point since 2002.

The mean satisfaction is below the midpoint of the scale (< 5), this is a striking observation because it indicates that most voters that participated in the ESS's were less than

neutral about their governments, meaning that they are dissatisfied (in differing intensities) about their coalition governments. Even more striking are the minimum and maximum, which indicate that even the country with the most satisfied voters doesn't score extraordinary on this scale. The country that has the worst perceived coalition government according to voters, on the other hand scores very low.

The gender variable indicates the average amount of respondents and indicates that a little over half of the respondents was female. The average income percentile is in the 5th percentile and the average education represents that secondary school has been finished, but the post-secondary school education has not been completed (yet). And the age variable indicates that on average the voters were around 48 years old.

The education variable is interesting to relate back to the theoretical model. Education might be used as an proxy for whether the voter is informed or not. It seems reasonable to assume that higher educated people are also more likely to be informed. As a consequence, an increase in the education might lead to more informed voters and therefore this might be associated with a decrease in the voters' satisfaction. However, it of course could also be possible that low educated people do put in effort to become informed. Therefore it is not clear whether education is a good proxy for how informed a voter truly is.

Table 6.1.2 summarizes the same variables, but this time the data is measured per respondent per year per country. The corresponding variance of the government coalition is linked to this individual and the control variables are measured as the difference between the two years in which the European Social Survey is being held. This is to approximate the development in these control variables that would possibly affect the satisfaction of voters. Of course an exception applies to the gender variable, which is measured as either a 1 or a 2.

Table 6.1.2 Summary statistics of the main variables (per year, country and respondent)

Variables	**Observations**	**Mean**	**Minimum**	**Maximum**
Variance in political ideology of each coalition	304.431	2.398981	0.0022	8.31912
Voters' satisfaction of governments	292.492	4.3109	0	10

Economic development (GDP, in million €)	304.431	28.6495	-805	911
Inflation (%)	304.431	1.9696	-1.6	12.06
Unemployment (in thousands)	304.431	-13.4936	-701.1	629.7
Seats of the coalition government	304.431	149.5545	18	504
Gender	302.954	1.533028	1	2
Income	230.905	5.608021	1	12
Education	302.289	3.355256	0	55
Age	303.125	48.21584	14	100

First of all, in the nine different rounds of the ESS almost 300.000 persons who lived in countries that at the time had government coalitions filled in the survey. The difference in maximum and minimum compared to table 6.1.1 with regards to the variance is due to the fact that some countries and years are not incorporated in this second database because for instance the satisfaction wasn't measured in that country in that year. In the first database these countries were still incorporated, but dropped out in the analysis. Therefore in this dataset these observations are left out immediately. The minimum and maximum of the other variables differs to that of table 6.1.1 because in table 6.1.2 I no longer calculated averages of all the variables.

The means of the variance and satisfaction are very similar in table 6.1.1 and 6.1.2. And therefore the comments that were being made then, also apply to this dataset. This doesn't hold true for the other variables, which again relates to the way they are being measured.

Again on average more female voters participated in the elections in this period. The mean income is again in between the fifth and sixth percentile. The maximum of the income indicates that some people did not know their percentile. Again the education is in between three and four indicating that on average voters did finish their secondary school, but not always their full advanced education. Here the maximum indicates that someone has received a doctoral degree. The age variable indicates that the average voters was again around 48

years old. And the oldest voter in this database that filled in the survey was 100 years old.

On average the GDP increases a bit over 28 million euros per two years over the period 2002-2018 in these European countries. Also the change in inflation on average over this period in these countries is close two 2%, which is close to the target of the European Central Bank. Moreover the unemployment decreased on average with almost 13.500 people every year. All the data of the control variables relate to the changes, because that is how the data is being measured.

VI.II OLS Regression

I start with a simple OLS regression without control variables for both datasets. Afterwards I include the different control variables. Table 6.2.1 and table 6.2.2 presents the results of all OLS regressions. Figure 6.2.1 in appendix D shows a scatterplot of the averaged data including a fitted regression line.

Table 6.2.1 OLS results of ideological political distance on satisfaction of voters in the period 2002-2018 (average data)

Satisfaction	Model 1	Model 2	Model 3	Model 4	Model 5
Variance in political ideology of each coalition	0.0852* (0,0458)	0.0283 (0.0407)	0.0417 (0.0377)	-0.0218 (0.0375)	0.0034 (0.0390)
GDP		0.0000*** (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Unemployment		-0.0008*** (0.0001)	-0.0006*** (0.0001)	-0.0003* (0.0002)	-0.0007*** (0.0002)
Inflation		-0.0068 (0.0067)	-0.0106 (0.0151)	0.0149 (0.0199)	0.0243 (0.0147)
Seats			0.0015 (0.0015)	0.0029 (0.0021)	0.0021 (0.0019)

Gender			-13.2444*** (3.2931)	-1.1153 (6.0164)	-13.5060*** (3.6351)
Age			0.0251 (0.0547)	-0.1745** (0.0742)	0.0172 (0.0685)
Education			0.1071 (0.1765)	0.2598 (0.4843)	0.2576 (0.2129)
Income			0.2155** (0.1076)	0.1358 (0.1339)	0.1416 (0.1246)
Constant	4.0601*** (0.1393)	4.9610*** (0.6167)	22.7722*** (5.0147)	10.8830 (8.5449)	20.2198*** (5.1359)
R^2	0.0262	0.258	0.4454	0.0809	0.3534
Observations	163	151	129	129	129
Country fixed-effects	No	No	No	Yes	No
Time fixed-effects	No	No	No	No	Yes

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.2.2 OLS results of ideological political distance on satisfaction of voters in the period 2002-2018 (individual per year per country data)

Satisfaction	Model 1	Model 2	Model 3	Model 4	Model 5
Variance in political ideology of each coalition	0.0857*** (0.0022)	0.0702*** (0.0023)	0.0737*** (0.0025)	-0.0095*** (0.0033)	0.0598*** (0.0025)
GDP		0.0002*** (0.0000)	0.0001*** (0.0000)	0.0006*** (0.0000)	0.0004*** (0.0000)
Unemployment		-0.0003*** (0.0000)	-0.0006*** (0.0006)	-0.0006*** (0.0000)	-0.0002*** (0.0000)
Inflation		-0.1481*** (0.0027)	-0.1610*** (0.0031)	-0.0139*** (0.0041)	-0.2255*** (0.0041)
Seats			-0.0018*** (0.0000)	0.0027*** (0.0001)	-0.0019*** (0.0000)
Gender			-0.0837*** (0.0100)	-0.0477*** (0.0096)	-0.0837*** (0.0100)
Age			0.0050*** (0.0003)	0.0042*** (0.0003)	0.0047*** (0.0003)
Education			0.0030* (0.0018)	0.0083*** (0.0018)	0.0054*** (0.0019)
Income			0.1390*** (0.0019)	0.0795*** (0.0019)	0.1332*** (0.0019)
Constant	4.1048*** (0.0070)	4.4224*** (0.0091)	3.8671*** (0.0291)	3.3743*** (0.0331)	4.0663*** (0.0298)
R^2	0.0052	0.0153	0.0495	0.0137	0.0491
Observations	292.492	292.492	224.912	224.922	224.922
Country fixed-effects	No	No	No	Yes	No
Time fixed-effects	No	No	No	No	Yes

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

These tables provides us with more insight in the data. In the first model of table 6.2.1 the effect of the variance on the satisfaction of voters is significant (p-value of 0,064) at the 0,1 level. The coefficient has a positive sign indicating that an increase in political ideological distance between coalition parties increases the satisfaction of voters. This is in line with the hypothesis that was formulated at the outset of this paper. That hypothesis stated that – as committee decision making research indicated – when the heterogeneity and the number of political parties in the coalition government increased the probability of making a correct decision would increase (assuming that the participation effect dominated and not the misrepresentation effect). If a (more diverse) coalition would make more correct decisions, this would also increase the satisfaction among voters.

The very first exploration of the data doesn't contain any control variables and is therefore even more likely to be vulnerable to omitted variable bias. Therefore I first include the three control variables mentioned at the end of the related literature section that are country specific: unemployment, economic development and inflation. Afterwards in the final model I will also include the voters' characteristics.

All the models in table 6.2.1 calculate the satisfaction of voters as the average per country and per year. Therefore economic development, inflation and unemployment will also be included as the average of the two years between each ESS, i.e. for the ESS in 2002 the economic development will be measured as the average of the GDP in 2001 and 2002. Of course the same applies to the other control variables.

I will first focus on table 6.2.1. The more elaborate model (Model 2) includes the same dependent and independent variables but also includes the three control variables discussed before. The first interesting feature of this second model is the fact that the effect of an increase in the political ideological distance between coalition parties still seems to increases the satisfaction (i.e. the sign is still positive) but the coefficient is no longer significant (p-value of 0.487). Although the effect of an increase in GDP is very close to zero (0.000000739) it is positive, which aligns with the existing literature. Thus indicating that an increase in GDP would increase satisfaction of voters. Moreover, one has to realize that GDP is measured in millions of euro's therefore the effect of a million euro increase in GDP would mean an increase in voters' satisfaction of 0.739. A similar reasoning holds true for the unemployment, this is measured in thousands of unemployed people, therefore an increase of unemployment by one thousand people would reduce voters' satisfaction by 0.8. Also in this case the sign of

the coefficient is as predicted. Both unemployment and GDP are highly significant (p-value of 0.0000). The sign of inflation also fits the existing literature, a one percent increase in inflation would reduce the voters' satisfaction. However this coefficient is not significant and therefore cannot be properly interpreted.

In the third model including all the control variables it's noticeable that most variables become insignificant and become larger in magnitude. Especially the Gender and constant coefficients have a large magnitude. The sign of the control variables is similar to the second model and therefore the interpretation doesn't change much. Although most coefficients are insignificant the positive sign of the seats, age, education and income coefficient do indicate that an increase of these variables would result in higher satisfaction. When the voter is a woman, the satisfaction would decrease. However due to the fact that most variables are insignificant it's hard to draw any conclusions.

The fourth model includes country-fixed effects similar to model two and three, most coefficients become insignificant which makes interpretation difficult. In this case all the time-invariant characteristics of a country are incorporated into the fixed effects regression and therefore limiting the problem of omitted variables. This allows the constant to be different for every country in the dataset. This model (both for the average and the non-average dataset) is the only model in which the variance has a negative effect on the satisfaction and therefore would not be in line with my hypothesis, however in the fourth model the variance is insignificant. The other control variables are in general very similar in magnitude and sign as in model two and three and therefore interpretation is also similar.

In the fifth model year-fixed effects are included. This means that the influence of the aggregate time series trend will be incorporated in the model. Any variable that is changing over time, but at a certain point in time influences all the observations in the same way will be included in this model and therefore also reduces the problem of omitted variable bias. As our datasets includes observations over a time period of sixteen year including time-fixed effects is very relevant to limit the omitted variables problem. Moreover the variance in the voters' satisfaction might be relatively large over the years, as the government coalitions will differ every couple of years. And for some governments the satisfaction will be larger than for others for a given individual.

In the fifth model the variance again has a positive sign similar to most of the other models. Similar to model three most coefficients are insignificant. Moreover the sign and

magnitude in model three and five are very comparable and thus also interpretation is similar

In general, the results of these section (although not always significant, perhaps due to the limited amount of observation) seem to provide a first indication that indeed an increase in the political divergence of the coalition government is associated with an increase in the voters' satisfaction. This is in line with my hypothesis. If I relate these results to my theoretical model it seems to indicate that the either the amount of uninformed voters is sufficiently high, or the amount of either left- or right-winged voters is sufficiently low (so none of the two groups is overrepresented in the population). The former seems to be invalidated by the result that in all the model in which education is added as a control variable, it has a positive effect on the voters' satisfaction. Thus assuming that education is a well performing proxy for how informed a voter is (assuming that higher education, means better informed) this is not in line with what we would expect. However, as explained before, perhaps education is not a good proxy for this. A more reasonable explanation at this moment seems to be that neither left- nor right-winged voters are overrepresented in the population and therefore a coalition government is associated with a higher utility and therefore higher voters' satisfaction.

When using the second database that isn't measured in averages I start out with the same exercise, so first of all I estimate the model without any control variables. This can be seen in table 6.2.2. Again the independent variable is (highly) significant (P-value 0.0000) and this time at the 0.01 level. Indicating that an increase in the variance of the ideological political distance of the coalition parties that are part of the government by one point increases the satisfaction of voters by 0.0857 on a scale from zero till ten. Remarkable is how similar the coefficients of the independent variables are in model 1 in both tables. Of course the standard deviation of the third model is quite a bit lower, due to the fact that many more observations are now being used. Also these results are in line with the theory proposed in the introduction and mentioned above.

In model 2 the same control variables are included as in model 2 of table 6.2.1. So again GDP, unemployment and inflation (although this time differently measured). All the coefficients remain significant at the 0.01 level. Again the signs of the control variables are in line with the predictions of the literature as set out in the related literature section. The effect of the variance decreases slightly compared to model 1, but remains highly significant. This seems to indicate that the coefficient is relatively robust to the inclusion of (these) control

variables.

In the third model all the before mentioned variables have a very similar magnitude and sign as compared to model two of table 6.2.2. The R^2 increases to almost 5% and all the variables are (highly) significant. The seats variable indicates that an increase in the number of seats for the government actually decreases the satisfaction of the voters, this is different compared to model 3 of table 6.2.1. The same holds true for the gender variable, which indicates that if the voter is female the satisfaction on average is lower than if the voter is male. Apart from that, the sign of all the control variables seem to be as predicted at the end of the related literature section. The only exception would be the seats as I predicted that the satisfaction would rise if the number of seats of the government coalition would increase, however that is not the case in this model. The sign of the education variable was ambiguous and this dataset again shows that education has a positive and now even significant effect on the voters' satisfaction. Therefore it seems to indicate that education is not an appropriate proxy for how informed a voter is, because the results are not in line with the prediction.

As mentioned before the fourth model also includes country-fixed effects which has the same effect as in model four in table 6.2.1 (namely to reduce the omitted variable bias by including time-invariant country characteristics). Also in this model the effect of variance becomes negative, however in this model the effect is (highly) significant. This result therefore contradicts my hypothesis stated in the outset of this paper. However this is the only model that reaches this conclusion, but this could be a sign of evidence that perhaps the other models are largely being influenced by time-invariant variables that overestimate the effect of the variation of the political ideologies in the coalition government on the satisfaction of voters. Perhaps variables that are either positively or negatively correlated with both variation in political ideologies and satisfaction are being omitted. Striking in this model compared to model four of table 6.2.1 is that all coefficients are highly significant which is similar to model three in table 6.2.2. Also in this case most of the coefficients are comparable in magnitude and sign as to the earlier models and therefore the interpretation doesn't change.

In the fifth model again year-fixed effects are included. Therefore similar to model five of table 6.2.1 any characteristics that change over the years, but influence the variables in a certain year in the same way are included and therefore reduces the likelihood of any omitted variables. In this model the effects of an increase in the variance is similar to most of the other models, thus increasing the satisfaction. Also in this model the magnitude and sign of the

control variables are very similar compared to model three and therefore fit nicely with my predictions in the related literature section.

One has to realize that these results do not indicate a causal relation. There can of course be different variables (yet to be discovered) that influence both the political distance between coalition parties and the satisfaction of voters with regard to the government coalition.

A look at the different (pseudo-)R^2's indicates that model 1 in table 6.2.1 is able to explain about 2.6% of the variation in the data. However, the R^2 doesn't indicate any causal relation. The second model in the same table is able to explain about 25.5% of the variation in the data and the adjusted R^2 is 23.5%, the adjusted R^2 corrects for the inclusion of the various control variables. As the R^2 will always increase when more variables are included. Although there isn't a real hard threshold to determine whether the R^2 is high or not, it seems like a R^2 of 25.5% for this dataset isn't low. Moreover the increase in the R^2 in the second model compared to the first is, nevertheless, striking. Model 3 in table 6.2.1 explains about 45% of the variation in the data, which is a very high increase compared to the second model. However most coefficients in the third model weren't significant. Model 4 in table 6.2.1 explains about 8% of the variation in the data, compared to the 1.13% of the fourth model in table 6.2.2 this seems relatively high. However, similar to the third of table 6.2.1 model most coefficients in the fourth model are insignificant. Model 1 in table 6.2.2 explains 0.52% of the variation in the data and model 2 in the same table explains 1.53% of the variation in the data. The adjusted R^2 is also 1.53%, so that remains constant. The third in table 6.2.2 model explains around 5% of the data. Although these numbers seem relatively low, again the increase when more control variables are included is noteworthy. Model 5 in this table explains about 5% of the total variation in the data, which compared to the 35% of model 5 in table 6.2.1 seems relatively low. However this is together with the third model in table 6.2.2 the highest R^2 for this dataset and therefore seems to be one of the models with the highest explanatory power also taking into account that all the coefficients are highly significant.

When using the average data (table 6.2.1) the R^2 decreases from around 44% in the third model to about 8% in the fourth model. This indicates that including country-fixed effects reduces the percentage of variation in the data that can be explained in the data. However when we include time-fixed effects, the R^2 is about 35%, so this is still a reduction compared to the third model, but it is a (large) increase compared to the fourth model. Compared to the

R^2 in the third and fourth model of the per year per country individual data (table 6.2.2), we can see in the table that again in the fourth model the R^2 decreases from around 5% to slightly over 1% when the country-fixed effects are included. However, when the year-fixed effects are included the R^2 increases again, compared to the fourth model, but now the R^2 is slightly below the value of the third model. This indicates again that including year-fixed effects actually increases the amount of variation in the data that is being explained by the model compared to including country-fixed effects.

In general the results of this empirical section seem to be in line with the hypothesis in the outset of this papers (except for model 4 in table 6.2.2) and the result obtained from the theoretical model. The results could either indicate that the amount of informed voters is sufficiently low (although the sign of the education variable seems to contradict this), leading to an increase in the satisfaction in case of a coalition government or the amount of voters for one party (or group of parties on one side of the left-right spectrum) is sufficiently low again leading to the conclusion that an increase in the diversity of the coalition would increase satisfaction.

Moreover the sign of the variance coefficient seems to confirm my theory, but one needs also to take into account the magnitude of the coefficient. Forming a coalition government with parties that are ideological further apart seems to increase the voters' satisfaction, however at the same time forming such a coalition is also an enormous hazzle and can delay the decision making process which might have adverse consequences. Perhaps not necessary for the popularity of the coalition government among voters, but possibly in other areas, for instance the relation with other countries, the national parliament or other institutions which rely on quick decision making.

VI.III Ordered probit

In this section I will do exactly the same exercise as I did in the previous section, however this time I will use an ordered probit model to analyze the two different datasets.

Table 6.3.1 Ordered probit results of ideological political distance on satisfaction of voters in the period 2002-2018

Satisfaction	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6

Variance in political ideology of each coalition	0.0807* (0,0417)	0.0340 (0.0416)	0.0535 (0.0439)	0.0347*** (0.0009)	0.0285*** (0.0009)	0.0306*** (0.0011)
GDP		0.0000*** (0.0000)	0.0000 (0.0000)		0.0000*** (0.0000)	0.0000*** (0.0000)
Unemployment		-0.0009*** (0.0001)	-0.0008*** (0.0002)		-0.0001*** (0.0000)	-0.0003*** (0.0000)
Inflation		-0.0067 (0.0067)	-0.0137 (0.0178)		-0.0613*** (0.0012)	-0.0684*** (0.0013)
Seats			0.0022 (0.0017)			-0.0008*** (0.0000)
Gender			-15.3019*** (3.9926)			-0.0393*** (0.0043)
Age			0.0124 (0.0644)			0.0023*** (0.0001)
Education			0.2176 (0.2264)			0.0010 (0.0008)
Income			0.3027 (0.1335)			0.0579*** (0.0008)
Pseudo-R^2	0.0029	0.0307	0.0648	0.0011	0.0033	0.0109
Observations	163	151	129	292.492	292.492	224.922

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01. Model 1, 2 & 3 relate to the data using averages. Model 4, 5 & 6 relate to the data using the per country, per year, per respondent data.

The interpretation of the ordered probit model is somewhat different compared to the OLS regression, as explained in the data section. The coefficient of the variance in model 1 of table 6.3.1 is very similar to the coefficient of the first model in table 6.2.1 indicating that the differences between the ordered probit and OLS model don't seem to big. However, one has to realize that in the ordered probit model it isn't possible to interpret the magnitude of the coefficient. But the sign of the coefficient can be interpreted and this is positive and therefore is in line with the theory proposed in this paper. After all, the sign indicates that whenever the variance between political parties ideologies in the coalition governments increase the probability of being in the higher satisfaction categories increases as well. Moreover the coefficient is significant (p-value of 0.053) at the 0.1 level and almost at the 0.05 level.

In model 2 the same average data is being used, but in this model the three familiar country specific control variables are being included. Striking is the resemblance between the coefficient in the OLS and ordered probit models in sign, magnitude (although in the ordered

probit model this can't be interpreted) and significance. Just as in the OLS model the independent variable decreases quite a bit, and becomes highly insignificant.

The sign, magnitude and significance of the control variables are also very similar between the ordered probit and the OLS model. Again we have to realize that it isn't possible to interpret the magnitude of the coefficients in the ordered probit model in similar fashion as in the OLS model. For this we need the marginal effect which are being discussed below. However, similar to before the sign and significance are very similar to the OLS model.

Similar to the OLS regression in model 3 most coefficients become insignificant, which complicates the interpretation. Striking is again the increase in the magnitude of most coefficients. However the signs of the coefficients remains the most interesting and those remain similar to the second model. In this model the pseudo-R^2 doesn't increase that much.

Model 4 is a simple exploration of the data including the satisfaction per voter per year and per country. In this model the variance is highly significant (p-value of 0.0000). Again the sign is in line with what my theory predicts, however the magnitude can't be interpreted. The only interpretation we can currently give is that an increase in the variance of the political ideology of the coalition parties will increase the probability that the satisfaction of voters is in the higher categories, meaning that the voters will be more satisfied with the government coalition.

The fourth model of table 6.3.1 is the ordered probit model using the extensive dataset and including the three country specific control variables. Compared to the OLS model we see that the sign and significance remains very similar. However the magnitude seems to be smaller in this model. But to compare the magnitudes of the coefficients one has to look to the marginal effects. For now the only thing that can be concluded on the basis of this analysis is that in general both the ordered probit and the OLS model seems to indicate that an increase in the ideological political distance between parties that are part of a coalition government increases the satisfaction of voters in relation to that government coalition.

The sixth model is very similar to the fifth, but also includes the voters' characteristics as control variables and is therefore the most comprehensive ordered probit model in terms of data and control variables. All the variables have the same sign and the magnitude is also very similar to the fifth model. Moreover the additional control variables have the same sign as in the OLS regression model, and thus are as predicted in the related literature section. This means that an increase in the age, education and income of the voter all increase the

probability that the voter is in the higher satisfaction categories. Whilst if the voter is a woman or if the number of seats of the coalition government increases (this is the only exception compared to the related literature), this decreases the probability of being in the higher satisfaction categories.

The pseudo-R^2 is part of the output of the ordered probit regressions and is comparable with the (normal) R^2. Therefore it also indicates the percentage of variation in the data that can be explained by the model. In the first model this pseudo-R^2 is 0.29% and it increases to 3.07% in model 2 and to 6.48% in model 3. These numbers are relatively low, but once again there is no hard threshold to determine (in absolute terms) whether or not the (pseudo-)R^2 is high or low. Also here we see a relatively big increase in the pseudo-R^2, something similar occurred with the R^2 in the OLS models. In model 4 the pseudo-R^2 is 0.11% and it increases to 0.33% in the fifth model and tot 1.09% in the sixth model. Something worth noticing is that in both the OLS and the ordered probit model the (pseudo-)R^2 becomes about three times as large in model 5 compared to model 4. Similar in both regressions the (pseudo-)R^2 increases about ten times in model 2 compared to model 1. This thus seems all relatively stable.

Table 6.3.2 Marginal effects of ordered probit model 1 (averaged data)

Satisfaction	0	1	2	3	4	5	6	7
Variance in political ideology	-0.001 (0,001)	-	-0.007 (0.004)	-0.015* (0.008)	-0.006 (0.004)	0.013* (0.007)	0.014* (0.008)	0.002 (0.002)

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.3.3 Marginal effects of ordered probit model 2 (averaged data)

Satisfaction	0	1	2	3	4	5	6	7
Variance in political ideology of each coalition	0.000 (0,000)	-	-0.002 (0.003)	-0.004 (0.008)	-0.002 (0.004)	0.004 (0.007)	0.004 (0.007)	0.000 (0.002)

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.3.4 Marginal effects of ordered probit model 3 (averaged data)

Satisfaction	0	1	2	3	4	5	6	7
Variance in political	-0.003 (0,003)	-	-0.008 (0.008)	-0.002 (0.003)	0.006 (0.005)	0.006 (0.006)	0.002 (0.002)	0.000 (0.000)

ideology of each coalition	

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.3.5 Marginal effects of ordered probit model 4

Satisfaction	0	1	2	3	4	5
Variance in political ideology of each coalition	-0.009*** (0,000)	-0.004***	-0.005*** (0.000)	-0.004*** (0.000)	-0.001*** (0.000)	0.003*** (0.000)

Satisfaction	6	7	8	9	10
Variance in political ideology of each coalition	0.005*** (0.000)	0.007*** (0.000)	0.006*** (0.000)	0.002*** (0.000)	0.002*** (0.000)

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.3.6 Marginal effects of ordered probit model 5

Satisfaction	0	1	2	3	4	5
Variance in political ideology of each coalition	0.002*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)

Satisfaction	6	7	8	9	10
Variance in political ideology of each coalition	-0.001*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

Table 6.3.7 Marginal effects of ordered probit model 6

Satisfaction	0	1	2	3	4	5
Variance in political ideology of each coalition	0.084*** (0.001)	0.058*** (0.000)	0.097*** (0.001)	0.126*** (0.001)	0.122*** (0.001)	0.171*** (0.001)

Satisfaction	6	7	8	9	10
Variance in political ideology of each coalition	0.126*** (0.001)	0.120*** (0.001)	0.068*** (0.001)	0.018*** (0.000)	0.010*** (0.000)

Standard errors between brackets; *p<0.1, **p<0.05, ***p<0.01.

The tables 6.3.2, 6.3.3 and 6.3.4 indicate that an increase in the variance, i.e. the political distance between parties that are part of the coalition government, eventually increases the probability of being more satisfied with the coalition government (ending up in the higher satisfaction category). In the lower categories an increase in the variance is associated with a decrease of the satisfaction. Important to realize is that these tables relate to the marginal effects of the averaged data. Therefore one, eight, nine and ten are excluded as answer(possibilities) because the data is being averaged. Moreover when the data was averaged there were 124 different unique answers (meaning that there were 124 different averages between 0.01 and 6.6), to make the analysis more comprehensive and therefore more useful, the answers were rounded. Therefore the answer possibilities were also reduced. This makes these marginal effects more comparable with the coefficients of the OLS regression and the marginal effects of the ordered probit regression of the other dataset. To compute the marginal effect I computed the marginal effects at the average of all the (control) variables included in the models.

Tables 6.3.5, 6.3.6 and 6.3.7 relate to the data that is measured per year, per country, per individual. In table 6.3.5 we see that an increase in the variance increases the probability of being more satisfied with the coalition government. However when including control country specific variables in table 6.3.6 an increase in the variance lowers the probability of being in the higher satisfaction categories. However when adding the individual specific control variables an increase in the variance increases the probability of being in the higher satisfaction categories. The magnitude of the marginal effects in general seem to be comparable with the results from the OLS model.

That also means that similar to the coefficients of the OLS regression the marginal effects of these ordered probit regressions are significant (most of them at least), but there magnitude also needs to be taken into account. Therefore it's worth mentioning that the

magnitude of all the marginal effects is relatively low and therefore the effect of forming a coalition government with more ideological diverse political parties may constitute quite a hazzle, whilst the increase in voters' satisfaction is relatively low (as indicated by the probability of ending in the higher satisfaction categories).

In general, the ordered probit regression seems to indicate that an increase in the political ideological distance between political parties that are part of a coalition government increases the probability that a voter will be (more) satisfied with the coalition government. This is similar to the conclusion drawn from the OLS regression and therefore also these results are in line with my hypothesis. The theoretical model provides several explanations for this, first of all it might be due to the fact that the number of uninformed voters is sufficiently low. However, we would have expected the education variable to have a negative effect on the voters' satisfaction (given that it would be a good proxy for how informed voters are), however nor in the OLS regression nor in the ordered probit is this the case. A different explanation could be that the amount of voters on neither side of the left-right spectrum is overrepresented. Therefore the voter' satisfaction will be higher with a compromise coalition resulting in policy that might come closer to voters' preferences.

VI.IV Shortcomings

First of all, it seems reasonably to conclude that not all the relevant control variables are being included in these models. The relevant literature seems to indicate that apart from economic development, unemployment, inflation, gender, income and education no other variables influence the satisfaction of voters, but perhaps future research identifies other variables that should have been included as control variables. When these variables are lacking in this research it's hard to draw causal conclusion, because we know that cofounders are still a problem.

Note that also reverse causality might be a problem, although this seems less dire. Nevertheless (theoretically) it seems possible that a low satisfaction by voters would engage parties involved in the coalition government to rethink their stands towards certain policies areas. It might be the case that this fundamentally and permanently leads to a change of the stance of the involved parties and therefore increasing or lowering the political ideological distance between the parties involved in the government coalition.

A minor shortcoming that I do feel I need to address is the fact that all of the databases

were construed by myself, and therefore these might be prone to errors. Although the scatterplot, other figures and tables do not indicate that this is a problem it cannot be excluded. Moreover, even if this is a problem, it seems unlikely that this leads to systematic errors and therefore would only reduce the magnitude and p-value of my coefficients but will not make them unreliable.

Even if my results would be internally valid than still there might be a (big) problem with the external validity meaning that the results can probably not be generalized to different continents or different political systems. As I pointed out at the outset of this paper the United States is a country that currently is being torn apart due to all the conflicting interest within the country and political parties. The confidence of voters is pretty low, which expresses itself in low satisfaction numbers for the current president (Jones, 2020). However, due to the fact that the United States is a two party system and my research doesn't relate to such a political system it's hard to extrapolate my findings to this political system, because it's no coalition government. Moreover of course the American political context isn't comparable to the European.

VII. Conclusion & Discussion

The number of political parties have increased rapidly in the last couple of years in Europe. This means an increase in the number of parties that will be installed in parliament, but eventually also an increase in the number of parties that participate within a government coalition. Often this coalition parties will not all share the same political ideologically and in this way political fragmentation and diversion leads to an increase in the political ideological diverse parties that are involved in the coalition government.

This research was interested in the effects of the political ideologically distance between parties that are part of the coalition government on the satisfaction of voters. Therefore the following research questions was posed:

Are European citizens more satisfied with their government in the period 2002-2018, if the government coalition consist of more ideologically distant political parties?

To better understand the dynamics and mechanism that influence the answer to this research question we answered this research question as followed: (i) through a theoretical model I have tried to determine why and under which conditions voters might be more satisfied with coalition governments (or not); and (ii) through empirical data research I have

tested whether these conditions and the hypothesis stated at the outset of this paper (and mechanism following from the theoretical model) hold for European countries in the period 2002-2018.

The results seem to indicate in general that for all researched data, either averaged or not and despite the used model an increase in the political ideological distance increases the satisfaction of voters. The theoretical model predicted that if the amount of uninformed voters is sufficiently large the expected utility will be larger with the coalition government relative to a one-party cabinet. This seemed a plausible explanation as due to the increase in the number of political parties the costs of getting informed increased for voters leading to an increase in the number of uninformed voters. But, using the education variable as a proxy, the empirical analyses seemed to indicate that an increase in the level of voters' information was actually associated with a decrease in the voters' satisfaction. The second prediction by the theoretical model was that if the amount of voters on either side of the left-right spectrum was sufficiently low the expected utility would also be larger with a coalition government rather than an one—party cabinet. This prediction can not be tested using the empirical analysis but seems as reasonable explanation and is in line with the results.

One other explanation for this observation (that the voters' satisfaction increase with political divergence in the coalition government) is based on the theory of decision making within committees and constitutes that an increase in the political distances means that the differences in policies preferences are bigger than usual, this means that every decision that is taken by the government requires an extensive debate within the government and requires settling on compromises. This could increase the quality of the decision making, which is directly reflected in the satisfaction of voters. Increasing the heterogeneity of the committee (government) requires that parties engage in the collection of information to ensure that the right decision will be made. As long as this information collection assumption is satisfied increasing the number and diversity of the political parties involved in the coalition government increases the quality of the decisions made by the government and therefore the satisfaction among voters.

An important feature to keep in mind is the magnitude of the identified independent variable. Even though the data was measured on a scale of zero till ten the magnitude of the coefficient and marginal effects in all models is relatively small. So despite the fact that the coefficient is significant in some model(specification)s, it is unclear whether the coefficients

are also economically relevant. A government coalition existing of very diverse – with regards to the political ideological – parties might come across different other problems, including practical ones. Thus even though it might increase voters' satisfaction it could also increase the (practical) problems related to political divers coalition governments. Whether this is a trade-off worth the while is something that has to be learned by new future research or by experience.

In following research it might be relevant to include control variables for certain (in hindsight) known shock events, like the financial crisis of 2007/2008. This might make the data more robust. As mentioned before future research also needs to focus on other control variables that might be discovered in the coming years that influence both the variance and the satisfaction of voters. Future research might also focus on whether or not voters are (truly) informed before they vote, as we have seen that this might also be a mechanism that could explain my results. It would be interesting to learn whether the amount of uninformed voters has or does increase over time, as the theoretical model shows us that this might explain the results found in the empirical analysis.

If it would be possible to obtain more data of different countries the findings and conclusions of this research might be applied to different countries, continents and political systems. In that case it might also be possible to track how the satisfaction changes overtime (within a country).

References

Anderson, J.A. (1984). Regression and Ordered Categorical Variables. *Journal of the Royal Statistical Society, 46*(1), 1-30.

Anderson, C.J. (1995). The Dynamics of Public Support for Coalition Governments. *Comparative Political Studies, 28*(3), 350-383.

Bakker, R., Vries, de C., Edwards, E., Hooghe, L., Jolly, S., Marks, G., Polk, J., Rovny J., Steenbergen, M. & Vachudova, M. (2015), Measuring Party Positions in Europe: The Chapel Hill Expert Survey Trend File, 1999-2010, Party Politics, 21(1): 143-152.

Bellucci, P. & Lewis-Beck, M. (2011). A stable popularity function? Cross-national analysis. *European Journal of Political Research, 50*, 190-211.

Bertrand, M. & Mullainathan, S. (2001). Do People Mean What They Say? Implications for Subjective Survey Data. *American Economic Review, 91*(2), 67-72.

Burn-Murdoch, J. (2016, 24 juni). *Brexit: voter turnout by age*. Geraadpleegd op 4 augustus 2020, van https://www.ft.com/content/1ce1a720-ce94-3c32-a689-8d2356388a1f

Cai, H. (2001). Optimal Committee design with heterogenous preferences. UCLA Working Paper. University of California, Los Angeles.

Centraal Bureau voor de Statistiek. (2017, 23 februari). *Bijna een kwart stemgerechtigden 65 jaar of ouder*. Geraadpleegd op 4 augustus 2020, van https://www.cbs.nl/nl nl/nieuws/2017/08/bijna-een-kwart-stemgerechtigden-65-jaar-of-ouder

De Condorcet, M. (1785). Essai sur l'application de l'analyse a` la probabilite´ des decisions rendues a` la pluralite´ des voix. L'imprimerie royale, Paris.

Doraszelski, U., Gerardi, D. & Squintani, F. (2003). Communication and voting with doubled sided information. Contributions to Theoretical Economics 3.

Dorussen, H. & Taylor, M. (2001). The Political Context of Issue-priority Voting: Coalition and Economic Voting in the Netherlands, 1970-1999. *Electoral Studies, 20*, 399-426.

Enkelmann, S. (2013). *Government Popularity and the Economy: First Evidence from the German Micro Data.* University of Lüneburg Working Paper Series in Economics No. 274. Available at:

https://www.leuphana.de/fileadmin/user_upload/Forschungseinrichtungen/ifvwl/orkingPapers/wp_274_Upload.pdf

Furnham, A. (1986). Response Bias, social desirability and dissimulation. *Personality and Individual Differences, 7*(3), 385-400.

Giger, N. (2009). Towards a modern gender gap in Europe? *The Social Science Journal*, *46*(3), 474–492.

Han, K. J. (2016). Income inequality and voting for radical right-wing parties. *Electoral Studies*, *42*, 54–64. https://doi.org/10.1016/j.electstud.2016.02.001

Huber, J. & Inglehart, R. (1995). Expert Interpretations of Party Space and Party Locations in 42 Societies. *Party Politics, 1*(1), 73-111.

Inglehart, R., & Norris, P. (2000). The Developmental Theory of the Gender Gap: Women's and Men's Voting Behavior in Global Perspective. *International Political Science Review*, *21*(4), 441–463.

Johnston, R., Jones, K., & Manley, D. (2018). Age, sex, qualifications and voting at recent English general elections: an alternative exploratory approach. *Electoral Studies*, *51*, 24–37.

Jones, J. B. M. (2020, 14 juli). *Trump's Job Approval Rating Steady at Lower Level*. Geraadpleegd op 15 juli 2020, van https://news.gallup.com/poll/313454/trump-job-approval-rating-steady-lower-level.aspx

Kostelka, F., Blais, A., & Gidengil, E. (2018). Has the gender gap in voter turnout really disappeared? *West European Politics*, *42*(3), 437–463.

Kramer, L. (2020, 4 maart). *Netherlands: European elections voter turnout, by level of education 2019*. Geraadpleegd op 29 juli 2020, van https://www.statista.com/statistics/1020588/european-elections-voter-turnout-in the-netherlands-by-level-of-education/

Laver, M.J. & Budge, I. *Party Policy and Government Coalitions* (1st edition). London, Great Britain: The Macmillan Press Ltd.

Li, H., Rosen, S. & Suen, W. (2001). Conflicts and common interests in committees. *American Economic Review*, *91*, 1478-1497.

Martinelli, C. (2002). Would rational voters acquire costly information? *Discussion Paper, 2*(10). Instituto Technolo´ gico Auto´ nomo de Me´xico, Mexico City.

McCullagh, P. (1980). Regression Models for Ordinal Data. *Journal of the Royal Statistical Society, 42*(2), 109-127.

McKelvey, R. and W. Zavoina. 1975. A Statistical Model for the Analysis of Ordinal Level Variables. *Journal of Mathematical Sociology*, *4*(1), 103-120.

Nannestad, P. & Paldam, M. (1993). The VP-function: A survey of literature on vote and popularity functions after 25 years. *Public Choice*, *79*(3), 213-245.

Nederhof, A.J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology, 15*(3), 263-280.

Noreen, E. (1988). An Empirical Comparison of Probit and OLS Regression Hypothesis Test. *Journal of Accounting Research, 26*(1), 119-133.

Norris, P. (1996). Mobilising the "Women's Vote": The Gender-Generation Gap in Voting Behaviour. *Parliamentary Affairs*, *49*(2), 333–342.

Paldam, M. (1981). A Preliminary Survey of the Theories and Findings on Vote and Popularity Functions. *European Journal of Political Research, 9*, 181-199.

Peel, M., Goode, M. & Moutinho, L. (1998). Estimating Consumer Satisfaction: OLS versus Ordered Probability Models. *International Journal of Commerce and Management, 8*(2), 75-93.

Persico, N. (2004). Committee Design with Endogenous Information. *Review of Economic Studies, 71*, 165-191.

Polk, J., Rovny J., Bakker, R., Edwards E., Hooghe L., Jolly, S., Koedam J., Kostelka F., Marks, G., Schumacher, G., Steenbergen M., Vachudova, M. & Zilovic, M. (2017). Explaining the salience of anti-elitism and reducing political corruption for political parties in Europe with the 2014 Chapel Hill Expert Survey data, *Research & Politics* (January-March): 1-9.

Renaud, P. & Winden, van F. (1987). Political accountability for price stability and unemployment in a multi-party system with coalition governments. *Public Choice, 53*, 181-186.

Sagarzazu, I. & Klüver, H. (2017). Coalition Governments and Party Competition: Political Communication Strategies of Coalition Parties. *Political Science Research and Methods, 5*(2), 333-349.

Simeonova, E., Akee, R., Holbein, J., Copeland, W. E., & Costello, E. J. (2018, 15 juli). *Low voter turnout? Increasing household income may help*. Geraadpleegd op 29 juli 2020, van https://voxeu.org/article/low-voter-turnout-increasing-household-income-may-help

Statistics Sweden. (2015, 29 mei). *Big differences in turnout by level of education*. Geraadpleegd op 29 juli 2020, van https://www.scb.se/en/finding-statistics/statistics by-subject-area/democracy/general-elections/general-elections-participation survey/pong/statistical-news/election-participation-among-persons-with-disabilities/

Swank, O. H., & Eisinga, R. (1999). Economic Outcomes and Voting Behaviour in a Multi-Party System: An Application to the Netherlands. *Public Choice*, *101*(3/4), 195–213.

Tversky, A. & Kahneman, D. (1974). Judgement under Uncertainty: Heuristics and Biases. *Science, 185*(4157), 1124-1131.

Visser, B., & Swank, O. H. (2007). On committees of experts. The Quarterly Journal of Economics, 122(1), 337-372.

Whiteley, P. (1984). Inflation, unemployment and government popularity-Dynamic models for the United States, Britain and West Germany. *Electoral Studies, 3*(1), 3-24.

Wille, A., & Bovens, M. (2018, 16 juli). *Education as a New Political Divide*. Geraadpleegd op 29 juli 2020, van https://www.greeneuropeanjournal.eu/education-as-a-new political-divide/

Appendix A

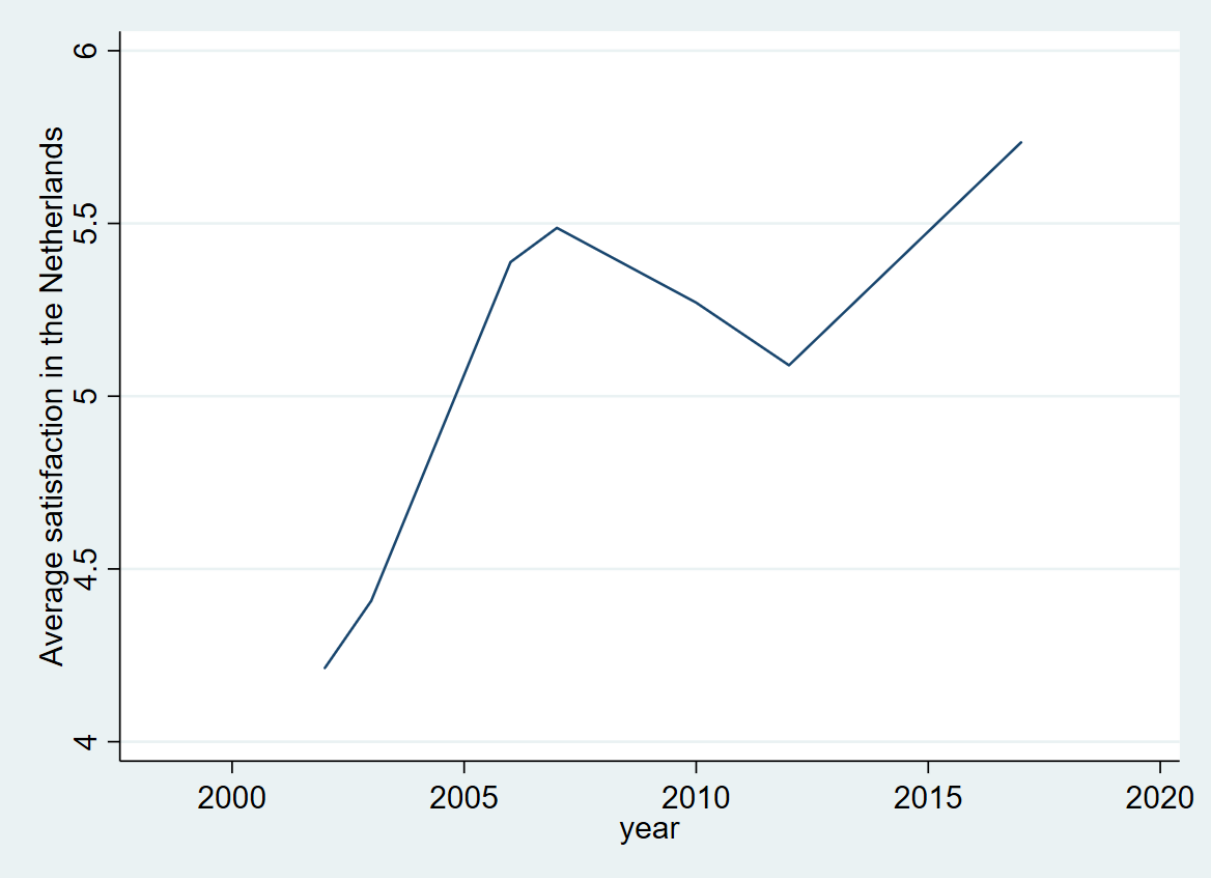

Figure 2.1 Line graph of the change in average satisfaction in the Netherlands in the period 2002-2018

This figure indicates that the trend of the average satisfaction in the Netherland is increasing over time. After 2010, which might relate to the financial and euro crisis, the average satisfaction is somewhat decreasing. But since 2012 it's increasing ones again.

Appendix B

Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Italy
Latvia
Lithuania
Luxembourg
The Netherlands
Norway
Poland
Portugal
Romania
Slovakia
Slovenia
Sweden
Switzerland
United Kingdom

Appendix C

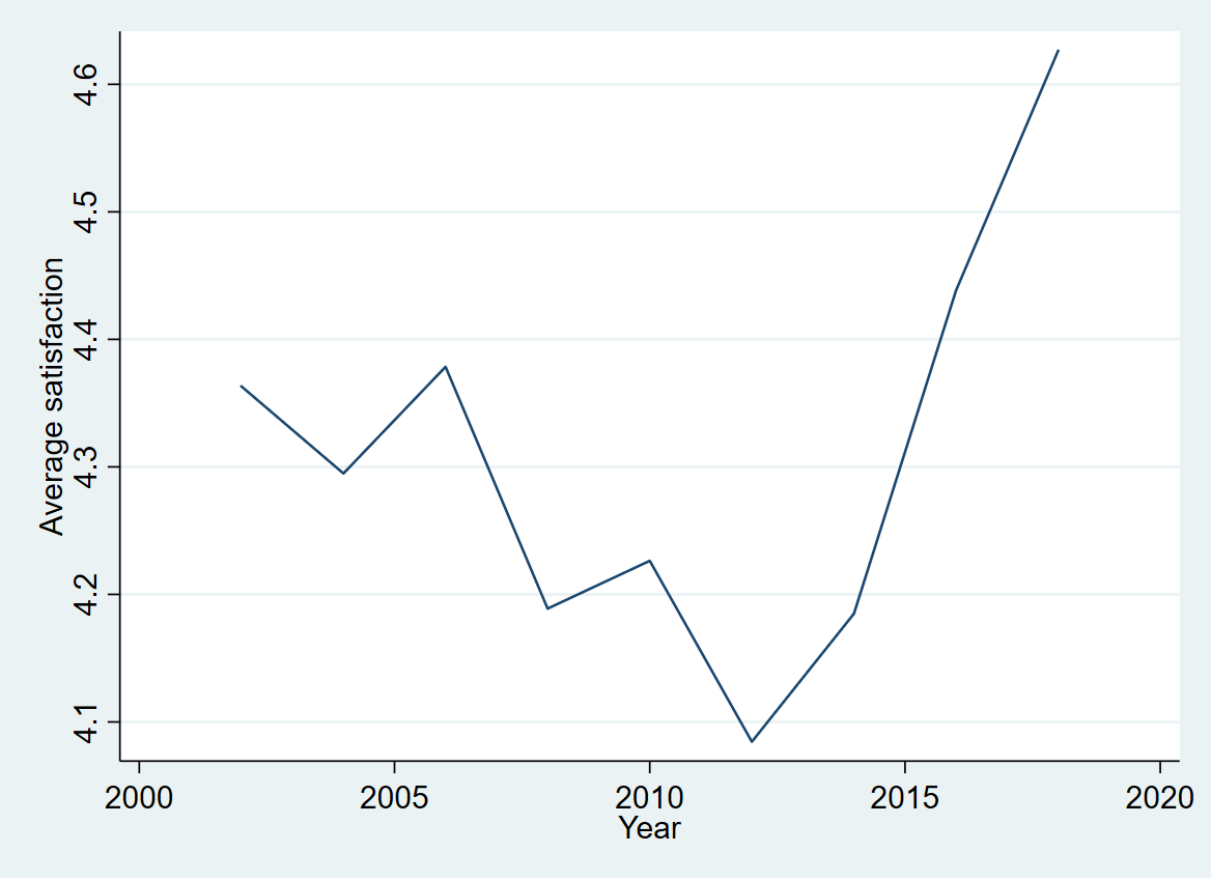

Figure 5.1.1 Line graph of the change in average satisfaction in Europe in the period 2002-2018

Similar to the line graph in figure 2.1 in appendix A it's striking to see that the average satisfaction hits a low point just after 2010, which could likely relate to the euro crisis. Since then however the satisfaction is on the rise and higher than it has ever been. However in general the satisfaction is relatively low, with an average below 5 which indicates that on average voters are less than satisfied with their government coalition.

Appendix D

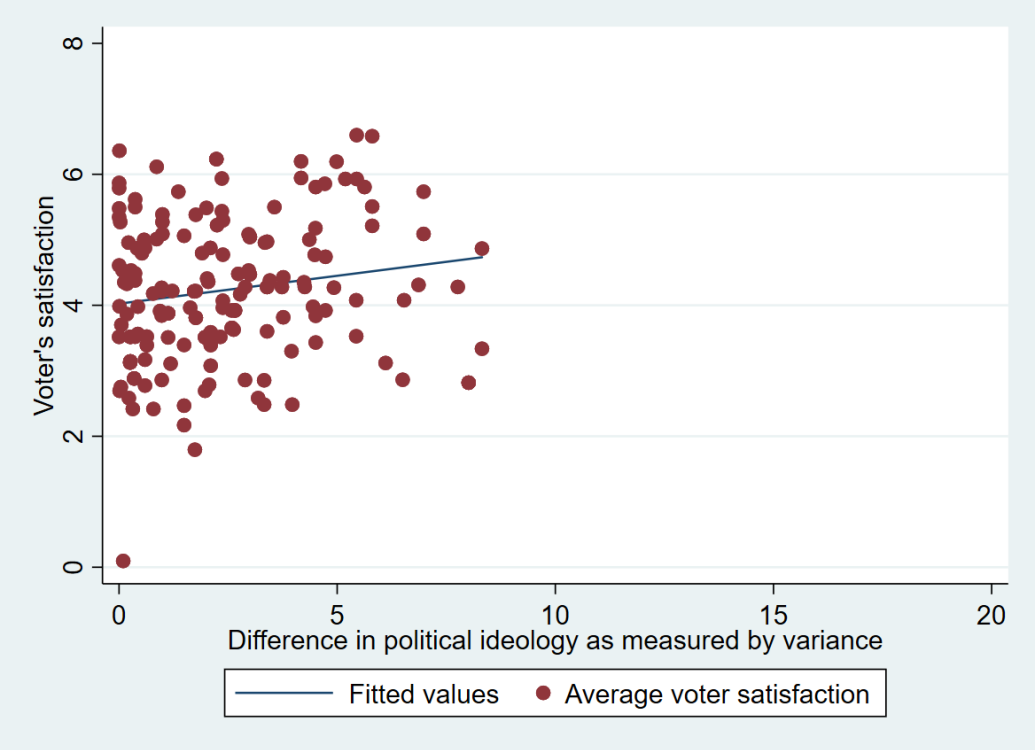

Figure 6.2.1 Scatterplot including fitted regression line of average voters' satisfaction on difference in political ideology