Lost in Space
Pairwise Comparisons of Parties as an Alternative to Left-Right Measures of Political Difference

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I, the undersigned [Martin Mölder], candidate for the degree of Doctor of Philosophy at the Central European University Doctoral School of Political Science, Public Policy and International Relations, declare herewith that the present thesis is exclusively my own work, based on my research and only such external information as properly credited in notes and bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes on any person's or institution's copyright. I also declare that no part of the thesis has been submitted in this form to any other institution of higher education for an academic degree.

Budapest, 27 April 2017

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Signature

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Am I following all of the right leads?
Or am I about to get lost in space?
When my time comes, they'll write my destiny
Will you take this ride?
Will you take this ride with me?

– "Lost In Space", The Misfits (Album: Famous Monsters, 1999)

Acknowledgments

The idea explored in this thesis – that it makes more sense to compare parties to each other than to an assumed dimension – came from a simple intuition while I was working with the manifesto data set and still mostly oblivious to the jungle of spatial analysis of party politics. Now that this work, but not the agenda as a whole, is finished, it is clear that this intuition held out rather well. The initial idea simply concerned the pairwise comparison of party manifestos for descriptive purposes and all that grew around this core was very much an evolutionary process, where numerous people in my academic environment over these years nudged and shaped what we can finally see here.

I am grateful to Simon Franzmann who also came across the idea of comparing party manifestos to each other in pairs, but who, for better or for worse, did not by far exhaust the initial questions surrounding this intuitively appealing as well as fundamentally justified method of approaching the question party politics. This left the ground open for me to fill the gap. In later stages of this work, when I had become aware that this idea had been set forth before, Simon Franzmann's suggestions during my stay at the Institute of German and International Party Law and Party Research at the Heinrich-Heine University of Düsseldorf were crucial to shaping some aspects of this work.

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Thank you all for making this a wonderful and exciting journey!

Abstract

It is ordinary and perhaps even fundamental to think about the differences between objects as distances in a space. In political science the left-right space, where the difference between parties is the distance between them on that one continuous dimension, is the most common way to think about political space and measures based on this space dominate empirical research. The left-right metaphor has a long cultural history and therefore it makes sense to assume that a left-right dimension captures the relevant differences among parties. In contrast, there is a range of research, which argues that political spaces are multidimensional and changing across countries and time. The left-right measure is used, most likely because of its simplicity, but it is also contested.

The space of party differences is a perceptual space – it is about how people see and understand those differences. There are no party differences that are separable form people's judgement about them. According to the theory of conceptual spaces, the preferred way to analyse such spaces is pairwise comparison. The difference between objects can be evaluated in pairs and these can either be used as measures in themselves or analysed further. Such measurement gives an estimate of difference that covers all possible dimensions in political space and thus allows us to uncover the dimensions that people – voters or politicians – use to differentiate between parties without influencing such judgements with pre-given benchmarks. Furthermore, pairwise comparisons can also be used on their own as many applications of measures of party politics – in coalition formation, polarisation research and analysis of party change – do not require an estimate of party position as such, just the distance between them.

The current work shows how pairwise comparisons of parties can be used as a way to uncover people's perceptions of political space on the individual level and how pairwise comparisons of party manifestos through the index of similarity can be used as a direct measure of political difference in models that would otherwise rely on differences measured through the left-right dimension. The individual level analysis is based on survey data obtained from Germany, Sweden and the Netherlands. The index of similarity based on the manifesto data set is compared to measures of party position on left-right dimensions derived form the same data in models for predicting coalition formation, party system polarisation, and change in the political profiles of parties. The individual level analyses show us aspects of political space that other similar research has not uncovered and those based on the manifesto data set indicate that the pairwise index of similarity outperforms the left-right measures in these contexts. A pairwise comparison of the political profiles of parties is thus a promising way to analyse party politics.

Contents

Chapter 1

Introduction: Confusions of Space

> I took my pill at eleven. An hour and a half later, I was sitting in my study, looking intently at a small glass vase. The vase contained only three flowers – a full-blown Belie of Portugal rose, shell pink with a hint at every petal's base of a hotter, flamier hue; a large magenta and cream-colored carnation; and, pale purple at the end of its broken stalk, the bold heraldic blossom of an iris. Fortuitous and provisional, the little nosegay broke all the rules of traditional good taste. At breakfast that morning I had been struck by the lively dissonance of its colours. But that was no longer the point. I was not looking now at an unusual flower arrangement. I was seeing what Adam had seen on the morning of his creation – the miracle, moment by moment, of naked existence.
>
> – Aldous Huxley, *The Doors of Perception*.

> The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.
>
> – Sir William Bragg, Winner of 1915 Nobel Prize in Physics.

The way we have come to understand political behaviour – the behaviour of parties and voters – includes the premise that perceptions of political difference play a role in how parties interact or how people vote. Indeed, this is a fundamental component through which the "representation" part of representative democracy should work. When we analyse political differences between parties either as they are depicted in party manifestos or how they are perceived by voters or politicians, it matters what kind of a tool we use. When we can only yield a hammer, everything looks like a nail. When we use preconceived notions of how a political space should look like, no matter how well justified, we are prisoners of our own contraptions, only able to see what they allow us to see. In certain contexts this can hinder our understanding of political space and give measures that do not work as well as they could. The objective of this work is to introduce and demonstrate a tool for the analysis of political space that is impervious to the structure of the latter; a Leatherman instead of a hammer. A tool that will actually allow us to uncover the political space that differentiates between parties instead of assuming it, a tool that can give better estimates about the political relationships between parties than those that are currently available.

Political science is more often than not interested in the unseen – phenomena that we cannot directly observe, but which we assume to be there in "reality", shaping the behaviours we wish to understand and explain. Although what we ultimately care about can be inaccessible by direct measurement, we use our imagination and ingenuity to collect pieces of empirical reality that are supposed to be indicators of our unseen objects of interest and assign them meanings and interpretations. The guiding conceptual tools that we have at our disposal function at this point also as filters and recipes – they direct our attention to some parts of reality and away from the rest, tell us how to think about that, which we do see, how to systematise it, generalise it, relate it to other phenomena. These tools are at the same time the conduits and the barriers between us and the "naked existence".

One of the most useful and popular of such tools in the interpretation of party politics has been the idea that political relationships and differences between parties and individuals are the same as distances between points in a space – like points on a line or a plane. Obviously, this metaphor – that difference is distance in space, most commonly in its left-right formulation in the case of politics, originated and is widely used outside of political science, but its geometric interpretation – the "left-right" as a continuous spatial dimension – is not as clearly or strongly present elsewhere. In general public discourse the words "left" and "right" can just as well refer to different political labels or categories (a categorical dimension) and not a continuous spatial dimension that is used to measure difference through distance. The continuous interpretation of this metaphor gives political science a simple framework to think about parties and to put a number on their ideological difference. From ever since it entered the broader political discourse up until the very present there have been political and academic debates over the content and meaningfulness of these ideological labels and this interpretation. But whether we like it or not, somehow it has stuck. Still, its popularity and its obstinacy are not necessarily guarantees that it is the best framework for the analysis of politics and political differences.

The following is about looking at the political relationships between parties – the same phenomenon the left-right tool allows us to see – with new eyes, from a fresh angle. It has the aim to unsettle the established perspectives just enough to show that there are simple and feasible others, which have been overlooked and might take us closer to what we want to understand in the end. We need the continuous interpretation of the left-right metaphor for two purposes – to characterise the position of a party *vis-à-vis* a certain ideological benchmark (how far a party is for example from the most leftist imaginable political position) or to use these positions to estimate the amount of

difference between parties (how far a party is from another party). The aim here is to show that:

- if we are interested in party space as such, it makes more sense not to assume this space (which is for the most part effectively the case when using a left-right dimension), but use pairwise evaluations of party difference to uncover the actual structure of that space;
- if we are interested in using estimates of party difference, it is possible and more meaningful to work with pairwise party differences that have been estimated without using an ideological benchmark.

For the latter purpose, working with party differences, the left-right space would simply be a means and the actual positions of parties are irrelevant, because only the difference between them matters. When we use the left-right tool to go from whatever information we have about reality to left-right positions and from left-right positions to political difference, we make an unnecessary step in the middle. This work introduces an approach for obtaining and working with party differences, which does away with the superfluous and the obfuscating. It shows how we can obtain and more fruitfully use information from surveys or party manifestos for the purpose of estimating the difference between parties without many of the problems that are built into the left-right tool.

The advantage of thinking in left-right terms is that it is seemingly simple and uses a vocabulary that all are familiar with. But this simplicity is illusionary and it has a consequential flip side. It is illusionary because even though a one-dimensional space is simple, we use it with a long list of assumptions, which are also part of the picture, but which are often forgotten. These might include and are definitely not limited to assuming that the left-right dimension is relevant everywhere, that the dimensionality of political spaces does not change over time, that there are no other dimensions differentiating among parties, and so on. All such assumptions allow this simplicity, but if any of them is violated, the final measure that we get suffers.

The idea of a left-right space works well only when the empirical reality we are interested in is also fairly unambiguously left-right, i.e. when the tool fits the job well. Setting aside the long history of the use of the metaphor, even a brief look at the political trends or academic debates of the present indicates that this is not likely to be the case. We are swimming in muddy waters. Perhaps not in the mainstream, but still, there have always been academic debates over the nature of political space. And as far as recent politics is concerned, the global financial crisis of 2007-2008 and the more recent wave of immigration towards Europe have slowly torn open Western political landscapes. What is emerging from the cracks cannot always be interpreted with old eyes. It is more

and more common to see actors whose statements and behaviour are in tension with what everybody has been used to, and how we would normally interpret a political landscape.

For example, after clearly winning the 2015 elections in Greece, but being just short of an absolute majority in parliament, Syriza ("Coalition of the Radical Left"), a party that would be by most accounts classified as a strongly leftist party, formed a coalition government with the Independent Greeks, a right-wing populist party. The main position drawing the two together being seemingly their stand against the EU and the way previous governments were handling the economic crisis in the country. Both of them were newcomers to the political landscape, who found common ground across the span of what was traditionally "left" or "right". At the same time in Spain another newcomer, Podemos, and its leader Pablo Iglesias, were cheering the ascent of Syriza. The Spanish elections of December 2015 saw the party become the third largest in the country. The rise of Podemos was mirrored by the surge in popularity for Ciudadanos, a more right-wing party whose exact position on the political landscape, however, has been ambiguous, but who has more often than not been located in the centre, as a liberal party. Within the span of a few years, a two-party landscape in Spain was thus transformed into a 4-party system, where the traditional parties on the left and right were mirrored by a different kind of a "left" and a "right" party.

A similar phenomenon happened in the left regions of the political space in Italy in the aftermath of the financial crisis. In the elections of 2013, the 5 Star Movement came second in the popular vote in its first national electoral contest, although it obtained far fewer seats in the legislature due to peculiarities of the electoral system. It has self-proclaimed not to fit into the traditional left-right paradigm, although for many of its positions it could be classified as a left-wing party.

While on the southern rim of Europe established politics has been upset mostly by tremors and quakes on the left, then towards the centre and the north of the continent, a more right-flavoured transformation has been happening. From Fidesz and Jobbik in Hungary to Law and Justice in Poland, from Alternative für Deutschland in Germany to Sweden Democrats in Sweden and the Party for Freedom in the Netherlands or the Freedom Party in Austria, a new kind of right-wing politics has been taking shape, although sometimes adopted by parties that have been around for a while. It would certainly be a stretch to say that all of such parties are the same, but what they do have in common is a brake with traditional ways of doing politics.

At times their position is a strange mix of policies or principles that in the traditional left-right paradigm were at the opposite ends of the line. For example Jobbik, effectively the second largest party in Hungary and commonly described as far-right nationalist, has been advocating resistance to

global capitalism, state assistance to small and medium sized businesses, opposition to the Trans-Atlantic Trade and Investment Partnership Agreement, redistribution of wealth, etc. – all positions that one would normally expect from the left of the political spectrum. Likewise, the nationalist far-right Party for Freedom in the Netherlands emphasises that it is not racist while building up some of its arguments against Islam on the fact that the latter does not respect the rights of sexual minorities and women. None of this would one usually expect from a party on the far-right.

If we look away from the continent and into the Anglo-American world, we can also easily see signs that the left and the right are torn apart. In the presidential elections of the United States in 2016 it seemed at one point that two alternative realities were competing – the competition between the mainstream of the Republicans and Democrats, our traditional left-right, was mirrored by the challenges of Donald Trump and Bernie Sanders, who shared in common their opposition to the established political elites and their way of doing politics. Their opposition seemed to constitute an alternative axis in politics, with a different kind of "left" pitted against a different kind of "right", yet both similarly distinct from the establishment. In the United Kingdom the fissures of the right could be seen in the internal indecisions and ruptures of the Conservative Party over the Brexit referendum. The latter was enabled by David Cameron, the leader of the party, who ended up campaigning against his own creation, while notable members of the party betrayed him in the process.

If we look at media discourse, which is by nature more flexible and quicker to react than academic ponderings, and how it has been trying to keep up with these developments, we can see a plethora of ways that people have been trying to come to terms with these developments and confusions on the political landscape. There has been a lot of talk over the last years about the end of the left-right paradigm, but this has not meant a Fukuyamaesque "end of ideology", but has rather referred to the fact that we need new and additional ways to make sense of political space. Some of the new distinctions and oppositions that have been suggested include opposing stances on globalisation (instead of the traditional matters of distributive justice) (Simpson 2016), up-wingers versus down-wingers (Fuller 2013), open versus closed (*The Economist* 2016b; *The Economist* 2016a), and so on.

Many of these elements are also reflected in recent academic discourse, although some doubts about the left-right distinction have been around for a while.[1] Political science, after all, does not exist in complete isolation from wider public discussions. For example, just in the wake of the "Great

[1] Classics such as Sartori (2005), Robertson (1976) and Stokes (1966), among others, have expressed certain reservations about the left-right framework, even though they have embraced parts of it themselves as well.

recession", but referring back to the Third Way transformation of the social democrats in Europe, Dyrberg (2009) made an argument that the left-right distinction on political landscapes was being re-articulated around "front-back". This suggested axis reflects to a considerable extent what has been put forth by more empirical work, making the claim that in addition to the economic left-right dimension, European political spaces are structured by a second dimension that distinguishes between the winners and losers of globalisation (Kriesi et al. 2006) or is structured around libertarian/universalistic (New Left) versus traditionalist/communitarian (New Right) poles (Bornschier 2010b). Others have emphasised parties' stances towards the European Union as a new dividing line on the European political landscape (Helbling, Hoeglinger, and Wüest 2010; Halikiopoulou, Nanou, and Vasilopoulou 2012), while still others imply that the second dimension that can subsume both left- and right-wing parties, which are in discord with the mainstream left-right, is a dimension of populism (e.g. van Kessel 2015).

Despite the discussions over how exactly to formulate it, there is a consensus in research looking at the ideological structures or characteristics of political landscapes that the traditional left-right dimension[2] we have inherited from the interpretation of the politics of industrial societies is not enough to capture the complexities of contemporary times. There is much less consensus over what the second or other dimensions should be and it seems we are nowhere close to having as clear a formulation of an additional dimension as we have of what "left" and "right" mean in the classical sense. There is a definite idea of what the problem can be, but next to no uncontested solutions to offer. And so it is that most if not all of the doubt and confusion about political space is swept under the rug as soon as we turn to more practical research endeavours that are not interested in the nature of political landscapes as such.

Analyses that have the aim of providing measures of party positions or using them in empirical research have mostly stayed true to the past. Regardless of whether we look at those that focus on political parties or on voters, we mostly find estimates of positions on a left-right dimension. For example, many of the major international surveys only include a question about the left-right self placement of the respondents (European Social Survey, World Values Survey, some waves of the International Social Survey Programme, Eurobarometer). Only some more election-oriented surveys include a question about the locations of parties (European Election Study, Comparative Study of Electoral Systems). The same is usually the norm for national studies (e.g. Austrian Election Study, German Politbarometer). We have no information about how people place themselves or parties on

[2] Where state intervention in the economy is on the left and free market capitalism is on the right.

any other general dimension, although this clearly seems to be relevant. Many surveys do include parties' and/or respondents' positions on various issues (see e.g. Alvarez and Nagler 2004), but this gives us information only about fragments of the political space and not the structure of the overall space itself.

In the case of expert surveys, the tools that have been used for the interpretation of political landscapes have been a bit more varied. Even though earlier expert surveys (e.g. Castles and Mair 1984) also focussed only on the left-right dimension, some of the more recent ones have been rather detailed in the dimensions on which they have asked experts to locate parties (Benoit and Laver 2006; Bakker et al. 2015). There has also been some variety in the measures that have been derived from party election manifestos – the most preferred source of information about the political profiles of parties. The manifesto data set (Volkens et al. 2015a), for good or for evil, is most known for its left-right (RILE) index of party positions (Laver and Budge 1992; Budge and Klingemann 2001). But there are also authors who have used the manifesto data to suggest party locations on other dimensions (e.g. Prosser 2014; Elff 2013) than the traditional left-right.

In terms of the data that is available, there is a clear preference for measurements using the left-right dimension, but still there are at least some alternatives out there. However, if we look at practical research, which actually implements measures of party position – the main purpose of the latter – there is almost complete preference for some version of the left-right dimension, most often the RILE index of the manifesto data set. The following chapters refer to over 70 empirical analyses that have used a variable about the political profiles of parties in the analyses of coalition formation, party system polarisation and party change, and only less than 20 have used something other than a unidimensional measure of left-right position (or something equivalent).[3] Even though nobody really doubts the complexities of our political landscapes and even though (at least on the parties' side) there are measures that locate parties on other dimensions than the classical left-right, in empirical analyses we are still overwhelmingly true to the latter. And all of this is done without showing that using a left-right measure is just as good or better than the available alternatives.

In practical analyses, information about where parties are located in a political space can serve two broad purposes. On the one hand, we might want to say something substantive about the political profile of a party, provide a convenient summary of the latter, and analyse how its substance is related to other aspects of the party, like its behaviour in certain situations. For example, we might be interested in how parties with different kinds of ideological profiles react differently to changing

[3] For a more detailed brake-down of these analyses, see Appendix A.

social conditions (e.g. Pontusson and Rueda 2008) or how parties with varying left-right positions behave in government (e.g. Tavits and Letki 2009). On the other hand, we might not necessarily be interested in the nature of the political profile of a party *per se*, but its relation to other parties. In this case we are interested in how different one party is from another or how much overall difference there is in a group of parties. This concerns, for example, research on coalition formation (e.g. Martin and Stevenson 2001; Glasgow and Golder 2015), party system polarisation (e.g. Sani and Sartori 1985; Dalton 2008), or party change (e.g. Dalton 2016).

In the first case we have to use the left-right tool, because that is what we are interested in. In the second case, we just need a tool that would give us an estimate of party difference and this does not have to be the left-right tool. Especially when the latter is bound to have problems in representing a more complex multidimensional and fluid reality. If we are interested in only the difference between parties, then we can use each party as a benchmark for every other party to derive an estimate of how different the parties are from each other regardless of the underlying political landscape they inhabit. All the confusions of space that were outlined above, and the problems they pose for practical research, thus become largely irrelevant. It does not matter what the first, second or third dimension of a political space is – an estimate of the difference between two parties in relation to one another (as opposed to against a common background) cuts across all the space that can be between them. The distance between two points is always a line, no matter what the number of dimensions is.

This is where the method of pairwise comparisons comes in. It focusses on estimating and analysing the differences between objects without using external benchmarks and is a rather common method for the study of how we perceive different objects (in a broad sense of the term) and how our conceptual spaces are structured (Gärdenfors 2000; Gärdenfors 2014). To some extent (using indirect information about the similarities between parties or candidates) this kind of an approach has found application in political science as well (e.g. Rabinowitz 1978; Kriesi et al. 2006; Bornschier 2010b), although there is almost no single study that has used it to directly analyse how people perceive political landscapes (one exception is Forgas et al. 1995). Neither is there almost any such research that has employed information on how parties present their political profiles. As far as the richest and most extensive resource on party politics – the manifesto data set – is concerned, there is a measure – the index of similarity – that has been proposed and which would directly estimate the difference between two parties (Franzmann 2008; Franzmann 2013), but it has found no application or elaboration in relevant research. This work will focus on these two gaps – direct

pairwise comparisons as a possible survey instrument to study the perceptions of people and the index of similarity as a way to estimate the difference between pairs of parties on the basis of the manifesto data.

Asking people, and this does not need to be the masses, it can also be experts, to give an evaluation of how different any two parties are from each other in terms of their political profiles approaches the problem of political landscapes from the complete opposite direction than the left-right metaphor. In the latter case we ask people to locate each party (or themselves) on a dimension that is assumed and given to them. There are as many points of data as there are parties. In the former case, we would ask people to give for each party an assessment of how different it is from every other party. There are as many points of data for each party as there are other parties and the political space is hidden in those assessments. We can test if these pairwise distances can be represented in lower dimensions and assess the loss of information. Instead of assuming dimensions we can actually empirically determine them. Thus, direct pairwise comparisons provide a unique way to empirically uncover the nature of political spaces as they exist in the minds of voters, party experts or parties themselves.

One of the main contributions of the index of similarity that uses the manifesto data is to be an alternative to estimates of difference that have relied on the left-right tool. As noted above, much of the research that has used data on party politics has been interested not in party positions, but party difference. Most often it has been the difference between one party and another, but also in some cases the difference of a party from a previous version of itself. In all such cases an estimate that is based on the distance between two points on a left-right dimension can be replaced by an estimate provided by the index of similarity. If we are interested not in the difference between two parties, but the overall amount of difference in a set of parties, then pairwise measures of difference can be aggregated using some of the same methods that have been used to aggregate the spread of parties on the left-right dimension into a single number. If we confine ourselves to the manifesto data set (which will be the case for any author who wants to do a more extensive analysis involving parties' political profiles), we have a range of left-right measures and the index of similarity, which are interchangeable for various analyses and are based on exactly the same data. This not only makes the adaptation of the index of similarity non-problematic, but also provides an easy way to compare the different approaches of measurement.

The pairwise measure, having several presumable advantages over left-right measures for the estimates of party differences, should be a better measure. It makes no more immediate spatial

assumptions except that the overall difference between two parties can be represented by a number. The only other thing we need to assume is a certain equivalence between distance and difference. By contrast, any spatial representation that locates all parties in a common space will have to determine and argue for, either empirically or *a priori*, the shape of this space, as well as for an overall adequacy of the spatial representation. A pairwise measure of difference is more informative, as the nature of the true space of differences between parties is contained within all pairwise representations taken together. We can analyse the latter and see what shape the underlying space actually has instead of assuming it. It has thus the potential to be a source of data for truly inductive studies of political spaces. And a pairwise assessment of difference, all else being equal, contains more information about the difference between parties than the representation of this difference on the left-right dimension, unless the political space the parties inhabit is truly unidimensional. It should thus work better than measures derived from the left-right dimension. In the light of the above, the following chapters will show how a pairwise measure can be implemented in survey research to give an inductive representation of a political space. Furthermore, they will demonstrate how a pairwise measure in the form of the index of similarity works better than other alternative measures that are based on exactly the same information about the political profiles of parties (the manifesto data set) in analyses that need measures of party difference.

We[4] begin in Chapter 2 with the most general framework – the theory of conceptual spaces – which both gives an account of how people form concepts and judge the similarity and difference between objects as well as provides a framework to clearly distinguish between the pairwise comparison of parties and many of the traditional approaches to the analysis of party politics that have relied on the left-right metaphor. In the end how we study and measure the differences between parties is about studying how people – voters that make up the electorate or politicians that make up parties – form judgements about objects and how they interpret the differences between them. The second part of the chapter gives an account of the general context and history of the use of left-right metaphor in political science, as well as its major issues and nuances.

Chapter 3 focusses on the measurement of political space. The manifesto data set as the most used source of data for the analysis of party politics and the various left-right measures that have been developed from it are introduced. Thereafter, the logic of pairwise comparisons and how this can be implemented in general as well as in the form of the index of similarity is outlined and the

[4] I assume that reading this work is an interaction between me, the author, and the reader. Use of the first person plural throughout the text refers to this.

logic of the rest of the chapters in how they will make the case for direct pairwise comparisons and the index of similarity is presented.

The usefulness of direct pairwise estimates of party difference will be demonstrated in Chapter 4. The chapter focusses on its use as a survey instrument, but in principle the same technique can also be used to study the structure of political space based on other souces of data. The focus here is on individual level data, because in this particular domain this kind of an approach is most unexplored. The chapter shows how individual level judgements of pairwise party difference can give information about the structure of the political space people have in mind when they think about party politics. Using data from Germany, Sweden and the Netherlands, it is shown how pairwise evaluations of difference and multidimensional scaling (MDS) can be used to uncover the true shape of political space in the minds of the electorate. The results indicate that instead of a New Left versus a New Right second dimension, we have something that sees these two kinds of parties as the same and contrasts them to the established older parties. Very similar, but not exactly the same configurations can be seen if we analyse the structure of pairwise party differences derived from party manifestos.

The next three chapters will be devoted to looking at pairwise comparisons of parties in contrast to left-right measures based on the manifesto data set. We will look at the contexts of party system polarisation (Chapter 5), coalition formation (Chapter 6), and party change (Chapter 7) to compare the pairwise index of similarity and various estimates of left-right positions. All of these comparisons have the same logic – we use the index of similarity and 8 different measures of left-right position, all derived form exactly the same data, in benchmark models that use the main variables that have been defined in existing literature to explain these phenomena. Since everything else is the same except for the measures of political difference, we can compare the performance of the latter by looking at the performance differences of the models based on how well they describe the expected associations in the data.

These four chapters as a whole make an empirically justified case for a pairwise approach to the measurement of party differences. This method constitutes an underutilised way for analysing the structure of political space on the basis of various sources of data, especially individual level data. In many models that require estimates of party differences it outperforms those that are derived from a left-right conceptualisation of political space. This conclusion to a large extent could also be reached by purely theoretical or methodological arguments, but to show is always more effective than to tell. Concepts and theories can always be debated and no method is perfect and therefore to show through practical research examples why and how a measure actually works or performs better

is more convincing than simply making a non-empirical argument that a certain measure should be preferred, although both are equally true.

In sum, whenever we are interested in the inductive analysis of the characteristics of political space or in the political differences between parties and how they relate to other phenomena in political systems, a measure of pairwise difference, which can be easily implemented both for survey research (for mass surveys as shown here, but also for expert surveys) and party manifesto data (in the form of the index of similarity, although further developments of the same principle would also be possible), should be the measure of choice.

Chapter 2

Conceptual Space and Political Space

> A central idea is that the meanings that we use in communication can be described as organized in abstract spatial structures that are expressed in terms of dimensions, distances, regions, and other geometric notions.
>
> – Peter Gärdenfors, *The Geometry of Meaning: Semantics Based on Conceptual Spaces*

> Yet statistics is, by its very nature, best thought of as dealing with the relationships between points in space – back again to geometry, the only adequate intuitive understanding of statistical relations, and in the first place the easiest way to deal with all but the very simplest distance or similarity judgements.
>
> – David Robertson, *A Theory of Party Competition*

When we talk about party politics as a space, we are obviously not talking about a space literally, but we are using what is called a conceptual metaphor (Lakoff and Johnson 1980; Lakoff and Johnson 1999). It is rather common to use our understanding of one domain to structure our thinking about another – the core idea of conceptual metaphor. Spatial relations are rather often transferred to structure our thinking about matters that have nothing to do with space literally. Power and other good things are "up", the future tends to be "forward" and we want to put bad things "behind" us. Inhabiting a three-dimensional physical world where our bodies clearly distinguish between up and down, front and back as well as left and right establishes the perception of space around us as a fundamental cognitive scheme that is used for the conceptualisation of other domains of thought (Gärdenfors 2000; Gattis 2001b). Spatial schemas are automatically acquired through everyday cognition, but must be adapted to different contexts in order for them to be of use for abstract thought and as such they can be used as memory, communicative, and logical structures (Gattis 2001a).

This chapter outlines the theoretical background for thinking about anything, including party politics, through the theory of conceptual spaces, which provides a geometric framework of knowledge representation that subsumes, among other things, conceptual metaphors. The theory of conceptual

spaces gives a general framework for thinking about party politics and allows to systematise and contextualise how the notion of space has been used in political science and how the approach to the analysis of party politics that is the focus of this work fits within it. Having outlined this general framework, it gives an account of how the notion of space was adopted in contemporary politics and political science. We follow the adaptation of the spatial metaphor and outline some of the issues that have arisen along the way. Much of the empirical knowledge about the political profiles of parties, the subject of Chapter 3, has in one way or another followed the general spatial model of which the left-right space is but a small part and which goes back in political science to the work of Downs (1957).

2.1 Theory of Conceptual Spaces

Before turning to the question of how the idea of political space has been used and applied in the analysis of political parties and their interaction, it is necessary to take a step back and consider how we form judgements about objects, including parties, in general and how these can or should be analysed. Such a general framework is provided by Peter Gärdenfors' theory of conceptual spaces (Gärdenfors 2000; Gärdenfors 2014), which is a theory of semantics that is built on geometric structures as a framework for knowledge representation. As we will see later on in this work, it is already in line with how the analysis of party politics has been approached in several respects – certain aspects of this theory correspond with the approach to the pairwise measurement of party differences that is presented and tested in this work, but also with the classical models of the spatial theory of party competition, which have informed almost all of the theoretical and empirical work on party politics over the last three quarters of a century. The theory gives a basis on which to differentiate between the two and forms a common ground that allows us to better understand the distinctness of the two approaches and their relationship to one another.

The theory of conceptual spaces is a general framework about not only how concepts are mentally represented as people make sense of the world, but also about how the same principles could be applied in the design of artificial systems. It is a framework for understanding and learning, a theory about how knowledge is mentally represented through geometric notions like space, dimensions, locations, regions, vectors and other geometric properties. It builds on cognitive psychology and cognitive linguistics (Gärdenfors 2000, section 1.1.1; Gärdenfors 2014, section 1.1), like the classical works of Lakoff (1987) and Langacker (1987). The theory was initially formulated with a focus on

concepts of perceptual objects (Gärdenfors 2000), but it extends to include actions and functional properties (Gärdenfors 2007), as well as adjectives, verbs, prepositions, events, but also how people reach common understandings about the meanings of objects (Gärdenfors 2014).

By focussing on similarity relations in conceptual space, the geometric theory of conceptual spaces distinguishes itself from the symbolic accounts of concepts, which hold that cognitive systems can be described as Turing machines, in which cognition is just computation that involves symbols, and associationist accounts, which focus on the links between information elements (Gärdenfors 2007, pp. 168-169). Ontologically, it considers the meaning of concepts to be located between the "realistic" and the "conceptualistic" accounts. The first understands meaning or truth to be a function of how words are mapped to external objects, the second sees meaning purely as a function of mental structures (Gärdenfors 2014, section 1.2). Meaning as something internal to the mind or as something external. The theory of conceptual spaces does hold that meanings as cognitive structures are mental entities, but that these are formed in an interplay between the mind and the external world (ibid., section 1.2). Through interaction with the environment and with each other – the meeting of minds – people form shared and corresponding geometric mental structures, which establish a cultural common ground, a shared understanding in a certain domain of knowledge (ibid., section 1.5).

The following subsections give an overview of the central building blocks of the theory of conceptual spaces. Those elements are outlined, which are essential for the analysis of party politics. Before moving on to how parties have been conceptualised and analysed in spatial terms, two ideal types of kinds of analyses that one could conduct with respect to politics based on the theory of conceptual spaces are sketched. These will help us to understand better how the notion of space has been used in political science.

2.1.1 Constitution of Conceptual Spaces

Quality dimensions

The notion of *space* in the theory of conceptual spaces should in general be taken literally – it is a space often with the same characteristics as our common sense understanding of physical space. Like physical space, it is structured by dimensions, which in this context are called *quality dimensions* (ibid., section 1.3). A quality dimension is a characteristic that we use to differentiate among objects, it represents a quality of an object. If we think of perceptual objects, then such qualities can be the weight, shape, colour, texture, smell, etc. of an object. The latter thus corresponds to a point

on quality dimensions. Such dimensions can have a continuous structure, which is isomorphic to the number line, or a discrete structure, which divides objects into classes or categories (Gärdenfors 2014, section 1.3).

Quality dimensions can be both innate as well as culturally learned (Gärdenfors 2007, pp. 171-172). Innate dimensions like sensory dimensions are hard-wired into our nervous system and others are added through cultural learning. Even the interpretation of innate dimensions can sometimes be culturally dependent (Gärdenfors 2000, section 1.9). Some, like our perception of physical space, have a fairly accurate internal representation as presumably it gives an evolutionary advantage in interaction with our surroundings. Quality dimensions that have no perceptual correspondence can be added culturally through science, for example the distinction between the weight and the mass of an object (ibid., section 1.9).

Quality dimension can either be *integral* or *separable* (ibid., section 1.8; Gärdenfors 2014, section 2.1). Dimensions are integral when having a value on one dimension implies having a certain value on another dimension. For example with respect to colour, which will be elaborated in more detail below, the dimensions of hue and saturation are related, while the size of an object does not necessarily imply a specific value or range of values on either of those qualities of objects.

Domains and conceptual spaces

In the framework of the theory of conceptual spaces a *domain* is a set of integral dimensions that is separable from others (ibid., section 2.1). A domain can consist of only one dimension or of many. A *property* of an object is information that is related to a single domain; in more geometric terms it is a convex region in a domain (ibid., section 2.2). A convex region can be thought of as s set of points in the dimensional structure of the domain in which all points between any two points A and B also belong to the set. It is defined through the geometric property of betweenness (Gärdenfors 2000, section 1.6).

Following Langacker (1987), domains can be separated into different levels of abstraction (Gärdenfors 2014, section 2.5). Basic domains are those that cannot be defined in relation to any other or which do not presuppose any other, like our perception of space, senses like colour, and sound. Basic domains are related to our bodily experiences and are fundamental for understanding the world. Such basic domains, especially space, are also the source domains of numerous conceptual metaphors, whereby we use structures from those domains to understand and make sense of more abstract phenomena (Lakoff and Johnson 1980).

The domains that we use to form judgements about objects constitute the *conceptual space* that is related to that object. These depend to some extent on context (Gärdenfors 2014, section 6.4.1) and thus the set of domains for an object is not fixed. This is true even for simple physical objects. While all people can perceive the shape and colour of a stone, an artist will additionally judge it by how its material structure is amenable to manipulation – a domain, which is likely not to be present for most people.

Such conceptual spaces are used both for the representation of *single objects* as well as *categories of objects* (ibid., sections 6.2 and 6.3). While a conceptual category as a generalisation is made up of regions in conceptual spaces, a single object is a special case of conceptual categories, where the region is reduced to a point, a vector of coordinates that corresponds to the dimensions of that space (ibid., section 6.5.1). These vectors do not have to refer to real objects and they do not have to contain all the properties of an object. A conceptual space can also contain *fictional objects* (ibid., section 6.5.2). The latter just involves moving to areas of conceptual space that do not contain any real-world referents. In practical terms, there is little difference between the representation of real and fictional objects, as even the representations of objects that actually exist are always partial.

Metric and non-metric spaces

Conceptual spaces, or parts thereof, can either be *metric* or *non-metric* (Gärdenfors 2000, sections 1.6.3, 1.6.4; Gärdenfors 2014, section 2.5.3). A metric space is a space where distance can somehow be calculated, while a non-metric space does not allow for distance calculation. An example of the former would be weight or length, where the dimension corresponds to a number line. A non-metric space would, for example, be a space of kinship relations or the traditional cultural understanding of gender. A space of kinship relations is an *ordinal space*, where one can distinguish between closer and more distant relatives, but it does not make sense to speak about the distance between them in any conventional way. The dimension of traditional gender is a *binary space*. Note that these – continuous, ordinal and binary – correspond to the common measurement scales as used in statistical analyses.

For metric spaces, there are numerous (in principle an infinite number of) ways of calculating distance (Gärdenfors 2000, sections 1.6.3, 1.6.4). The *Euclidean distance*[1] and the *city-block* or

[1] $d(x, y) = \sqrt{\sum_i (x_i - y_i)^2}$, where $d(x, y)$ is the distance between x and y and x_i and y_i are the locations of objects on dimension i

Manhattan distance[2] are the most common ways of calculating distance in metric spaces. Gärdenfors (2000, section 1.8) notes that the Euclidean distance might be preferable for integral and city-block distance for separable dimensions. Both of them are specific instances of the generalised *Minkowski distance*[3], which provides for an infinite number of ways of calculating distance in space. Furthermore, in certain instances it might make sense to weigh dimensions (ibid., section 1.6.4) in distance calculations in order to capture the different importance people might attach to different domains of an object in their similarity judgements (ibid., section 1.6.4).

Distance and similarity judgements

Like possible ways of calculating distance, there are also in principle an infinite amount of ways for mapping distance in space onto similarity judgements. This mapping has been usually conceptualised in psychological literature through some kind of an exponential function[4] (ibid., section 1.6.5). Such a transformation implies that there is a non-linear relationship between distance and similarity. Although theoretically this similarity function, like the distance function, can take an infinite amount of forms, in the end, for each particular research domain, this should be an empirical question.

Two fundamentally different kinds of dimensions

The quality dimensions that structure conceptual spaces come in two fundamentally different kinds – *scientific* and *phenomenal* (Gärdenfors also calls the latter interchangeably as cognitive or psychological) (ibid., section 1.2; Gärdenfors 2007, p. 172; Gärdenfors 2014, section 2.1). Phenomenal dimensions are about the structure of human perceptions, scientific about the representation of concepts within a scientific theory. The former describes the structure of our perceptions, which should have testable consequences for human behaviour. In the latter case, the dimensions are not assumed to have any psychological validity, and are only useful for prediction and scientific analysis. If we are interested in how humans behave, we should focus on phenomenal dimensions, but if we are interested in a scientific description of how the natural world around us operates, we should adopt a scientific approach to conceptual spaces. For certain chemical reactions to occur – how individual atoms interact – it does not make sense to ask what they think about each other, but in order to

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[2] $d(x, y) = \sum_i |x_i - y_i|$

[3] $d(x, y) = \sqrt[k]{\sum_i |x_i - y_i|^k}$

[4] In the form of $s_{ij} = e^{-cd_{ij}^n}$, where s_{ij} is the similarity between points i and j, d_{ij} is distance, c is what is called a sensitivity parameter and e is Euler's number.

understand how humans interact it is unavoidable to analyse what their perceptions and judgements about each other are.

Two telling examples of this distinction are our perception of colour and the physical space (Gärdenfors 2000, sections 1.4, 1.5; Gärdenfors 2014, section 2.1). In physical reality, all spatial dimensions are of equal importance. However, Gärdenfors suggests, due to the effect of gravity on our perception, the vertical dimension is overestimated in our perception and this is a possible explanation of why we perceive the moon to be bigger on the horizon. There is a slight difference between the phenomenal representation of physical space and the scientific representation of physical space.

A more telling example about how the phenomenal and the scientific conceptual space can differ is that of the colour space. Scientifically, the colours we see depend primarily on one dimension – the wavelength of light. However, the human perception of colour has a very different structure. We seem to perceive colour on a circular dimension, which can be represented by a colour wheel. Furthermore, the dimension of saturation can be represented as distance from the centre of the polar coordinates that comprise the colour wheel and the dimension of brightness that is perpendicular to the saturation dimension. Brightness and saturation are related as colours that are close to black and white on the brightness dimension can only have a limited amount of saturation. This means that we find it more difficult to distinguish between colours at low or high brightness. Together, these dimensions can be represented by the colour-spindle (Figure 2.1).

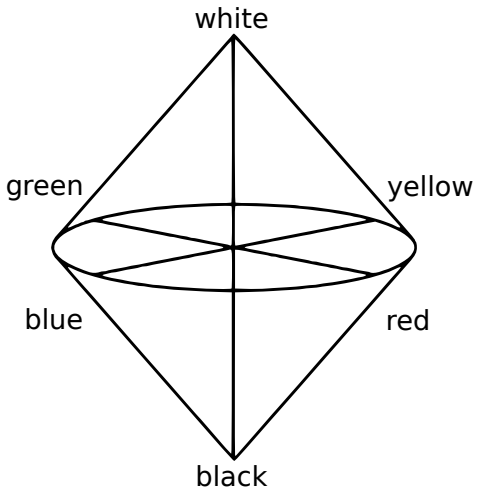


Figure 2.1: **The Colour Spindle.** This diagram represents the three-dimensional perceptual structure of the conceptual space of colour. Adopted from: Decock and Douven (2013).

Before moving on, a note about the ontological status of the dimensions would be necessary. If we are talking about scientific dimensions, then their goal can (but need not) be to describe as accurately

as possible certain natural process that can have absolutely no perceptual or phenomenal reality (e.g. the distinction between weight and mass). Phenomenal spaces, however, are mental constructs, which Gärdenfors occasionally also calls "theoretical constructs" (Gärdenfors 2014, section 2.1), but by this he does not refer to the scientific interpretation, merely to the fact that they are constructs that are instrumental in systematising our judgements and should not be mapped to physical phenomena.

2.1.2 Representing and Analysing Conceptual Spaces

According to this perspective on human cognition, our judgement of similarity between objects is thus a function of how far they are located in the corresponding conceptual space. A judgement of similarity depends on the structure of this space, but it is also the fundamental way of uncovering the latter. Just as our mind arrives through the conceptual space at a judgement of similarity, we can use information contained in this judgement to uncover the structure of the underlying conceptual space. This problem of analysis does not arise for scientific spaces as they are constructed *a priori*, but is a fundamental question if we are working with phenomenal spaces.

For the latter, their structure has to be inferred from human behaviour and the most well-known method for this kind of analysis is multidimensional scaling (MDS) (Gärdenfors 2000, section 1.7; see also Kruskal and Wish 1978; Borg and Groenen 2005). MDS is a dimensionality reduction technique, which works with pairwise distances or similarity judgements between objects. All the distances between n objects can be by definition perfectly represented in $n-1$ dimensions. MDS allows to create lower dimensional representation of the pairwise distances and to compare that to the original pairwise distances in order to evaluate how well the lower dimensional representation corresponds to the initial data. Thus, if all the pairwise distances (or similarity judgements) among a number of objects can be well represented on one dimension, we can conclude that the underlying conceptual space that these judgements come from is one-dimensional. That there is only one quality dimension and a corresponding domain that people use to differentiate between such objects. The nature of the method and its use in the context of party politics will be further elaborated below (see Chapter 3 and 4).

It should be noted here that MDS in its most common applications is aimed at analysing spatial representations of points through perpendicular dimensions, i.e. dimensions that are not related to each other. In this sense, it allows one most readily to analyse the domain structure of a conceptual space (a domain begin made up of one or several interrelated dimensions that are separate from other such dimensions constituting other domains). Therefore, the dimensions that are uncovered

by MDS should be thought of as domains in the terminology that was introduced above, keeping in mind that domains can also consist of a single dimension.

2.1.3 Conceptual Spaces and Party Politics: Two Ideal Types for Analyses

Political parties can also be considered as objects in a certain kind of a space and the difference between parties is thus a function of the distance in that space. Like all other objects, the dimensions and domains that one would use to differentiate among parties are not absolutely determined and they can depend on context. Parties could be differentiated according to their political profiles, but also the style of the rhetoric of their leader, the personalities of their most prominent politicians, their organizational structure, properties of their membership and so on. Some of these – like membership – have quite specific and well defined physical referents, while others, like judgements about party leaders or party politics, are much more abstract and often have only indirect physical manifestations.

If we focus specifically on party politics and if we for the time being set aside all of our knowledge about party research and also bracket the fact that political parties are social constructs, which by that very nature have no complete physical referent (other than the distribution and actions of physical human bodies), there could be two kinds of analysis of the spatial structure of party politics that correspond to these two kinds of conceptual spaces. In order to set the framework for the discussions below, they will be outlined here, even though the discussion above about conceptual spaces already makes them evident.

Scientific analysis of party space

If we adopt the scientific approach, we assume that there is a political space determining the differences between parties existing regardless of how people and politicians might perceive that space. That there is an actor-independent space. This allows us to assume and *a priori* construct the dimension or dimensions that make up this space. We not only can but must determine their content and if there are more than one, then also their relative importance. Having constructed such a space, we can then try to locate parties or voters or both in such a space and try to make inferences about their interaction and behaviour based on distances somehow measured in that constructed space. At no point do we have to consider at depth how people or parties actually perceive each other. We impose a spatial structure on the actors that we want to study, a structure, which could be one of many and the merits of which in comparison to alternative formulations should be an empirical question.

Phenomenal analysis of party space

If we adopt a phenomenal perspective on the analysis of political space, then the steps along the way would in many ways be the reverse. Instead of assuming a certain political space and using that to arrive at the locations of parties and the distances of parties from one another, we would start with the latter – pairwise measures of similarity between parties. As we will see below, such judgements can find applications in many common research questions in political science on their own. However, if we are interested in the political space that these judgements come from, then we would have to analyse them in order to determine what kind of a lower dimensional representation is suitable to account for them and use our prior knowledge and additional methods to determine the substantive nature of that space, i.e. what its constitutive quality dimensions and the corresponding domains refer to in terms of specific political positions and attitudes.

At this point we should note a peculiar confusion with terminology. If we are studying people and how they perceive the world, then the scientifically correct way to analyse that conceptual space, including political space, would be the phenomenal approach, and not the "scientific" approach. The latter is appropriate if we want to represent a phenomenon in a way that is to varying degrees oblivious to any internal representation there might be within the phenomenon itself. For many natural processes and physical objects this makes sense, but for much of human cognition and social behaviour it does not, because such processes are shaped by the representations that people form in social interaction.

2.2 The Left and Right in Politics and Political Science

Having outlined a framework about how to think of conceptual spaces and differences between objects or conceptual categories in the latter, the last half of this chapter gives an overview of how the notion of space and in particular the left-right space has been adopted in political discourse and political science. The argument is that while the traditional conceptualisation of space in the form of the left-right dimension in many ways resembles the scientific approach to conceptual spaces, then the pairwise measurement of differences is well in line with the phenomenal approach to conceptual spaces. In the context of human perceptions, the latter is theoretically more appropriate.

2.2.1 Origins of Politics as Space

The spatial notions of "left" and "right" are much broader than the domain of politics, being related to how we perceive the space around us, and much deeper in a sense as well – it has been suggested that they can even be in tune with certain basic personality traits and brain structure. In contemporary political science it is usually uncontroversial to think of a political system in terms of a left-right space. In political discourse these two terms started out as a reference to a categorical understanding of a political landscape where actors belong to different kinds of groups. And remnants of it are still there – the "wing" in the "left-wing" or "right-wing" still refers to this categorical conceptualisation. Over time, the binary classification of left and right has been stretched into a continuous linear dimension as we know it today.

Although focussing on the use of the terms "left" and "right" in politics, Laponce (1981) gives also a thorough account of how these two notions have structured our thinking throughout history in other domains. Being constituted from opposites as well as including a natural middle point, these notions can perform a variety of functions like juxtaposing, dividing and setting apart (ibid., p. 27), which helps to explain part of their success story. According to his account, they also tap into the very fundamental concept of verticality, a basic idea that has structured most cultures over time. Power and the divine being located up, the vertical dimension is clearly asymmetrical. Verticality maps onto "right" and horisontality onto "left" in the left-right divide, but the latter in the political context does not inherit its severe asymmetry (ibid., Chapter 6).

The left-right metaphor thus has a very deep cultural grounding. Taking this a step further, and perhaps helping to explain why this division has been so popular and so enduring, there is a range of recent and still developing research that links it to basic differences in personality as well as brain structure/function (for an overview, see Jost et al. 2014). Even though this might need to be taken with a pinch of salt, this direction of research has very interesting propositions about how and why this distinction maps onto our very being. This research perspective suggests that the left-right (or the often equivalent, especially in the US context, liberal-conservative) distinction is related to, among other things, system justification (defence of the status quo), resistance to change and acceptance of inequality, sensitivity to threats and danger, openness to new experiences, as well as differences in the activity and structure of certain brain areas that process basic emotions.

Coming back to politics in particular, the terms "left" and "right" entered political discourse at the end of the 18^{th} century in France and established themselves alongside other political labels in the French setting, like "republicans" and "conservatives", "reds" and "whites", as words that referred to

opposing political groups (Gauchet 1996). From France these terms spread over continental Europe and only later to the Anglo-American world (Laponce 1981, Chapter 3), everywhere performing the same function of dividing parties into camps.

With this origin in mind, it has been noted that the left-right spatial metaphor as used in political science was already introduced during the French revolution and subsequent interpretations of it (Sartori 2005, p. 298; Laver 2001, p. 4; Benoit and Laver 2006, pp. 12-13). However, this is a slight misconception. The words "left" and "right" then had nothing yet to do with the left-right spatial dimension that we are familiar with in the political science of today. They were just labels for different groups. Nobody was yet thinking about politics as a continuous dimension and this domain, as far as ideological or political differences were concerned, was categorical. There is no indication of a continuous interpretation of these terms in accounts of the French political discourse the followed the French Revolution (see Laponce 1981; Gauchet 1996).

If we look more generally at some of the earlier writings on political parties (a selected overview is provided by Scarrow 2002), then the idea of differences and conflicts of interests or principles between groups was also there from the very beginning of the discussions on parties and continued to be present throughout the 19th century. Yet, there is no evidence that such differences were conceptualised as distances on a continuous spatial dimension. They were just distinctions, which were tied to different social classes and groups with different positions in society and diverging and conflicting interests (e.g. Guizot 2002; Morse 2002). The idea of parties as organisations that are related to social classes or groups with clashing interests is also evident in the two most known major works on political parties from the end of the 19th and the beginning of the 20th century by Michels (1915) and Ostrogorski (Ostrogorski 1902a; Ostrogorski 1902b). Neither of them used the spatial metaphor in the sense that we are familiar with in contemporary political science.

Michels (1915), as much as he focuses on the interaction between parties, talks about kinds or types of parties related to groups of people, classes or castes (e.g. working class, aristocracy, bourgeoisie), with certain positions or interests in society. In a handful of cases across his work, he does use the terminology of "left" and "right", seemingly interpreting this in spatial terms and not just as groups called "left" and "right", but this is far from being a prevalent mode of thinking about political difference in his text. The latter, for him, is tied to distinct ideologies like anarchism, conservatism, communism and socialism, which are not interpreted and compared geometrically.

In broad terms, the same is true for Ostrogorski. His ideas of political conflict and struggle, of political difference, are related to conflicts between social classes (e.g. aristocracy, middle class,

working class) and ideologies (e.g. liberalism, socialism, conservatism), especially in the case of Europe (Ostrogorski 1902a), or different issues like slavery or business interests in the case of the Unites States (Ostrogorski 1902b). Thus, it seems that at the turn of the 20th century, thinking of political landscapes as spaces where distances between points on a line represent political or ideological differences was not part of the discourse of political science. The left-right in this context was functioning as a binary or a categorical quality dimension.

2.2.2 The Spatial Models of Politics

What we are familiar with today began to emerge in the first half of the 20th century. The first well known and explicit interpretation of party difference through a continuous spatial dimension dates from the middle of the first half of the 20th century, and made its way into mainstream political science in the second half of the century through the popularization of the work of Downs (1957), who introduced the spatial metaphor of difference between parties as distance between points in space. He adopted the metaphor from the economists Hotelling and Smithies (ibid., p. 115), who had used it to make sense of ideological differences between parties in the United States. The original objective of Hotelling in formulating his theory of spatial competition between firms (Hotelling 1929) was the problem of stability in a duopoly. He used the example of two sellers positioning themselves in physical space in order to attract the maximum number of customers and drew a parallel to the American political system with two parties competing for votes in a political space. Smithies (1941), who was writing in the wake of Hotelling, maintained and elaborated the mapping of such ideas of competition from physical space to political space.

This work not only brought the idea of a continuous political space that is structured by one (or few) ideological dimensions to political science, but much more. The idea of parties located on a continuous spatial dimension was seamlessly taken up by political scientists studying party politics in the 60s and 70s. Thus, for Robertson (in one of the first empirical studies into political space) thinking in terms of space and spatial dimensions was a "natural and efficient way of dealing with a complex phenomenon" and something that was basic to "our conceptualisation of political competition" (Robertson 1976, p. 55). Sani and Sartori in their study of party system polarisation had adopted the left-right spatial dimension, the simplest version of the spatial metaphor, together with its implications automatically and without comment (Sani and Sartori 1985), despite the fact that Sartori in his earlier ground-braking work on party systems had some justified reservations against the Downsian adaptation of the unidimensional spatial metaphor (Sartori 2005, pp. 290-291). Also von

Beyme considered the left-right dimension a "valuable orientation aid" (von Beyme 1985, p. 136). All of these studies happened before any systematic inductive analysis into the full structure of political spaces had been performed and all of them effectively assumed that the left-right spatial metaphor is correct or at least good enough. In subsequent research, the spatial metaphor in the form of the left-right dimension, if not a multidimensional space, has become the *de facto* unquestioned way of thinking about politics.

But there was much more built around the idea of parties being located in a continuous ideological space. Expanding on the initial ideas of Hotelling, Smithies and Downs, which brought together both candidates (or parties) and voters in one framework, an extremely broad and theoretical research tradition developed under the label of "spatial theory" (see e.g. Enelow and Hinich 1984; Enelow and Hinich 1990). The spatial theory of politics seeks to be a "complete scientific theory" (Enelow and Hinich 1984, p. xi) about how candidates or parties and voters behave, not just about how political space is perceived. It is a formal theory that seeks to create an internally (mathematically) consistent set of propositions about the nature of political behaviour. The idea of political space, where preferences are a function of distance (ibid., Chapter 2-3), is only a small part of this endeavour, even if it is the "foundation of the spatial theory" (ibid., p. 162). It also includes a range of assumptions about what motivates the behaviour of actors in this framework, but also about the institutional context in which political competition takes place, as well as issues of information costs and uncertainties in judgement and perception (ibid.). It is a theory that tries to include in one framework all the major possibilities and important characteristics of politics – the real and the potential.

While the theory of conceptual spaces provides just a general framework for thinking about and analysing the differences between parties as objects of perception, the spatial theories of politics, which encompass both the interaction of parties and voters in a political space, contain a whole range of assumptions and constraints also about the actors themselves in order to make the theory and its implications consistent in the light of what we assume about the functioning of representative democracies. Such assumptions include, but are not limited to, simple majority rule, voting according to one's (single-peaked) preferences, the existence of ideal points for issues, i.e. positions that are preferred above all others, the existence of the median position, etc. (see e.g. ibid., Chapter 2). The initial versions of such spatial theories of political behaviour assumed a unidimensional space and even though later iterations have looked into multidimensional settings, the simpler versions are still primary as they are more coherent and stable.

Naturally, this kind of formal idealisation of political behaviour was met with criticism about the tenability of its assumptions. In one of the earliest critiques, Stokes (1963) notes that the assumptions such theories make about the unidimensionality of political space, its fixed structure and the common frame of reference for both politicians and voters are out of sync with reality. There have been many notable attempts to both suggest alternative frameworks for political behaviour to account for the deficiencies of the general spatial theory (e.g. Rabinowitz and Macdonald 1989) as well as attempts to reconcile accounts that are based on the spatial logic of voting with the non-political considerations of voters (Merrill and Grofman 1999; Adams 2001) in order to bring the spatial theory to be more in line with reality.

If we think about the distinction between phenomenal and scientific spaces brought out above (see section 2.1), then the whole logic of political space here follows the latter logic – a certain framework, a political space with all its corollaries, is assumed in order to model politics. And indeed, given the ubiquity of the spatial language surrounding politics and the deep roots of the left-right divide, this can be justified to a certain extent. A set of issues or issue dimensions is taken as given and all analyses – whether empirical or formal – follow from that.

2.2.3 Dilemmas of Political Space

This section focusses on some of the issues of political space not necessarily related to the full formal model, but which have been raised in the spatial analyses of party politics. They are particularly relevant for the current work, which aims to show the benefits of thinking of political space not as a scientific but as a phenomenal space, something that should be studied and determined empirically and not assumed.

Inductive or *a priori* spaces

Although from the perspective of studying perceptual spaces, as outlined above, one could argue for a bottom-up inductive analysis of political space, it is still common to argue that this space is assumable and that there is merit in doing so. The distinction between an inductive and an *a priori* approach (Benoit and Laver 2006, pp. 50-52; Benoit and Laver 2012; De Vries and Marks 2012) to political space vaguely reflects the distinction between a phenomenal and a scientific space. In the latter case the political scientist assumes a certain number of dimensions with a certain content and then proceeds to locating parties on them and using these locations for conducting whatever analysis comes after. In the former case the political scientist does not assume anything about a particular

political space and strives to determine its characteristics from empirical data. If we would want to understand what is going on in the minds of people, to create a model which would capture or explain their behaviour, the preference should be for an inductive approach. The *a priori* approach has been argued for, however, for the reason that it saves us from potentially uncomfortable and problematic interpretations of spatial dimensions that can arise from inductive analyses (Benoit and Laver 2006; Benoit and Laver 2012).

Dimensions as ideology

If we talk about political space and its dimensions, we usually talk about ideology, something broad and general structuring the more specific elements of a political landscape, specific political issues. This connection between issues and ideology is already present in the work of Downs (1957, pp. 97-98), who emphasises the distinction between policy and ideology. It is also present in later iterations of the general spatial theory, which assumes that ideological labels are used by people to guess the positions of parties or candidates on particular issues (Enelow and Hinich 1984). Ideologies are short-cuts that help voters so that they do not have to connect every single issue with their own world view (Downs 1957, p. 98), but they also must be related to specific policies if they are to reliably work as short-cuts (ibid., p. 102). An ideology should therefore be a generalisation of the political profile of a party, something that structures a party's positions across many issues. Ideology or the dimensions of political space, although not directly seen, should in principle be observable if we look at parties' positions on particular issues. Some issues appear together more and some less and this is how ideology should be empirically observable. However, if we look at the issue positions of parties (Albright 2010) in terms of how they covary, then it can be hard to see a simple or a general ideological structure.

Different spaces in different places

Political space can be different depending on where and how we look at it. It can be different for different actors, as well as in different places and different times. Not only is there ample evidence from empirical studies that the content and dimensionality of political space can change across countries and over time (e.g. Huber and Inglehart 1995; Benoit and Laver 2006), but it has also been suggested that the space, which exists in the minds of parties and the space that exists in the minds of the electorate are different.

Franzmann (2011, pp. 331-332) makes a distinction between programmatic heterogeneity and

ideological polarisation as two different kinds of divergence between parties that happen in different arenas. The first concept belongs to the supply side of politics, the parties, and refers to the total programmatic differences between parties. The second refers to how various issues relate to politically salient social cleavages and gives rise to ideological polarisation within the political system and the electorate more generally. It is thus more related to the demand side of politics. Such a distinction is also echoed by Stoll (2010b) and Stoll (2010a), who differentiates between a party and a voter defined space, which, depending on the level of aggregation of conflicts, either refer to issue spaces or ideological spaces.

Most empirical research does not effectively recognise this distinction, although it has been noted that data on party differences gathered from different kinds of sources correlate with each other to varying degrees. For example Dalton and McAllister (2014, p. 776) show how mass, expert and self-placement sources about party positions all correlate highly among each other, while data from party manifestos shows much lower correlations. This can indicate that there is a difference between how people think of parties and what is contained in party manifestos, although it has also been suspected to be due to measurement error (ibid.). The fact that different sources of data might be measuring different things has also been suggested by Meyer (2013, p. 31).

Ideological dimensions and the number of parties

Furthermore, empirically speaking, the nature of political space is related to the number of parties that inhabit that space, as well as the broader social context. If we try to measure party differences and how ideological dimensions manifest in the latter, we see, somewhat counter-intuitively, that the number of ideological dimensions that can structure empirical political spaces is dependent on the number of parties in the system. The latter determines how dimensions of ideology align if parties want to differentiate themselves from each other on them. There can be a range of possible positions on issues, but in the end for us to see a position, somebody, a party, has to take a position on it.

Taagepera and Grofman (1985) have argued that the number of parties in a system is related to the number of issue dimensions in that party system, an association echoed earlier and later in such works as Lijphart (1984) and Lijphart (2012). This ties the ideological dimensions in a society – issue cleavages – to the number of parties. In general, this is simply the acknowledgement that the structure of party systems reflects the issue structure – the conceptual space for political differences – in a society. The logic of this argument is that a certain issue structure in a society "generates" a certain number of parties and Taagepera and Grofman (1985, p. 350) speculate that the choice

of an electoral system, that can accommodate more or less parties, might also be influenced by this environment. As they put it – parties minus issues equals one.

But there is another way that the number of parties and the number of dimensions is related, which is evident if we take a more data-centred perspective on the problem. If we talk strictly about how parties differentiate among themselves, then empirically speaking the first question should be, how can we see this difference? And here it should be kept in mind, that the dimensions on which parties are differentiated depends on the number of parties that we are looking at. Stoll (2010a) elaborates on this important point about the structure of political spaces being related to the number of parties that inhabit them. She emphasises that if we think from the perspective of party positions, then the dimensionality of political space is "the number of salient conflicts that are linearly independent given party positions on those conflicts, where two conflicts are independent or orthogonal if parties' positions on one cannot be predicted using their positions on the other" (ibid., p. 409). She calls the latter the effective dimensionality.

This effective dimensionality is dependent on the number of parties that inhabit the space, as the differences between n objects can always be perfectly represented on at most $n-1$ dimensions (see section 2.1.2). Thus, a space that is needed to represent the differences between parties cannot have an effective dimensionality that is greater than the number of parties minus 1. This reflects the conclusion of Taagepera and Grofman (1985) noted above. In the case of two parties, the difference between them can be represented on a line – a single dimension.[5] Whatever the number of issues that the parties differentiate themselves on, one side will always be associated with one party and the other side with the other party (or else there is no differentiation). All issues are aligned in the same direction and so there can be only one "visible" dimension of ideology where one party is on one side and the other party is on the other. In a similar way, all the possible differences between three parties can be perfectly represented on at most two dimensions and so forth.

2.3 Thinking through Space about Spaces

If we take the theory of conceptual spaces as the framework though which to make sense of judgements of similarity between objects as the general background, then this suggests that we should approach political spaces as phenomenal spaces. What in the end determines the interaction between

[5] This is why it might have seemed reasonable to assume a unidimensional political space in the case of two party systems like in the United States or the United Kingdom.

parties and between parties and voters is how they perceive each other. These perceptions should matter for how parties decide to cooperate and how voters should decide to vote, should they care about political issues in their decisions at the ballot box.

The spatial notions of left and right have a long cultural and political history and therefore it is only natural they they were taken up by political scientists as a tool for making sense of politics. In their first incarnations in politics it seems that they were treated more as a categorical dimension while in political science they have been treated as a continuous dimension. But somewhere along they way it seems that it faded from attention that if we are interested in political behaviour, we should also be interested in how the relevant actors see the space. Instead, the core of this kind of thinking in political science has been built up on empirically tangent assumptions, according to a logic that follows more from a scientific and less from a phenomenal approach of political space.

In addition to studies which try to reconcile the ideas of the spatial model of political behaviour with empirical reality, we are thus left with a range of issues that remain unresolved, but which could have easier solutions if we keep in mind the distinction between a phenomenal and a scientific space. The preference should be for inductive analyses, especially if we are interested in how people actually think about politics and not in what makes our formal models consistent or simple. If people's or parties' positions on issues do not unproblematically collapse into simpler dimensions, then perhaps this is simply a fact of the reality of politics. Maybe parties and maybe voters do have diverging understandings about the differences between themselves. And in line with how similarities between any kinds of objects are perceived, the ideological dimensions that we are able to see and discern do depend on the number of "objects" we are looking at and the latter in turn is related to the number of general social cleavages.

If we think of how the notion of space has been used in political science, then no matter what position we take, it is evident that there are many unresolved issues. From this more abstract level concerning the nature of political space they have carried over into many aspects of the empirical analysis of political space, which we turn to next.

Chapter 3

Empirical Knowledge of Political Space

> In this context, position and the three dimensions were beside the point. Not, of course, that the category of space had been abolished. When I got up and walked about, I could do so quite normally, without misjudging the whereabouts of objects. Space was still there; but it had lost its predominance. The mind was primarily concerned, not with measures and locations, but with being and meaning.
>
> – Aldous Huxley, *The Doors of Perception*

Thinking about the similarities or differences between anything, including parties, might well be impossible save in spatial terms, but this does not mean that there is only one way to do this. The spatial framework that we use can either be our own creation or created from within the processes that we are interested in. The former, scientific, approach is common if we are trying to create systems of meaning to explain phenomena that are themselves inherently "meaningless", i.e. not animated by mental representations that are created within. In this case we presume a certain spatial structure to represent a phenomenon and judge it by the usefulness for whatever purpose we have in mind. The latter, phenomenal, approach is appropriate if we want to understand human perception or judgement. If we study party politics, then what matters is how parties themselves or voters perceive and understand politics. Thus, all else being equal, a phenomenal approach, one that does not prescribe or presume any kind of a political space, but seeks to capture as best as possible how this space is represented for the actors involved, should be preferred in party research.

Thinking about parties, and consequently measuring party politics, has in a way been unwittingly stuck between these two approaches. On the one hand we have the left-right spatial metaphor, which has deep and broad cultural roots and is related to the vary basic ways we understand the world or even to how our personalities are built. This basic line of division does have a phenomenal reality. But much of our thinking about parties, especially the general spatial model, has been built around this metaphor without problematising its nature and without fully accounting for its limitations.

Even if it does exist in the minds of people, it is amenable to change over time and across different contexts and the political difference between parties can be evaluated across numerous other quality dimensions. It both does and does not make sense to assume the existence of such an overarching political dimension.

Even if in the analyses of party politics there is a strong sub-current that is focussed on political space as it might occur to the actors that are involved within that game, much of the empirical applications of measures of party politics are working with a version of the left-right dimension. This reflects the dominant currents in the spatial theory, but is also the fact that the left-right dimension is a simple solution. It is much easier to work with a unidimensional measure that can to some extent be assumed. All of this follows the logic of the "scientific" analysis of political space. But how would a phenomenal analysis of party politics look like, one which would apply some of the main methods that have been used elsewhere for the analysis of such space? It turns out that it would not be much more complicated, and would in many ways be more meaningful and revealing.

When in the previous chapter we focused on how to think about political spaces and how this has carried over into politics and political science, then the focus here is on how party politics has been actually measured. This chapter zooms in on the empirical analysis of party politics, with a particular focus on the manifesto data set as this has been overwhelmingly the primary source of information about the political profiles of parties and the spatial measures of party position. In the last part of the chapter we take a step back and suggest a way of measurement that follows from the phenomenal approach to thinking about party politics, which is more in line with how we should conduct an analysis of political space according to the theory of conceptual spaces. It introduces the pairwise measurement of party difference, both in the context of the manifesto data set as well as other data sources. The chapter ends with outlining a framework of comparison for the traditional spatial approaches for the measurement of party politics and the pairwise approach that will guide the research design for the rest of the chapters of this work.

3.1 A Plethora of Sources

We can think about political space in whichever way we want to, but what matters in the end is how we actually measure it, what information these measures contain and how useful they are in explaining something that we are interested in. Empirical data about political spaces can come from various sources, all with their relative advantages and shortcomings (for an overview, see

Volkens 2007). In broad terms we can divide them in two – ones that have asked someone's opinion about a party and ones that have tired to infer the position of a party from its behaviour, i.e. the behaviour of its politicians. With regard to the former, there are mass surveys, which have asked people to locate parties usually on a left-right dimension (e.g. Schmitt et al. 2015), but rarely other dimensions, and expert surveys (Benoit and Laver 2006; Bakker et al. 2015), which have asked mostly political scientists to characterise parties on various dimensions. Some have also asked party members their opinion about political positions (e.g. Weßels 2011) and there have been various voting advice applications – software that tells people which party they match to in terms of their political preferences – where experts and party members have cooperated in determining the positions of parties on certain pre-selected issues (e.g. Trechsel and Mair 2011; Krouwel, Vitiello, and Wall 2012).

Asking party members about their political preferences would of course come closest to understanding the political profile of a party, as in the case of mass and expert surveys about parties we are looking at the impression of "external" actors about parties. However, if we are looking at voting behaviour, it would be crucial to know not so much how parties see themselves, but how voters perceive the conceptual space that is used to differentiate between parties. Regardless of how we evaluate these various sources of survey information, they all share one fundamental shortcoming – they are temporally limited, because they are only available for one time point and cannot be retrospectively constructed, as it does not make sense to ask people now about the political profile of a party in the past (Meyer 2013, p. 32). Even if the person did exist at that moment in the past, time has diluted and eroded the memory. Thus, for more extensive analyses that span across time, party behavioural data should be more feasible.

Behavioural sources of information can in turn be broadly divided into two – voting behaviour in parliament and the way that parties have articulated their political profiles in manifestos or other documents. If we look at how members of different parties either vote together or not, it is possible to infer what the locations of these parties are on an ideological dimension. This has been extensively studied through what is called roll-call voting in the United States (Poole and Rosenthal 2000). These are votes for which it is known how each member of the legislature voted. However, this tends to work only in contexts where we have two parties and no coalition governments, in which case voting will reflect coalition-opposition status and not actual ideological position (Meyer 2013, p. 31). Thus, party manifestos are, at least as far as analyses across countries and time are concerned, the most well suited for the analyses of political space. They do have their problems, some of which will

be discussed below, but for certain analyses simply no other data is or could be available.

Party manifestos are a unique source of information about party politics in several respects. They are regular statements of party policy that are attributable to the whole party (Budge and Farlie 1985, pp. 272-273; Robertson 1976, p. 72) and the only message that is in the full control of the party (ibid., p. 12). It is a more or less uniform genre for the expression of political preferences across settings, at least in comparison to other possible textual sources of data. Manifestos are not only the most direct single source of data about the overall political profile of a party, they are also the only source of data that is available for any kind of analysis of party politics that stretches out into the past and covers numerous countries and time periods. It is therefore not surprising that the latter are widely used for both human and computerised analyses to retrieve information about the political profiles of parties.

In the case of computerised analysis of manifestos as text, word frequencies are used to determine the positions of parties on a dimension. Such approaches are fast and reliable, because computers are able to process textual data fairly quickly and always do it in the same way. However, of the two computerised solutions that have been suggested in political science, one still requires human input in the form of benchmark texts that have to be defined and which determine the dimensions that are analysed (Laver, Benoit, and Garry 2003) and the other is limited in the sense that parties have to be analysed across elections (thus assuming that political space does not change over time) and can be done so on only one dimension (Slapin and Proksch 2008) (thus effectively assuming that there are no more relevant dimensions).

As far as the current state of research is concerned, human content analysis of manifesto data is still the most realistic and feasible source of data about party politics, at least for more extensive analyses. There have been several projects over the years, which have performed content analysis of party manifestos or other documents, like the Euromanifestos Project (Schmitt et al. 2016) or the Regional Manifestos Project in Spain (Alonso, Gómez, and Cabeza 2013), in order to determine where parties stand on issues or ideologies, but the one that by far stands out, that has been and is likely to be the most prominent source of data for the analysis of party politics, is the manifesto data set (Volkens et al. 2015a; for the most comprehensive overviews of this long-running project, see Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013). The single measure for party left-right positions that has been used by far the most in empirical research – the RILE left-right index (outlined in Laver and Budge 1992) – comes from this data set, as well as numerous potential alternatives that have more often been suggested than actually used.

Regardless of the nature of the analysis that we aim to conduct, we are unlikely to be able to get around the manifesto data set, if for no other reason, then simply because of its scope and availability. The empirical analyses below will also use this data set. The following sections will give a longer overview of this data, as well as the various measures of party position and difference that have been devised from it, as this is the *de facto* state of the art in the vast majority of party research.

3.2 Measuring Political Space through Party Manifestos

The manifesto data set is currently maintained under the project titled Manifesto Research on Political Representation or MARPOR[1] and has been previously known as the Manifesto Research Group (MRG) and the Comparative Manifestos Project (CMP), dating back to the late 1970 and, among others, the work of Robertson (1976). We refer to it here as simply the manifesto data set, although during its long history it has had various names. The version of the manifesto data set (2015a) that is used in this work covers 56 countries, 673 elections 988 parties and 3924 instances of coded documents (Volkens et al. 2015b). It is a type of content analysis (Krippendorff 2004; Budge and Bara 2001a) that is applied to the election manifestos of parties, each statement in which is coded into one of an array of issue position categories. This coding scheme is brought out in Table 3.1.

The coding process is fairly straightforward and involves two steps (for more details, see Werner, Lacewell, and Volkens 2014). First, the manifestos are split into quasi-sentences, which contain a single political statement and are no longer than one natural sentence (and in many cases shorter). This is called "unitising". Thereafter, each statement is coded into one of 56 substantive policy categories. There is an additional category for quasi-sentences, which have no political meaning or cannot be captured by the coding scheme. The values of the categories in the dataset for each party are thus proportions, relative attention devoted to each issue in the whole manifesto.

The category scheme has stayed almost unchanged since the beginning of the project. The only major alteration has been the addition of two categories in the domain of economy in 1989 to accommodate certain new issues that had arisen during the 1980s (Volkens 2001, p. 36). Although there are a few instances, where most of the content of a party manifesto has fallen into the empty category, thus indicating the possible inadequacy of the coding scheme, in most cases this proportions is rather small (the average across the whole data set is less than 5%). This assures us that the coding

[1] For a comprehensive overview of the project, related publications as well as the data, see the web page of the project: https://manifesto-project.wzb.eu/.

Table 3.1: **The Manifesto Coding Scheme.** This is the coding scheme as elaborated in version 4 of the coding handbook. In a later version, some of the 56 categories (e.g. democracy or multiculturalism) have been split up into subcategories. These are not shown here as the data for them is available only for the last few years. "Pos." refers to positive positions regarding the issue and "neg." to negative.

Domain 1: External Relations	
101	Foreign Special Relationships: Pos.
102	Foreign Special Relationships: Neg.
103	Anti-Imperialism: Pos.
104	Military: Pos.
105	Military: Neg.
106	Peace: Pos.
107	Internationalism: Pos.
108	European Integration: Pos.
109	Internationalism: Neg.
110	European Integration: Neg.
Domain 2: Freedom and Democracy	
201	Freedom and Human Rights: Pos.
202	Democracy: Pos.
203	Constitutionalism: Pos.
204	Constitutionalism: Neg.
Domain 3: Political System	
301	Decentralisation: Pos.
302	Centralisation: Pos.
303	Gov. and Admin. Efficiency: Pos.
304	Political Corruption: Neg.
305	Political Authority: Pos.
Domain 4: Economy	
401	Free Enterprise: Pos.
402	Incentives: Pos.
403	Market Regulation: Pos.
404	Economic Planning: Pos.
405	Corporatism: Pos.
406	Protectionism: Pos.
407	Protectionism: Neg.
408	Economic Goals
409	Keynesian Demand Management: Pos.
410	Economic Growth
411	Technology and Infrastr.: Pos.
412	Controlled Economy: Pos.
413	Nationalisation: Pos.
414	Economic Orthodoxy: Pos.
415	Marxist Analysis: Pos.
416	Anti-Growth Economy: Pos.
Domain 5: Welfare and Quality of Life	
501	Environmental Protection: Pos.
502	Culture: Pos.
503	Equality: Pos.
504	Welfare State Expansion
505	Welfare State Limitation
506	Education Expansion
507	Education Limitation
Domain 6: Fabric of Society	
601	National Way of Life: Pos.
602	National Way of Life: Neg.
603	Traditional Morality: Pos.
604	Traditional Morality: Neg.
605	Law and Order: Pos.
606	Civic Mindedness: Pos.
607	Multiculturalism: Pos.
608	Multiculturalism: Neg.
Domain 7: Social Groups	
701	Labour Groups: Pos.
702	Labour Groups: Neg.
703	Agriculture: Pos.
704	Middle Class and Prof. Groups: Pos.
705	Minority Groups: Pos.
706	Non-Econ. Demogr. Groups: Pos.

Source: Werner, Lacewell, and Volkens (2014)

scheme is general enough to capture the vast majority of the political content of party manifestos across time and countries.

3.2.1 Shortcomings of Manifesto Data

Although the data set is by far the most used source for party policy analysis, it nevertheless has several shortcomings that should be acknowledged. The specific problems that are associated with not the data set as a whole, but its most used part – the RILE left-right index – are discussed later as they are of a different nature.

Problems of reliability

The most prominent issue that is usually brought out in relation to the data set is that of reliability. The process of deciding which issue category a quasi sentence belongs to inevitably involves human judgement and therefore we might suspect that there can be problems of inter-coder reliability

(Mikhaylov, Laver, and Benoit 2012). Different people have diverging judgements and there will always be a certain amount of coding error in human coded content analysis. The project uses only one coder per manifesto and therefore direct assessments of the reliability of the data are not available. Various measures of reliability have been suggested for the dataset that tap into something other than coding error (Budge et al. 2001; Klingemann et al. 2006), thus they should not be taken as direct evidence for the absence of the latter.

In order to counter the problem of coding error, the project has developed strict coding procedures. The coders are required to take initial coding tests, which are assessed for their reliability, and during the coding process they are in contact with project supervisors (Volkens, Bara, and Budge 2009). The test results (Volkens 2001) as well as some early evidence in inter-coder reliability in this kind of data generation (Robertson 1976, p. 78) suggest that the issues of reliability of the data might not be as severe as it has been suggested Mikhaylov, Laver, and Benoit (2012), who preform a replication of the coding procedure, which is structurally in several respects different from the coding procedure of the manifesto project.

Issues with source documents

One of the criticisms of the manifesto data set as a whole has been that some of the source documents that have been coded have not been party manifestos and are thus inadequate to represent the party. For example, this has been the case for some German (Janda et al. 1995, p. 187) and Danish (Hansen 2008) manifestos. Although these are certainly problematic cases, as far as we know, they are still overwhelmingly the exception rather than the rule. They might create outliers or wrong conclusions about single parties that are few and far between, but overall there is no reason to assume that anything major is wrong with the source documents.

The saliency misunderstanding

One of the most common arguments against using the manifesto data for determining party positions on ideological dimensions is that the data set represents the saliency (relative emphasis) of issues and not position and is thus not suited for studying the latter (see e.g. Dalton 2008, p. 904). This distinction comes from saliency theory, which speculated that parties do not confront each other on positions that are diametrically opposed to one another, because more or less everybody agrees on what is acceptable or not, and therefore parties just emphasise different issues in competition with each other (for an early overview, see Robertson 1976).

Indeed, the manifesto coding scheme contained a number of categories, which were explicitly defined through opposing categories (e.g. "military: positive" and "military: negative"), while others were seemingly without a position (e.g. "freedom and human rights"). Some authors have emphasised this distinction in the context of saliency theory (e.g. Stoll 2011), even though the truth is that all the coding categories are positional. This is evident if one reads the definitions of the categories carefully ("freedom and human rights" means support for freedom and human rights and that is a particular position on that issue) and in a recent version of the coding instructions have been explicitly categorised as such (Werner, Lacewell, and Volkens 2014).

Furthermore, the empirical status of saliency theory is not as strong as some of its proponents might assume. It has been noted that the major predictions of the theory fail to materialise empirically (Dolezal et al. 2013). Furthermore, if we look back at the early writings that laid the groundwork for the manifesto data set, we can see that the initial choice not to code favourable and unfavourable mentions of some of the issue categories separately, i.e. to code them as non-positional and thus seemingly in line with saliency theory, had nothing to do with the latter, but was implemented in order to have a higher level of reliability in the data (Robertson 1976, p. 78). The argument that the data set measures saliency and not position is thus not on a very firm ground.

3.3 Manifesto Data and Left-Right Positions

The manifesto data set has been a prolific source of data for the construction of measures of party ideological position and the next sections will introduce some of the more outstanding of those. Most attention will be devoted to the RILE left-right index of the dataset, as this has been and still is the most widely used measure not only out of those that have been generated from this data, but probably out of all measures of party position that are out there. The later sections will introduce the suggested alternatives to the RILE index that are supposed to overcome some of its numerous deficiencies.

In addition to the selection of measures that are discussed below, there are also several attempts to apply factor analysis to the data (most notably Gabel and Huber 2000), but since it is evident that factor analysis models do not provide good and parsimonious summaries of the data (see Robertson 1976; Albright 2010) and that the data itself due to its nature is poorly suited for factor analysis (van der Brug 2001), these are not considered here. This is not to say, of course, that the problems of the following indices are necessarily of a lesser degree.

3.3.1 The RILE Index

By far the most common way to use the manifesto dataset (for arguably 80%-90% of the users of the data) is the RILE left-right index (Budge 2013b), which is constructed deductively, relying mostly on certain *a priori* assumptions about the meaning of left and right. Thus, this index most clearly follows the "scientific" logic for the analysis of political space. The RILE index is presented as the most important outcome of the dataset (Budge and Klingemann 2001).

Part of the rationale behind the index is maintaining compatibility with already existing research practices. At the time the index was proposed (and this is still true today), most empirical analyses relied on one dimension. With few exceptions this was the left-right dimension (Laver and Budge 1992, p. 16). In this context, the purpose of the RILE index was to provide "comparable cross-national and cross-temporal left-right scores" (Klingemann et al. 2006, p. 64). In addition to compatibility with previous research and alleged generalizability, a unidimensional left-right measure was claimed to be better than other alternatives because of the possibilities to visualise data (Laver and Budge 1992, p. 23).

An initial version of the index was constructed by Laver and Budge (ibid.) and more thorough accounts of the logic of the index have been given elsewhere (see e.g. Budge and Klingemann 2001; Klingemann et al. 2006). In addition to considerations of applicability and established research practices, the rationale for the index itself was and is theory-driven. The prime consideration for choosing categories in the initial version of the index as either left or right was "a priori theoretical coherence" (Laver and Budge 1992, p. 26) and "the actual policy positions of the actors [were] not considered until after the dimension [had] been defined" (ibid., p. 25), even though the index builds on a country by country factor analysis of the manifesto data Budge, Robertson, and Hearl 1987. The theoretical basis for left and right categories stemmed from ideological writings as they had accumulated by around 1900 (Budge 2013b, p. 2). Thus, the "justification for the RILE and the basis of its construction [...] [was] not that its constituent policy categories [went] together empirically across the data, but that highly influential early modern theorists put them together in their political analyses" (ibid., p. 3).

According to this general logic, the fully developed version of the index chose two sets of 13 categories out of the 56 included in the coding scheme to represent left and right policies (see Table 3.2). The fact that a measure constructed thus can be "applied" comparatively across time and countries (Budge and Bara 2001b, p. 59; Budge 2013b, p. 4) has been seen as a great asset of the index. This is juxtaposed to "empirically derived and contingent" measures (Klingemann et al. 2006,

p. 111), which change as patterns in the data change and which are thus not "applicable" across countries and over time.

Table 3.2: **The RILE Index.** The table shows the sets of left and right categories that are used to calculate the index. The numbers refer to the codes of the variables as they are used in the dataset.

Left		Right	
103	Anti-imperialism: Positive	104	Military: Positive
105	Military: Negative	201	Freedom and Human Rights
106	Peace: Positive	203	Constitutionalism: Positive
107	Internationalism: Positive	305	Political Authority
202	Democracy	401	Free Enterprise
403	Market Regulation	402	Economic Incentives
404	Economic Planning	407	Protectionism: Negative
406	Protectionism: Positive	414	Economic Orthodoxy
412	Controlled Economy	505	Welfare State Limitation
413	Nationalization	601	National Way of Life: Positive
504	Welfare State Expansion	603	Traditional Morality: Positive
506	Education Expansion	605	Law and Order
701	Labour Groups: Positive	606	Social Harmony

Source: Volkens et al. (2015b)

The RILE index is calculated in the following way. First, the proportions of party manifestos that are covered by the "left" set of categories and the "right" set of categories (both shown in Table 3.2) are determined separately and second, the "left" proportion is subtracted from the "right" proportion. This results in a measure that could in principle range from -100 (the whole manifesto is devoted to "left" categories) to +100 (the whole manifesto is devoted to "right" categories). The actual range is more limited, since the "left" and "right" category sets cover less than half of the total set of coding categories and manifestos have a considerable amount of content outside of these categories.

The index can be expressed with the following formula, where N_R is the number of quasi-sentences that have been coded under one of the "right" issue categories, N_L is the number of quasi-sentences that have been coded under one of the "left" categories and N is the total number of quasi-sentences in the manifesto. I use this notation, which is slightly different from what is usually presented, as it will be more compatible with the notation of some of the other indices that are introduced the the rest of this chapter.

$$RILE = \frac{N_R - N_L}{N} \tag{3.1}$$

It is crucial to note here that the final left or right position of a party combines two separate assessments – the leftness and the rightness of a manifesto. Therefore, the interpretability of the index, i.e. what it is possible to know about what it measures by the values it ascribes to cases,

depends on how the two assumed poles of the index are related to each other. If the sets are empirically positively correlated, then the assumption that they represent opposite ends of a dimension is violated and the meaning of the values is problematic. If there is no substantively significant correlation between them, then a value of the index, especially in the mid-range of the scale, can result from an indeterminate mix of "left" and "right" proportions and it is not possible to meaningfully tell how left or right a party is. Only if there is a notable negative correlation between the sets, would it be possible to conclude that a party on the left or right side of the index is "left" or "right" according to the meaning presumed by the index. There is evidence that this structure assumed by the RILE index is only very weakly observable in the data and for certain sets of cases like Central and Eastern-European countries is not observable at all (Mölder 2016).

The wide use of the data and the index corresponds to the amount of criticism and scrutiny the RILE index has received. An overview is provided by Gemenis (2013). In general, both issues of reliability and validity of the dataset as a whole and of the RILE index have been raised, as was already discussed above. Much of the case for the index has relied on face validity (Budge et al. 2001), but certain problems with the latter have also been the source of some of the criticism towards the index. Although it has been noted that the left-right movements of parties reported by the index have closely corresponded to historical events in the post-World War II period (Budge and Bara 2001a, p. 15), there are also some issues with regard to interpreting party shifts on the RILE index (Budge and Klingemann 2001, p. 48; Franzmann and Kaiser 2006). Problems of placement have been brought out in the case of radical right parties (Klingemann et al. 2006, Chapter 4), but also for parties in Greece (Dinas and Gemenis 2010; Gemenis and Dinas 2010) as well as Italy, Austria, Belgium, France, the Netherlands, Denmark, Germany (Pelizzo 2003).

Surely, issues of validity have been defended by proponents of the index. Correlations with other measures like expert surveys (Budge and Bara 2001b; Chapter 4 Klingemann et al. 2006) have been cited as evidence for the validity of the index as well as simply the fact that the index has been widely used (*sic!*) for various purposes (Budge and Bara 2001b; Budge 2013a, p. 2). Only the use of data, however, and a correlation with other measures that accounts for less than half of the variance (see Benoit and Laver 2006, pp. 92-93) are not really convincing evidence that the measure is valid.

3.3.2 Proposed Alternatives to the RILE Index

As the RILE index has been the most popular use of the manifesto data and as most analysts are well aware of at least some of the criticism that has been pointed out, there is a range of measures

that have been proposed and that should improve over the flaws of the RILE. The following sections will introduce the most notable such alternatives.

Kim and Fording RILE (KFRILE)

Perhaps the simplest alternative was suggested by Kim and Fording (1998) and Kim and Fording (2002), who use the same subsets of categories for left and right as the RILE index, but employ a different logic for calculating the position of a manifesto. While the RILE index normalises the counts of political statements that belong either to the left or the right category with respect to the total number of political statements in a manifesto, the measure proposed by Kim and Fording does it with respect to the total number of political statements in the two subsets of left and right. The advantage of this is that it evaluates position with respect to the supposedly ideological part of the manifesto and not the manifesto as a whole. It is thus not dependent on issue categories that are ideologically irrelevant, which is one of the problems of the RILE index. The value of the index is calculated as shown in equation 3.2.

$$KFRILE = \frac{N_R - N_L}{N_R + N_L} \tag{3.2}$$

Logit RILE (LRILE)

An improvement over the kind of measure Kim and Fording suggest is proposed in turn by Lowe et al. (2011), who address the problem of the marginal effect of additional statements. Both the RILE and the KFRILE measures assume a fixed marginal effect for an additional political statement that is coded in the data set. Lowe et al. (ibid., p. 130) propose a decreasing marginal effect model, which entails working with proportions (of one category or set of categories to another) and a logarithmic scale. Their proposed measure, adopted into this left-right context, takes the form of a logarithm of the ratio of the number of right statements to left statements (0.5 is added to each count for methodological reasons (ibid., p. 132)). This logit scale has no predefined end points and any position on it is theoretically possible, given an extreme count in one of the categories. In their article they propose 13 different scales for various issue pairs in the manifesto dataset. This article focuses on its application to the same left and right categories that were defined for the RILE index. Thus, using the above notation, the formula for a logit RILE index would be as shown in equation 3.3.

$$LRILE = \log \frac{N_R + 0.5}{N_L + 0.5} \tag{3.3}$$

Prosser left-right index (PLR)

While these two alternative approaches focused primarily on how to calculate the positions of parties on an assumed scale in terms of its content, there is also a range of approaches, which concentrate on how to determine the issue categories that should be used for estimating positions from the data, thus taking a more inductive approach to the measurement of political position. For this purpose Prosser (2014) takes the logit scale (equation 3.3) as the most valid way of constructing left-right positions from the manifesto data, but focuses on a method to select the appropriate categories form the data set. He uses exogenous correlations between issue categories and the relevant scale (correlation between an item and a scale that excludes the latter, starting with a naive initial scale and then adding and dropping issue categories) to select the appropriate categories (ibid., p. 95). In an elaboration of the Lowe et al. (2011) measure for salience, he uses the ratio of the logarithm of the total number of statements in an issue category (plus one) to logarithm of the total number of statements in a manifesto (plus one) to recalculate the raw category values in the manifesto data set (Prosser 2014, p. 96) for the purposes of evaluating these exogenous correlations. This ensures that they are comparable across manifestos of different length. Components that correlate with a scale are added to it and those that do not are removed iteratively until a stable equilibrium for the scale is reached. This results in a general left-right scale. Prosser uses the same procedure to construct separate economic and social scales. For consistency, we focus here only on the left-right dimension.

Franzmann and Kaiser left-right (FKLR)

Also focusing on how ideological issue categories should be selected out of the whole data set, Franzmann and Kaiser (2006) propose a measure for party positions on a left-right dimension, which changes across countries and time. The corresponding calculation of party positions involves the following steps (ibid., pp. 167-174). First, a linear regression is used for each of the 56 coding categories, with the values of the categories as the dependent variable and party dummies as independent variables, to select the categories that most distinguish between parties. These are assumed to be the ideological categories. This is done separately for all party systems. Depending on which parties emphasise which issues, they can then either be classified as left or right. Categories that do not differentiate between parties are classified as valence issues. Thus, the whole range of categories in the manifesto data set is taken into account.

The final position on the left-right dimension is calculated similarly to the RILE index – the difference between the right position scores and the left position scores is divided by the sum of

the position scores plus the valence scores (Franzmann and Kaiser 2006, p. 173). This is shown in equation 3.4. R, L and V refer to right, left and valence scores across all the issue categories that have been thus identified. The scores themselves are calculated from the values of the issue categories in the data set by subtracting the lowest score for a category across the parties at an election. The ideological position of a party at an election is a moving average with the two adjacent elections taken into account. Using this method, party positions have also been calculated on separate economic and social dimensions (see Franzmann 2009).

$$FKLR = \frac{R - L}{R + L + V} \tag{3.4}$$

Jahn left-right (J)

Although partially written as a critique of the Franzmann and Kaiser measure, Jahn (2010) proposes a very similar approach to estimating the positions of parties on a left-right dimension. Jahn uses Norberto Bobbio's theoretical account of the left-right dimension (Bobbio 1996) to determine *a priori* the core issues that relate to each of the poles of this dimension. This is the part of the ideological dimension that he assumes. Multidimensional scaling (MDS) is then used to determine the location of these assumed core issues on the dimension. Thereafter, Jahn uses regression to select the time and country specific elements of left and right (those that correlate highly with the core dimension). Another MDS is applied to this new set of issues to determine their location on the final form of the dimension. The positions of parties on the left-right dimension are constructed as the sum of the values of the issue categories in the manifesto data set each multiplied by their locations determined by MDS as shown in equation 3.5, where LR_{core} refers to the set of categories that are assumed, LR_{extra} to those determined by the regressions and S to the corresponding locations determined by MDS.

$$J = \sum LR_{core} \times S + \sum LR_{extra} \times S \tag{3.5}$$

Elff economic left-right (EELR)

The final two measures considered here are methodologically much more intricate and thus it is not possible to concisely or formally describe the mechanism that leads from the manifesto data to the final estimate of ideological positions. The following only conveys their overall logic. Elff (2013), in his proposal for a left-right measure, starts with the fact that positions in an ideological space,

considered as latent variables, are different from the frequencies of words or sentences in a manifesto and proposes a measurement model that is able to take this difference into account and go from the latter to the former. His proposed model also includes a dynamic component that captures the possible change of positions over time. It assumes that parties, unless they are new parties, do not establish their positions *tabula rasa*, but use their previous position as a point of departure. Elff estimates the positions of policies as well as actors in a policy field separately from the party positions that are reported in the manifesto data set. He employs this model on a rather restricted sets of coding categories (Elff 2013, pp. 224, 228) to estimate party positions in a uni-dimensional economic space and in a two dimensional liberal-authoritarian – permissiveness-traditionalism space. For consistency, we focus here only on the left-right dimension.

König et al left-right (K)

König, Marbach, and Osnabrügge (2013) also propose a dynamic latent variable model based on the manifesto data, which additionally incorporates information from expert surveys into the estimation process. One of their main concerns that had not been addressed by previous measures is cross-country comparability. They use a Bayesian framework to incorporate prior information (expert assessments) about the shape of the latent policy space and a logit transformation (Lowe et al. 2011) of the data, excluding some of the categories of the manifesto coding scheme. Furthermore, they assume that parties take "the same position in their first EP election as in the previous national election" and that "parties with the highest relative seat share gains in their country take the same position in the next election" (König, Marbach, and Osnabrügge 2013, p. 9). They conclude that their method provides plausible estimates on the left-right ideological dimension with reference to convergent and construct/face validity. Their estimates seem to be similar to expert judgements, but very different from those of the RILE.

3.4 Pairwise Comparisons and Political Space

All of the methods for estimating party positions that were described above assume something about the political space that they aim to study before any analysis has been done. It can be the number as well as the meaning of dimensions like in the case of the RILE index, but can also concern just the dimensional structure of the space. Constructing a unidimensional measure effectively assumes that one dimension is an adequate representation of politics. This is a hallmark of how "scientific" and

not "phenomenal" measures are constructed. Below we introduce how a measure of party politics from the latter perspective would look like and how it would fit into the same frameworks of analysis that have been applied in political science using our common left-right measures.

The story of political space here has so far had one very clear direction. From the prominent idea of a left-right dimension we have moved to its measurement through the most common and used source of data and the most preferred measure and have covered the main proposed alternatives to the latter. For all intents and purposes, this is the core of the mainstream of the analyses of party politics. If you randomly pick an analysis that has dealt with party politics in the last two decades, chances are high that it will be based on the manifesto data set and that it uses the RILE index. This does not mean that there are no alternatives. Alternatives which do not only substitute it with another left-right measure, as we have considered above, but also alternatives, which go beyond the left-right paradigm in general and touch upon something much more basic on the political landscape. The left-right paradigm is focussed on locating parties on an ideological dimension and comparing them through the latter. An alternative approach, which has mostly been overlooked in political science, would be to compare parties to each other. This brings us back to the suggestion that if we are interested in phenomenal spaces – conceptual spaces as they are perceived by actors themselves – then the way to study them would be through pairwise judgement of similarity (see section 2.1.2).

Pairwise comparisons and the measurement model of comparative judgement have been applied in psychology and related disciplines for some time (originating from Thurstone 1927), long before the theory of conceptual spaces was taking shape. Measuring either directly or indirectly the difference between pairs of objects has usually been used not as an end in itself, but as a means to understand the nature of the cognitive space that these comparisons come from. In party research, however, both of these steps are of importance. In many cases, like when studying polarisation or coalition formation, the political differences between parties are all we are interested in and the analyst does not ultimately care about the nature of the space that these differences come from. The latter is used simply as the means to locate parties so that differences between them can be measured. Only if we are interested in the nature of the underlying space, its substantive content in terms of the quality dimensions that separate parties from one another, do we need to go further than pairwise assessments of difference.

The following looks at how the method of pairwise comparisons has been applied within and around political science. It focuses at more length on the specific issues that one has to tackle when applying this to obtain individual level estimates of party difference or estimates that are derived

from party manifestos using the manifesto dataset.

3.4.1 Applications in Political Science

The method of pairwise comparisons has been used to study the perception of colours, sounds, preferences, candidates and even of entire nations. Together with multidimensional scaling (MDS) it is the method of choice for the study of the structure of conceptual spaces as it does not impose any characteristics and restrictions on this space (Gärdenfors 2000). In this respect, it is especially suited for the study of political spaces, as the number and content of dimensions that should be used for the positioning of parties changes over time and countries and thus it is problematic to have pre-defined measurement scales that would fully capture these spaces. Pairwise comparisons of parties would not only provide an estimate of the difference between any two parties, but would allow analysing and determining the underlying structure of the complete political space.

Psychological analyses of the perceptual or phenomenal spaces of thinking about certain objects, about the psychological structure of how people form judgements regarding the similarity of objects, are routinely performed using pairwise comparisons (ibid., section 1; Borg and Groenen 2005, pp. 9-13; Borg, Groenen, and Mair 2013, pp. 7-19). The preferred strategy for such analysis is strictly empirical, i.e. free from substantive assumptions about the nature of the space imposed by the analyst. This technique has been applied to study the similarities between colours, sounds and facial expressions (Borg and Groenen 2005, pp. 63-80) as well as people's perception of countries (Kruskal and Wish 1978, pp. 30-35) or the similarities between salient political issues (Marcus, Tabb, and Sullivan 1974).

An important distinction in this context is how one obtains data about judgements of similarity – whether it is done directly or indirectly (Borg, Groenen, and Mair 2013, Chapter 4). In the first case, when studying perceptual spaces, a direct measurement means actually asking people to evaluate the similarity or difference between objects. In the case of parties this would involve directly asking people to evaluate the differences between parties. In the second case, one would use some other measure as a proxy for information about the actual differences one is interested in. For example, in the context of analysing people's perceptions of parties, one could use differences in probability to vote or thermometer scores as a source of information about how people perceive party differences. For an accurate depiction of political perceptions, direct data should be preferred over indirect data.

As far as research into political parties (or similar actors like candidates in elections) is concerned, however, there are only a few isolated instances both on the supply (political parties) and the demand

(electorate) side where this method has found application. In an edited volume by Budge, Crewe, and Farlie (1976) several authors explored the dimensionality of political spaces as they might indirectly (i.e. using proxy measured for perceived similarity) appear to voters or how one might derive them from party behaviour using multidimensional scaling. Thus, Rusk and Borre (1976) analysed the perceived political space in Denmark using thermometer scores, concluding that it used to be one-dimensional, but had become two-dimensional. Damgaard and Rusk (1976) also looked at the Danish case, but focussed on using MDS on party similarity determined from parliamentary voting patterns. Looking into the French case, Mauser and Freyssinet-Dominjon (1976) and how individuals are ranking political parties or their leaders, applied MDS to conclude that the French political space is two-dimensional. Also, Inglehart and Sidjanski (1976) apply MDS to analyse the relationships between attitudes towards parties and issues in Switzerland to conclude that the political space in Switzerland is, surprisingly, three-dimensional. Such concentration of these kinds of analyses in one volume is the exception.

Indirect pairwise comparisons and MDS has been also been applied in the study of party identification as well as individual candidates in the United States and Britain (Rusk and Weisberg 1972; Rabinowitz 1978; Shikiar 1974; Katz 1979), but also Poland (Cwalina and Falkowski 2015). Listhaug and Macdonald (1990) used MDS on thermometer scores for parties in 6 European countries with an emphasis on visual representation and not the study of the underlying space as such. Virtually the only example of direct demand side measurements of party difference that has used MDS is a study about the political landscape of Hungary on the eve of the first free elections in 1990 (Forgas et al. 1995), which used direct pairwise assessments of similarity between parties and MDS to analyse the perceived political space.

In party research more specifically, pairwise comparisons together with MDS has been used in a few isolated occasions to derive lower-dimensional representations of the differences between election manifestos (van der Brug 1999; Vries 1999; Teperoglou and Tsatsanis 2011). It has found much more thorough application in the analysis of the difference structure between parties on the basis of mass media data (Kriesi et al. 2006; Bornschier 2010b). For the most part, pairwise comparisons have therefore not been used as a source of information in themselves, but as an intermediate step for further analysis of political space.

Coming back to the distinction between direct and indirect measurements, using media data as well as using party manifesto data are indirect ways of measuring how parties differ from each other. Parties after all are also people – politicians who interact with each other on the basis of judgements

they form about one another. A direct way of analysing the political profiles of parties would therefore be to survey politicians themselves. However, this approach shares the same limitations as mass surveying (see section 3.1) and it is not a surprise that it has not found much application. The benefits of textual sources of data, which we assume reflect the political profiles of parties and the relationships between which reflect the ways in which politicians from different parties perceive one another, outweigh their limitations. It should be kept in mind still that this is but an approximation and not as good as an ideal direct measurement would be.

3.4.2 Manifesto Data and the Index of Similarity (SIM)

If we want to measure the similarity judgements of individuals, then this is rather straightforward. We should just ask them. If we would try to measure the similarity between two manifestos in general or on the basis of the manifesto data set, then the options here are not that obvious. The current work will focus on a way of measuring the difference between manifestos that has been called the "index of similarity" and which echoes many other studies into similar problems that have been conducted before.

Sigelman and Buell, in a study about issue convergence in U.S. presidential campaigns (Sigelman and Buell 2004), use articles published in newspapers during 11 presidential campaigns to see how much presidential candidates address the same issues. In order to measure what they call convergence between the attention profiles of candidates – the overlap in the proportions of attention devoted to certain issues, they propose a measure of "total block distance between a pair of attention profiles, i.e. the sum of the absolute differences between them" (ibid., p. 653). Such a measure, when scaled to range from 0 to 100, shows how much similarity there is between the issue profiles of a pair of candidates. Even though they refer to it among other things as "block distance", this measure can be interpreted as a measure of similarity (or overlap) between the issue profiles of candidates. Following Sigelman and Buell, the same measure is also used by Kaplan, Park, and Ridout (2006) in the context of U.S Senate campaigns and by Dowding et al. (2010) for the study of policy agendas in Australian politics. The same measure is applicable to the complete political profiles of parties as represented by their election manifestos and is thus of particular relevance if we are interested in or cannot get around the use of manifesto data.

Franzmann, with reference to Duncan and Duncan's discussion of indexes of segregation and especially what the latter call an index of displacement (Duncan and Duncan 1955, p. 211), has suggested the use of the same index of similarity (Franzmann 2008; Franzmann 2013) to measure

party differences on the basis of manifesto content analysis data. The index of similarity in this case has been calculated as the sum of the absolute differences between the coding categories for a party pair. The same method to calculate the difference between parties has also been separately used to characterise party policy differences and change in the case of Estonia (Mölder 2013). The same (Vries 1999) or a similar (van der Brug 1999; van der Brug 2001) step has also been used not as an end-measure, but as an intermediate stage before downscaling the data with MDS.

The manifesto dataset gives the breakdown of a manifesto according to the proportion of attention that is devoted to 56 different policy categories. The index of similarity calculated therefrom has an intuitive and straightforward interpretation – it can be scaled to range from 0 to 100 and interpreted as a proportion overlap between the political profiles of two parties. Mathematically, this index is equivalent to a measure of city-block distance in a 56 dimensional space and can be represented as follows (see also (Franzmann 2008; Sigelman and Buell 2004):

$$S = \frac{200 - \sum_{i=1}^{56} |c_{i1} - c_{i2}|}{2} \tag{3.6}$$

where S denotes the programmatic overlap or similarity between a pair of parties and c_{i1} and c_{i2} refer to the proportions of manifestos of the two parties that were devoted to each of the 56 policy positions in the manifesto data set. For some purposes it might be more suitable to express the value of the index not as similarity, but as difference. In that case the index would take the following form:

$$D = \frac{\sum_{i=1}^{56} |c_{i1} - c_{i2}|}{2} \tag{3.7}$$

where D denotes the difference between two manifestos on a scale from 0 to 100.

The problem of weights

One objection to using all of the issue categories of the manifesto coding scheme would be that obviously not all policy areas are of the same importance. Certainly national security or the economy tend to be more important than culture or minority groups. If different issue categories are indeed of different importance then this would imply that one would have to select which issues are important at which moment in time in which party system for which party and assign corresponding weights. Neither of those options are feasible, because such information simply does not exist. But fortunately the situation is not that hopeless.

If we assume that the manifesto length each party gets to use for a given election is at least to

some extent limited – not a very unreasonable assumption – then this problem is not as severe as it might appear. If manifesto length is limited and if different interests within the party compete for that length, then the distribution of relative emphases in the manifesto is likely to be in line with the importance of these issues for the party. If a party spends half of the manifesto on national security and none of it on the welfare state, it is justified to suspect that the former is much more important to the party than the latter and that this relative importance is reflected in the proportion of the manifesto that is devoted to the categories. Therefore, the manifesto data set is most likely to some extent already weighted – by the parties themselves.

The problem of similarity

It was brought out above (section 2.1.1) that judgements of similarity are a non-linear function of distance in space. If we look at the left-right measure above and how they have been applied in empirical analyses (see the chapters below) as well as the index of similarity, then they effectively assume that the distance that is measured is (linearly) equivalent to similarity. What kind of a similarity function would perhaps be more appropriate in this context is an empirical question that must be resolved elsewhere. The analyses that follow will therefore also assume a linear mapping between the two.

The problem of distance

The index of similarity is based on city-block distance, even though there is an infinite amount of other distance metrics that are possible, no just the Euclidean distance. The choice between Euclidean and city-block distance is not an unknown issue in political science and it has been noted that the use of the city-block metric is more appropriate when the dimensions are separable and the Euclidean distance is more appropriate when they are not (Benoit and Laver 2006, p. 27). The same has been noted about the analysis of quality dimension in conceptual spaces (Gärdenfors 2000, section 1.8). It is the position here that across the whole range of issues that are included in the manifesto data set it is fair to assume that issues are separable and thus is it appropriate to use the city block distance.

If we keep the way that the index of similarity is constructed in mind and look back at how all the measures of left-right position outlined above have used the manifesto data to determine party positions, which can be then used to calculate the distances between parties, a sharp contrast should be evident. Constructing a measure of ideological position, to some extent depending on the index,

assumes the adequacy of the dimension. It forces us to select certain categories that should matter, to assume a way to aggregate those categories into a position, and in many cases to make several further assumptions about the nature of the data. Many things are done to the data on our way from raw data to a measure of position and from position to a measure of difference.

The index of similarity by comparison assumes almost nothing on its way from data to estimates of difference. It does use the city-block metric of distance instead of other possible options, and a one to one correspondence between distance and difference, but that is it. And it uses all the issue categories of the manifesto data set, instead of selecting just a few that should matter. This should already start one thinking about the benefits of the index. If it comes from the same source, but uses more data and does not try to reduce a 56-dimensional space into a 1-dimensional space before measuring the distance between objects, then chances are that in the end it captures more information than the assumption-heavy and reductionist alternatives. This is, fortunately, an empirical question, which will be dealt with in further parts of the this work.

3.5 Making a Case for the Pairwise Approach

When we are thinking of difference between parties as distance in space, we are not just using a conceptual metaphor, we are referring to the basic structure of how the differences between any objects are conceptually represented. Difference is distance in space – in mental space, the dimensions of which correspond to the domains and dimensions that we use to differentiate between objects. If we are interested in assessing how different any two perceived objects are, we should uncover and follow that conceptual structure which is used in that particular setting. While the structure of how we perceive some of the physical properties of objects is immutable as it is hard-wired into our perceptual system, the conceptual space of more abstract, socially constructed concepts like parties is culturally contingent. Even if something like the left-right structure, whether categorical or continuous, has structured our thinking about political parties since their inception, it does not mean that this is the only dimension or the only relevant dimension that people or politicians use to think about parties. It is a simple and convenient analytical device, but there is no guarantee that it will give us the full or accurate depiction of how political difference are understood. In order to uncover the structure of the latter, we should use what has been recommended for the study of such phenomenal spaces – the measurement and analysis of pairwise comparisons, which is compatible with any underlying spatial structure that people can use to differentiate between a set of objects.

The argument here in the end is that one kind of a measure – pairwise comparisons – is able to give us better information, is for certain purposes a better measure overall. That it is more compatible with the structure of the underlying concept that we are aiming to capture. In short, that it is more valid. Some of this validity is evident from the more abstract discussions that have preceded and will be repeated below. Some can only be evident, if we compare these different measures in action. The next sections will thus also clarify what validity should mean and how it should be assessed.

3.5.1 Question of Validities

Validity is a concept that has many flavours, one with a long and debated history, especially in psychological research (for an overview, see Strauss and Smith 2009). Adcock and Collier (2001, p. 530) have counted 37 different adjectives that have been attached to the term and even though they distil the core of the concept into three types, it perhaps makes sense to keep in mind first and foremost the simple yet vague idea that a valid measure is a measure that captures something that it is supposed to capture (Carmines and Zeller 1979, p. 17), that captures what is in the concept that we want to measure (Adcock and Collier 2001).

Adcock and Collier (ibid.) outline a framework for the construction of measures that goes from the abstract concept through the systematised concept to measures and specific indicators. Validity should be thought of in that framework. The background concept is the general phenomenon that one would be working with, which in the case of political science often involves essentially contested concepts like "democracy" (ibid., p. 532). Concepts, the structure of which is not in place and that can take on many different meanings that are irreducible. The whole process must then start from fixing the background and the systematized concept that are to be the basis of whatever is to be measured.

The background concept here is the idea of political space – a certain set of quality dimensions that people use to differentiate between parties. It is not up to the analyst to assume what this space is in order to derive valid measures, but a valid measure would be a measure that is in line with the structure of people's thinking. Conceptualisation is not something that is here separate from and prior to measurement. A valid measure in this sense would be a measure that is able to accommodate any possible structure people might use to differentiate between parties and not one that assumes a certain conceptual structure.

So even before we get to such questions as content or construct validity, which deal with measurements that have already been performed, it would be possible to theoretically argue that estimating

the difference between parties in pairs, whether on the individual level or on the party level, is a more valid measure because it is more in line with the background concept – the idea of political space that can take many different forms across different contexts – than the idea of measuring that space along one ideological dimension. A pairwise measure works for any political space, because parties are compared to each other and not some pre-given benchmark, which might not be in line with that space. The latter aspect also ties in with the problem of context specificity that Adcock and Collier (2001, pp. 534-535) bring out. They note that many concepts one might look at in political science can vary in their meaning across different settings. Political space – the quality dimensions that people use to differentiate between parties – certainly is one such concept. But as noted above, for a pairwise measure as opposed to a "scientifically" derived measure this is not an issue.

But there is a further complexity involved with the concept of political space and its measurement. A majority of the measures that are constructed and used are based on the assumption that political spaces are measurable on the left-right dimension. And even though we know that political spaces are more complex in reality, it is to some extent reasonable to make this assumption, because of the deep and long history of the left-right metaphor in political discourse. Maybe something resembling a left-right dimension is there in the minds of politicians or voters when they make judgements about who to vote for or who to coalesce with and maybe that is enough? Maybe differences on that dimension work and we would not need anything else? This is why we need to consider the measures themselves and how to evaluate the validity of something that has already been measured. When what was above focussed on the two upper rungs of the ladder of conceptualisation-measurement, the sections below will go over how to assess measures among themselves in order to outline the general logic of the chapters that follow.

Face validity

Before we get to the trinity of content, convergent and construct validity, we should perhaps stop on one of the most common ways the above-mentioned measures of political position have been validated. This is "face" validity – an assessment of whether the measure "looks like" it measures something that it is supposed to measure (Carmines and Zeller 1979, p. 53). This strategy is employed for the RILE index (Budge et al. 2001), as well either explicitly or implicitly for many of the alternatives that were covered above (e.g. Kim and Fording 1998; König, Marbach, and Osnabrügge 2013; Franzmann and Kaiser 2006).

This might work with measures of left-right position as we have a rather good general under-

standing of the political developments of countries and the general political profiles of parties as they have changed over time. But one should still keep in mind that there is a Rorschach test element in there as well – a matter of subjective judgement of whether we notice the resemblance to something or not. Furthermore, this is a strategy what would not work that well for a pairwise measure, as we are no longer talking about the location of a single party within a pre-defined political framework but the relative distance between two parties across the whole possible political space.

Content validity

Coming back to the framework of Adcock and Collier (2001, p. 537), they define content validity as the "the degree to which an indicator represents the universe of content entailed in the systematised concept being measured." In short, it is a question about whether everything that should be included is included, and nothing that should not be included is not included. From the measures that were brought out above, the ones by Jahn (2010) (partially), Prosser (2014) and Franzmann and Kaiser (2006), for example, have focussed on the mechanism of empirically selecting which issues categories in the manifesto data set should be measured for a left-right dimension and which should be left out, thus addressing the problems of content validity. But the question here is much broader, because issues unrelated to left-right divisions can also meaningfully distinguish between parties.

Similar to the question of whether the concept is in line with the measure that was discussed above, this is something that we can judge already here, without moving further. If we ask people to place parties on a left-right or any other pre-given dimension, then we force them to think in these terms and we get measures only for that quality dimension. This will not reflect the total set of dimensions that people might use to differentiate between parties otherwise. The same is true if we use the left-right dimension to align parties on the basis of their manifestos. Furthermore, many of the measures based on the manifesto data set that were discussed above focus only on a subset of the whole range of issues that are included. Thus, they are by definition partial. It is not hard to see how a pairwise judgement of an individual or the index of similarity in the case of the manifesto data set by definition captures more political content than the other measures that are considered here.

Convergent/divergent validity

Convergent validity looks at how a measure is related to other measures that are supposed to measure the same thing and divergent validity concerns the question of how measures that should measure different things are unrelated (Adcock and Collier 2001, p. 540; Carmines and Zeller 1979, p. 54).

A special case of this is criterion validity whereby a measure is assessed through comparing it to something that is considered a correct measure of the concept in question (Adcock and Collier 2001, p. 537). With regard to the latter, it has been noted that it is problematic in social sciences, because this comparison is hard to find "true" measures that can serve as benchmarks for comparison (ibid., pp. 537-538).

Nevertheless, this is a common way measures of party policy have been validated (Meyer 2013, p. 43) and with regard to the measures that were discussed above, this strategy has been applied for example by Kim and Fording (1998), Jahn (2010), and Franzmann and Kaiser (2006) using various sources of data. A special case of criterion validity has been the practice to compare estimates from party manifestos to expert surveys (e.g. Lowe et al. 2011). It has been argued that the latter provide a privileged source of information about party politics and should be used as a benchmark for the validation of other measures (Benoit and Laver 2006, p. 3).

The idea that one measure can serve as the benchmark for another or that a certain measure has privileged access to the truth assumes that it has no fundamental flaws and that the two measures, the benchmark measure and the one to be validated, are comparable. And for expert surveys, making that assumption should not be that automatic, as they certainly have their problems (see e.g. Volkens 2007). It is therefore not that easy to determine whether the lack of convergent validity really means a lack of validity or indicates something else.

Construct validity

The third strategy that one could employ is construct validation (Adcock and Collier 2001, pp. 542-543), which should be preferable over convergent/criterion and content validity in the social sciences (Carmines and Zeller 1979, p. 22). It has also been pointed out that construct validity is a unifying form of validity that encompasses content and criterion validity (Strauss and Smith 2009, p. 7). What it boils down to is whether "a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts (or constructs) that are being measured" (Carmines and Zeller 1979, p. 23). In broad terms, construct validation thus refers to the performance of variables in models. If we have different concepts that are related to each other, then this relationship should remain visible if we use different measures for one of the concepts. In the context of statistical analyses, this possible difference in the validity of various measures can be expressed in model fit and the strength of associations (Adcock and Collier 2001, p. 543).

One of the main preconditions of construct validation is the existence of a "theoretical network

that surrounds the concept", which would allow to "generate theoretical predictions which, in turn, lead directly to empirical tests involving measures of the concept" (Carmines and Zeller 1979, p. 23). One of the weak points of this strategy can be that that there are no well developed theories in social sciences (Strauss and Smith 2009, p. 9). But it has also been noted that it is not necessary to have formal and fully developed theories for construct validation, just enough theoretical prior knowledge about a phenomenon to outline theoretically derived hypotheses, i.e. relationships (Carmines and Zeller 1979, p. 24), that one could expect.

If we look at how various measures of party position have been applied in practical research, then even if we do not have strong theories in every case about how the political profiles of parties should be related to other phenomena, there is a broad range of analyses that have tested possible associations and that could be used for comparing the measures to each other. This is certainly true for coalition formation, where there is a strong consensus that political differences should be related to the likelihood of a coalition forming. In other areas like party system polarisation and party political change, there is less consensus over possible associations, but enough of prior research that would allow for comparison. If one measure captures political differences better than another, then, all else being equal, this should be seen in models when we look at model fit or the strength of associations. Thus, through convergent validity it is possible to compare how well various measures capture the political differences between parties. Taking all of the above into account, this is the strategy that is used in three of the four chapters that follow.

3.5.2 Logic of the Analyses

If we ask people to judge the similarity of all parties in pairs (Chapter 4) then such pairwise comparisons represent the totality of that particular (effective) political space and methods like multidimensional scaling can be used to see if and how this space, how the relationships between parties in that space, can be represented in lower dimensions. If lower dimensional representations are feasible, and if they show a structure that is broadly in line with what one could expect from that political system, we know that the approach has validity. Furthermore, if we focus on variation between individual representations and not just the aggregate structure that averages across all individual assessments and we see that different people have similar representations, we would know that there indeed is a certain common understanding, a common conceptual space that people share to make sense of party differences.

Furthermore, if we want to know how pairwise thinking can outperform thinking along a left-

right dimension, we could ask how different assessments of distance are in line with people's actual or intended behaviour. People can place themselves on a left-right dimension and thus we can know how far they are from all of the parties. Or we can ask them how far they are from each party separately, without specifying any dimension. These different assessments of distance can be compared with how likely a person says they are to vote for a party. As far as political considerations play a role in voting, the better measure should be more in line with voting intention.

The last three chapters zoom in on the manifesto data and the index of similarity. Chapter 5 focusses on party system polarisation, Chapter 6 on coalition formation and Chapter 7 on how parties change their political profiles. All of these are phenomena, for which the measurement of difference between parties is essential and their positions on a left-right dimension are of secondary importance. Furthermore, most of the analyses in these three domains have employed thus far the RILE left-right index. Although one could say that research into these three phenomena is at various degrees of maturity – coalition formation has perhaps been most systematically studied and there is most consensus about the explanation of the phenomenon, while polarisation and party change show less certainty over what should be related to the variable of interest and how – we have rather clear theoretical and reasonably clear empirical expectations across the three topics about what a basic model should look like.

Therefore, all of these chapters will follow the same structure. First, the state of the current research is elaborated and core variables, which are related to the variable of interest, are outlined. Because political differences are among the *explanans* in the study of coalition formation, less attention is paid to other possible predictors of coalition formation. For polarisation and change, political differences are the *explanandum* and therefore one should be careful to outline a more complete model, that would not exclude a crucial explanatory variable, but would yet maintain simplicity that is commensurate to the amount and nature of data that is available for these analyses. For each of the topics, all models are fit to exactly the same set of cases, so that the only thing which differs between the models is the measure of party politics. Any difference in model fit or the associations that are indicated are thus attributable to the latter. All else being equal, the more valid measure should provide the better fitting model.

Chapter 4

Direct Pairwise Comparisons as a Means to Understand Political Space

Note: This chapter has been prepared as a separate article, which indicates André Krouwel as the second author. This is to recognize his role as the academic director of Kieskompas (www.kieskompas.nl) for providing the individual level data that is used in this chapter.

> He that walketh with wise men shall be wise: but a companion of fools shall be destroyed.
> – Proverbs 13:20, *The Bible (King James version)*

> Tell me what company thou keepest, and I'll tell thee what thou art.
> – Miguel de Cervantes / Sancho Panza, *Don Quixote*

The left-right dimension is the default way of thinking about political or ideological spaces[1] in political science. It is the dimension most common across countries, the prevailing idea one finds across much of the literature on political spaces both in Western (see e.g. Huber and Powell 1994, p. 294; van der Brug 2001, p. 117; Budge and McDonald 2006, p. 253; Benoit and Laver 2006, p. 111; Dalton 2008, p. 910) as well as non-Western countries (e.g. Singer 2016, p. 180). Even though there is research that argues Western political spaces to be two- (Kriesi et al. 2006; Bornschier 2010b) or (Warwick 2002) three-dimensional, or of varying dimensionality across countries (Benoit and Laver 2006), the left-right dimension is still the one which is most used in research that requires us to assess

[1] These two terms are employed interchangeably to refer to the space that is used to represent the political differences between parties in a party system.

the differences between parties, like in studies of coalition formation (e.g. Martin and Stevenson 2001) or party system polarisation (e.g. Dalton 2008).

If a survey is to include an instrument about party ideology, it is most often about positions on the left-right scale, not because this is the only dimension that is of importance, but most likely because this is the only dimension that political scientists can agree on (Warwick 2002, p. 116). However, using survey tools that just see left and right, we lack an understanding of how the complete political space is structured in the minds of people. This chapter shows how this gap can be filled using pairwise comparisons between parties and multidimensional scaling (MDS). As a survey instrument, it is more demanding than left-right placement, because it requires the evaluation of all party pairs by the respondent, but the results that it can give us are uncontaminated – they do not depend on our *a priori* assumptions about what issues to ask people or what dimensions to present them with.

The method of comparative judgement together with multidimensional scaling (MDS) is the method of choice for the study of the structure of perceptual spaces (Gärdenfors 2000). It takes all the individual differences between object pairs and strives to represent these in lower dimensions. An often cited example to illustrate this is through distances between cities (e.g. Kruskal and Wish 1978). Suppose we had data on how far in a straight line all European capitals were from each other. Each city is characterised by as many values as there are other capitals. If we use MDS to represent these values in a 2-dimensional space and plot it, we will get essentially a map of Europe, where each city is characterised by two values – longitude and latitude or its location on the x and y axes of the map. A complex data structure comfortably reduces to a simpler form, as the initial pairwise distances originated from a two dimensional space and the pairwise distances that we started with are exactly the same as the distances represented in the two dimensional space.

We can do exactly the same thing with political parties. Survey respondents can be asked to assess the perceived political or ideological differences between parties one against every other. Such pairwise distances can then be analysed with MDS, which enables to evaluate and uncover the underlying perceptual space for the respondents' pairwise assessments. At the start of the analysis we would not know and we would not need to know how this space looks like. There would be no necessity to define a benchmark for evaluation – in this case an ideological dimension – beforehand. We can create lower dimensional representations of the pairwise assessments and then ask how well they account for the original data. This method is particularly well suited for the study of political spaces for which it would be problematic to have pre-defined measurement scales or benchmarks without distorting the space we study. For previous applications of this method in political science,

see section 3.4.1.

The aim of the current chapter is thus to emphasise an overlooked, but potentially very insightful use for the idea that parties should first and foremost, if possible, be compared to each other in pairs. This is a method, which not only gives us a direct estimate of the difference between any two parties, but also provides a useful way to analyse the underlying structure of people's thinking about political parties. The following demonstrates its feasibility to provide inductive representations of political spaces. The chapter continues with a brief account of MDS and pairwise comparisons, introduces the dataset that has been gathered for Germany, the Netherlands and Sweden and ends with the presentation of the results of several approaches for using MDS with this data. Even though the focus of this chapter is on individual level analysis as here the gap in the current research into party politics is the largest, the results are also compared to analysing the party difference structure in these three countries at approximately the same time on the basis of manifestos. Although there are differences between those two sources, there is also a notable amount of agreement between them. In the end of the chapter, the results are interpreted in the context of some of the recent studies about the dimensionality of political spaces in European countries in general and in these three party systems in particular.

4.1 Multidimensional Scaling and Direct Pairwise Comparison

Before we move on to the method, a comment is necessary about the kind of space that this method would give us. Stoll (2010b) differentiates between a raw political space, which is simply the number of important issues that appear on the agenda of a party system, and an effective space, which is the number of linearly independent conflicts on a political landscape (see also Section 2.2.3). The dimensionality of the effective space is always less than or equal to the number of parties minus one (ibid., p. 449). And this is also the kind of space MDS would give us, as the pairwise differences between n parties can always be perfectly represented in at most $n-1$ dimensions. Thus, if we ask people to evaluate parties in pairs and then use MDS to analyse the dimensionality of the underlying space, the result is what Stoll had in mind with the effective dimensionality of a political space. It is a party differences space, to some extent dependent on the number of parties that we are looking at.

Multidimensional scaling is a family of methods for both exploratory and confirmatory data analysis (Kruskal and Wish 1978; Borg and Groenen 2005; Borg, Groenen, and Mair 2013), all

of which share one thing in common – they analyse data on proximities or differences between pairs of objects and provide spatial configurations of points corresponding to these objects in lower dimensional spaces (Kruskal and Wish 1978, p. 7). Such proximities can either be derived indirectly by analysing attributes of the objects or by direct measurement. The latter is uniquely suited for the study of underlying perceptual structures through survey research as no criteria of judgement other than the assessment of difference/similarity between objects is imposed (ibid., p. 9; Borg and Groenen 2005, p. 129).

Direct pairwise measurements, which includes asking people's evaluations, are feasible when there are relatively few objects of comparison as the number of pairs grows exponentially. For n objects one has to evaluate $n(n-1)/2$ pairs. For 5 parties this would be 10 pairs, but for 10 parties already 45 pairs. For surveying people, this poses a limitation. Fortunately, most party systems have much fewer than 10 relevant parties. For each party pair, the respondents would be presented with a scale on which they can evaluate the difference between the parties in that pair. The scale of assessment should have a range of 5 to 10 points (Borg, Groenen, and Mair 2013, p. 29) and an excessively granular scale would most likely provide no additionally useful information (Borg and Groenen 2005, pp. 118-119). The following analysis implements an 11 point scale, as this (unlike a 10 point scale) has a neutral midpoint equidistant from both of the extremes.

4.1.1 MDS on the Aggregate Level

This chapter uses MDS both on the aggregate as well as the individual level. For aggregate analysis individual assessments are averaged to obtain one "global" similarity matrix, which is used as input to MDS. This matrix represents the average distances between parties across the respondents and one can think of this as a best point-characterisation of the data, the same way we would average across all individual estimates of a party position to obtain one estimate or a party's location e.g. on a left-right dimension.

Interval multidimensional scaling, which applies the majorisation algorithm to determine the best fitting MDS solution (ibid., pp. 169-194), is used in this analysis. This is implemented in the "SMACOF" package (de Leeuw and Mair 2009) in R (R Core Team 2015). Interval MDS assumes that the original pairwise assessments can be interpreted as distances as opposed to ordinal MDS, also a very common form of the method, which would only look at the ranking between different party pairs. Interval MDS is more appropriate in this case, as treating the assessments as ordinal would entail a loss of valuable information. For each country, the fit of MDS solutions of one to

four dimensions is evaluated by looking at the Stress-1 value of the model (Borg and Groenen 2005, pp. 169-194). It is a measure of model fit, which is based on the difference in the distance between the points in the original pairwise distance matrix and in the proposed MDS space – the model. Although there are rules of thumb for evaluating stress (ibid., pp. 48-50; Borg, Groenen, and Mair 2013, pp. 23-25), these are, as always, not unproblematic as the meaning of the value of Stress-1 can depend on the number of points that the model is based on as well as the type of multidimensional scaling that is used (e.g. ordinal MDS, being less restrictive, shows lower values of stress). The focus is thus on how adding additional dimensions to the solution decreases the Stress-1 value of the model (Borg and Groenen 2005, p. 47), keeping in mind that a value of around 0.1 or less indicates a rather good fit (see also ibid., p. 48).

There is uncertainty in every estimate and one possible way to characterise this here is through bootstrapping (see Mooney and Duval 1993). In order to show how the aggregate level analysis can vary depending on the composition of the sample, 1,000 bootstrap samples are drawn from the set of respondents for each country and the matrix of average pairwise differences is recalculated for each sample. Performing aggregate level MDS on all of these samples gives us a sense of uncertainty in our estimates, which are presented visually – both the solution from the initial MDS performed on the original data as well as all the results from the bootstrapped data are plotted.

4.1.2 Individual Level MDS

In addition to looking at aggregate data, it is also possible to analyse all the individual pairwise assessments directly, either all at once within a single model or one by one. This would give an overview of how much spread and uncertainty there is in the assessments of party difference on the individual level. In the current analysis, two possible approaches are used for this. In the first approach, the same scaling technique that was used in the aggregate case is applied to each individual pairwise distance matrix and a solution of the same dimensionality that was deemed optimal in the aggregate case is estimated. Then the Procrustes procedures (Borg and Groenen 2005, pp. 429-445) are used to adjust each of the individual MDS spaces to the aggregate MDS space. This is implemented in the `Procrustes` function of the "SMACOF" package (de Leeuw and Mair 2009) in `R` (R Core Team 2015). Through this procedure, the individual MDS spaces are rotated and dilated to best fit the benchmark configuration through what are called admissible transformations – transformations that do not change the fit of the configuration *vis-à-vis* the original pairwise distances of each individual. This can be done, because the origin and the dimensions of the MDS

configurations are arbitrary. The final correspondence of the individual spaces to the benchmark space can be assessed through the congruence coefficient (Borg and Groenen 2005, p. 440), which ranges from 0 to 1, higher values indicating better congruence. Through this procedure it can be seen how each individual has imagined the locations of parties in a perceptual space while thinking about their pairwise differences in a culturally shared space.

In the second approach to individual level data, the IDIOSCAL method for individual difference scaling (ibid., pp. 480-482; Borg, Groenen, and Mair 2013, p. 42) is used. This method assumes that there is a group space, which can be rotated and reflected and the dimensions of which can be weighed by respondents in their individual representations of that space. The logic of this approach is similar to the previous one – individual representations are considered separately, but the whole approach assumes that they echo one overall space that is common to all respondents. The fit of such models is assessed and the locations of parties they provide is compared to the aggregate level MDS as well the the results from the Procrustes procedure that was described above.

While evaluating these models in terms of their fit is rather straightforward, the substantive interpretation of the model can be more problematic. MDS only suggests a spatial configuration that accounts for the pairwise observations and cannot give further evidence with regard to the veracity or substance of the model (ibid., p. 11). The primary way of interpreting MDS models is thus by visual inspection of the spatial configuration (Kruskal and Wish 1978, p. 9; Borg, Groenen, and Mair 2013, p. 11), with particular attention to how the points are located in relation to each other and utilising prior substantive knowledge about the objects that are analysed (Borg and Groenen 2005, p. 9). The last sections of this chapter thus elaborate on how the political spaces that were revealed by this method correspond to the findings of other studies that have looked into the political spaces in these countries as well as Western Europe in general. Keeping in mind that one should be cautious about such inductive spatial representations as they can produce results that can be difficult to interpret and might not be in line with what we can expect (Benoit and Laver 2012), only the broad structures of these spaces and the relative locations of different kinds of parties are emphasised.

4.2 Direct Data on Perceived Pairwise Differences Between Parties

The following analysis is based on data collected through an online survey from October to December 2014 in the Netherlands, Germany and Sweden. For each of the countries in the study, the question-

naire included questions on the pairwise difference between all major parties. The question wording was the following: "How similar or different are the following parties in their political beliefs?" [2] The objective of this analysis is to probe into the structure of the political space in these countries and thus the respondents were specifically instructed to think about the political profiles of parties and not the parties in general, thus limiting the quality dimensions that people should be thinking about. Other differences between parties, like leadership, would be irrelevant for such a comparison. But one still has to consider the possibility that other aspects were included in people's judgements. To some extent this is inevitable, and should be kept in mind as one possible weakness of the method.

The pool of potential respondents included people who had previously filled out one of the voting advice applications (VAAs) developed by Kieskompas[3] and had voluntarily disclosed their e-mail addresses in order to be contacted later for filling out online questionnaires. After cleaning the data, 689 respondents for Germany, 256 for the Netherlands and 338 for Sweden were left. Only those respondents were used, that gave answers to all pairwise assessments. Although the sample sizes for the last two countries are modest, this is not a major obstacle for this kind of study as its objective is not so much to provide precise estimates for a population as it is to show that this kind of survey instrument works and can give us valid and insightful information about the political landscapes of these countries.[4] More information about the data sets are brought out in Appendix C.2.

The participants were asked to give an estimate of political similarity-difference for each party pair on an 11-point scale (where 0 is completely similar and 10 is completely different). The survey included 6 parties from Germany: Christian Democratic Union (including CSU) (CDU), Social Democratic Party (SPD), Alliance 90 / The Greens (G), The Left (L), Free Democratic Party (FDP) and Alternative for Germany (AfD) (15 pairs); 8 parties from the Netherlands: Christian Democratic Appeal (CDA), Democrats 66 (D66), Freedom Party (PVV), Socialist Party (SP), Green Left (GL), Labour Party (PvdA), People's Party for Freedom and Democracy (VVD) and Christian Union (CU) (28 pairs); and 7 parties from Sweden: Social Democratic Workers' Party (SOC), Moderate Coalition Party (MO), Sweden Democrats (SWD), Environment Party The Greens (MP), Centre Party (CE), Left Party (VP) and Liberal People's Party (FP) (21 pairs). The survey also included a similar

[2] The question ending for Sweden was "...in what they want to achieve politically?"

[3] https://home.kieskompas.nl/en/

[4] The raw dataset from the Qualtrics online survey platform contained rows (apparent respondents), that could not be taken as valid responses, considering the amount of questions that were left unanswered or the time it took to fill out the questionnaire. Therefore, all cases with excessive missing values or that took more than 100 minutes to complete, were removed. It was also apparently the case that for Germany and Sweden there was a small number of respondents (a couple of dozen), who understood the pairwise questions in the wrong direction. Such cases were also removed.

question about the pairwise political difference between the respondent and each of the parties, plus party and respondent locations on the classical left-right dimension and propensity to vote (PTV) scores for the parties.

It goes without saying that these sets of respondents were not representative – the composition of the samples was skewed in terms of age, gender, education and various other characteristics. However, it is maintained here that in such a case – when people do not report their own personal attributes, but those of commonly perceived external objects, and furthermore when what is crucial is not the absolute location of a party, but its relative location from another party – this is not essential for the validity of the study. We can see evidence to support this if we look at how party placement on the left-right dimension can be predicted from respondent's age, gender and education, as well as the respondent's self placement on a left-right dimension. If we take data from a representative survey like the European Election Study 2014 (Schmitt et al. 2015) and predict party placement on the basis of socio-demographic characteristics (age, gender, education) and the left-right self placement of a respondent, then the average adjusted R-squared for a linear model across all parties is 0.065 for Sweden, 0.020 for Germany and 0.024 for the Netherlands. Variation on socio-demographic factors and participants' ideological profile thus explains almost nothing of how people locate parties in political space. We can assume that results from an unrepresentative sample still tell us something generally meaningful.

4.3 The Perceptual Structure of Political Space

4.3.1 Pairwise Comparisons and Intended Voting Behaviour

Before moving on to the MDS analysis of the pairwise differences, it would be important to take a very short detour into how pairwise differences compare to thinking in terms of distances on the left-right dimension. As mentioned above, the respondents were also asked to evaluate the pairwise political difference between their own political beliefs and those of each party. They were likewise asked to locate themselves and the parties on a general left-right dimension. Maybe it is indeed the case that MDS and pairwise assessments will give us a more adequate picture of the political landscape, but maybe the left-right is enough? One possible way to compare the two assessments of difference would be to see how they compare to the respondent's stated likelihood to vote for a party (PTV, the probability to vote). If we assume representative democracy and the chain of representation to work, we also assume that people's vote for a party should be determined by political considerations, as

problematic in terms of motivation and the requirement of political knowledge as it might be (Toka 2009).

If we look at the correlations between PTVs on the one hand and pairwise distances and left-right distances on the other, as shown on Figure 4.1, then they are consistently higher for pairwise assessments than for positions on the left-right dimension. Looking at the correlations, it is also important to point out another nuance. The average difference between the correlations for the two measures seems to be different across the countries – for Germany it is 0.13, for Sweden it is 0.15, but for the Netherlands it is 0.24. It seems that the standard left-right dimension in comparison to pairwise assessments is much less associated with people's considerations of whom to vote for in the Netherlands than it is in the other two countries. By itself this might not be a major distinction, but in the light of what we consider below, it is important to keep this in mind, as well as the overall fact that pairwise distances are more in line with voting intentions than distances on the left-right dimension.

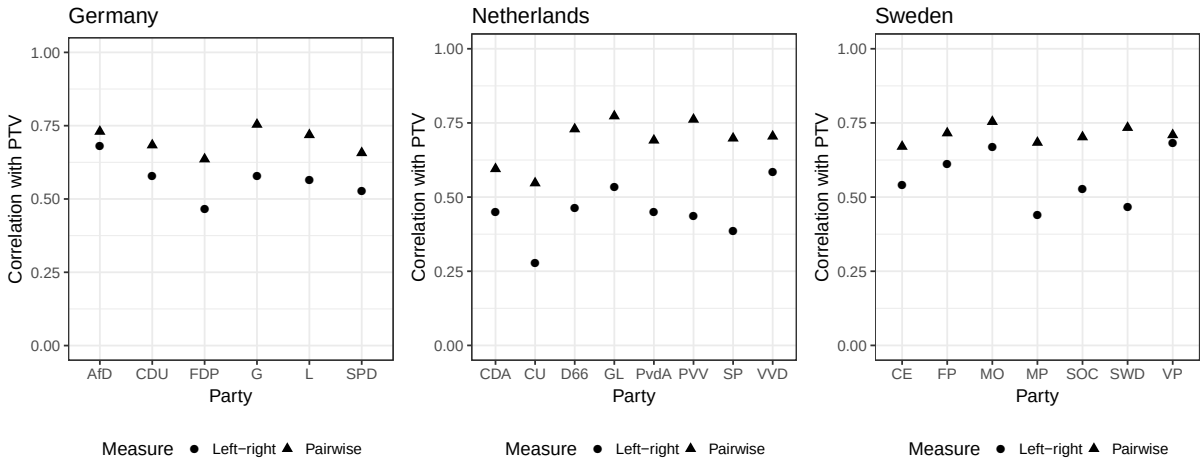


Figure 4.1: **Correlations with Probabilities to Vote.** The figure shows the correlation between respondents' probability to vote for each of the parties on the one hand and their distance from the party either on the left-right dimension or in terms of a pairwise assessment of political difference between the respondent and the party.

4.3.2 Perceived Political Space on the Aggregate Level

Moving on to the pairwise assessments of difference between parties and MDS, we start with an aggregate level analysis. Individual pairwise assessments were averaged across respondents and for each country 1 to 4 dimensional MDS configurations of the political space as described above were estimated. The fit (Stress-1) of such configurations is shown on Figure 4.2.

The figure shows that a unidimensional representation is not a particularly good description of

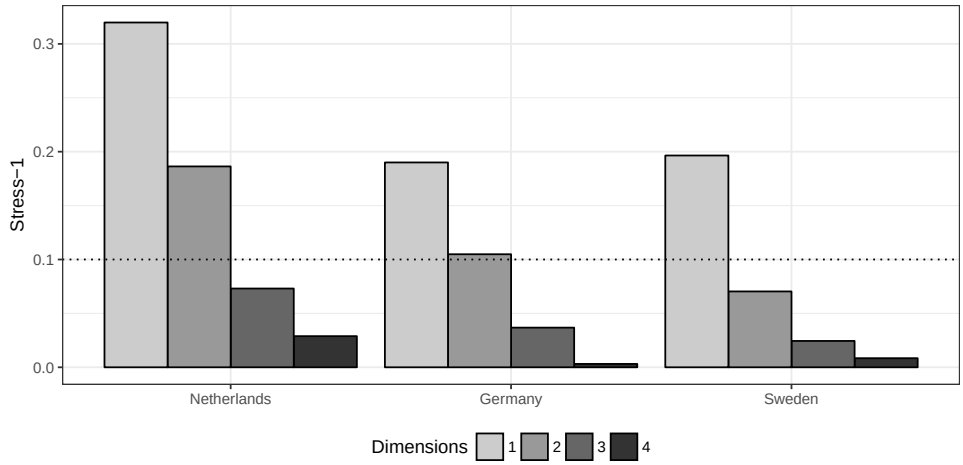
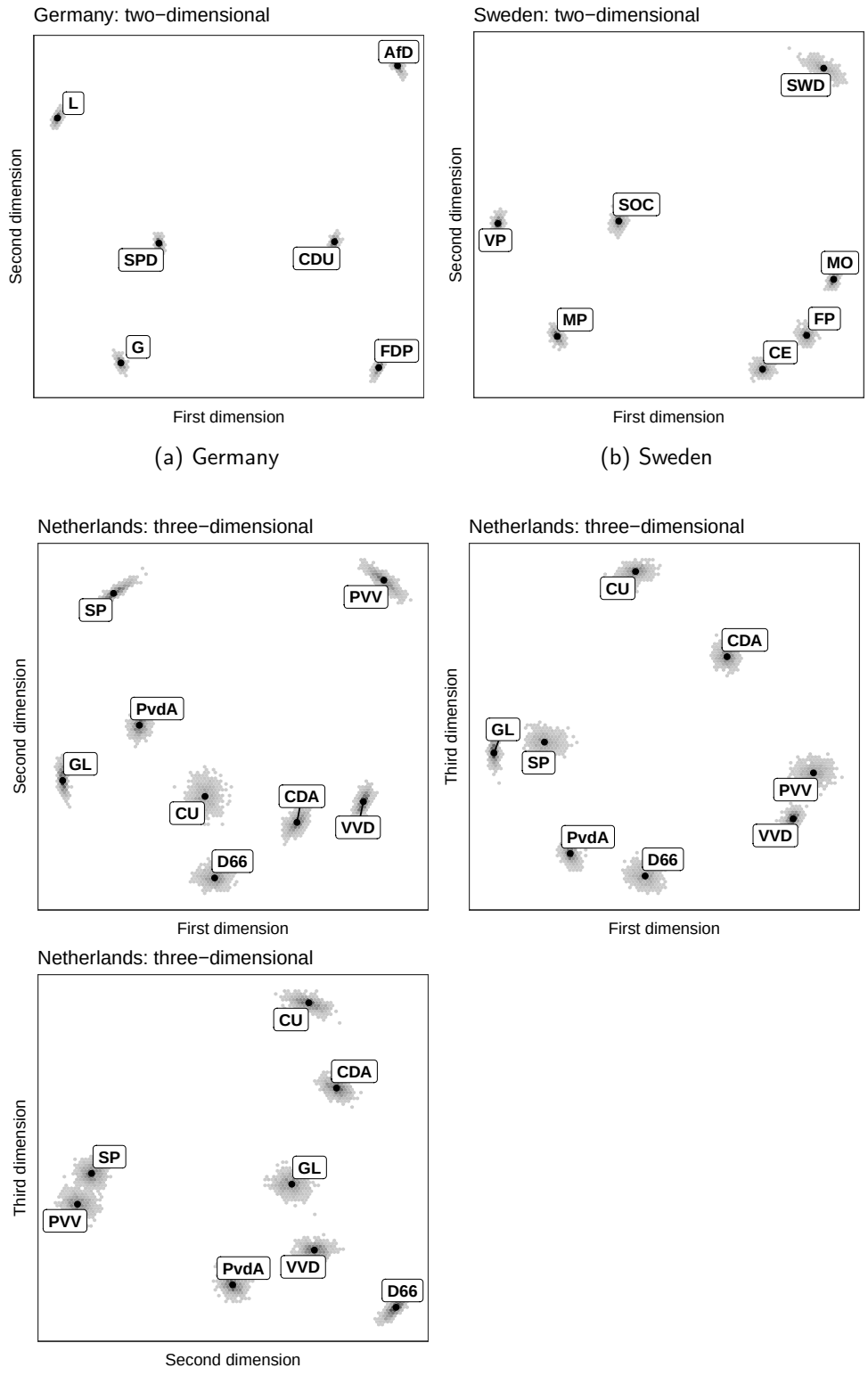


Figure 4.2: **Model Fit for Political Spaces of Different Dimensionalities.** The figure shows the Stress-1 values for the models across the three countries, representing the pairwise distances in party difference spaces of 1 to 4 dimensions. The dotted line indicates the threshold for a reasonably well-fitting model.

the political space in any of the countries and especially in the Netherlands. A two-dimensional description would give already a rather good description of the space in Germany and Sweden, however in the case of the Netherlands a three-dimensional solution seems to be notably more adequate to depict the parties and the differences between them. In short, one could conclude from this that the political space is two-dimensional in Sweden and Germany and three-dimensional in the Netherlands. This is also in line with the fact that the difference between the voting intention and difference in unidimensional space was greatest in the Netherlands – the latter is just not a very good representation of that political space. But what do these spaces and parties' locations in them actually look like?

Figure 4.3 shows the location of the parties in the corresponding political spaces of Germany, Sweden and the Netherlands. We can see that according to these spatial representations the first dimension in all three countries corresponds to the traditional left-right dimension. It distinguishes between the right-wing parties (including the radical right), like conservatives or liberals, and left-wing parties (including the radical left), like social democrats and greens. If we compare the first and the second dimension in all countries, we can see that the second dimension seems to distinguish the extreme or populist parties from the rest. In the case of Germany, the second dimension clearly sets the Left (L) and the Alternative for Germany (AfD) apart from the rest, in the case of Sweden it distinguishes the Sweden Democrats (SWD), and in the case of the Netherlands, it distinguishes the Party for Freedom (PVV) and the Socialist Party (SP) from the rest. And it is also important to note that it does not distinguish between those parties within the countries – it tells us that in



(a) Germany

(b) Sweden

(c) Netherlands

Figure 4.3: **Political Spaces in Germany, Sweden and Netherlands.** The figures show the locations of parties as depicted in the corresponding spaces that were determined above. The grey dots show the locations across the 1000 bootstrap samples for the mean pairwise distance matrices.

some important respects the far left and the far right are the same. Looking at the third dimension in the case of the Netherlands, and comparing it to the first and the second dimension, it seems to be the case that this dimension separates the Christian parties (CU and CDA) from the rest. Thus, we might conclude that the third dimension that structures party differences in the Netherlands is the religious dimension. We return to the interpretation of those spaces at the end of the chapter, let's now turn to the representations of those spaces on the individual level.

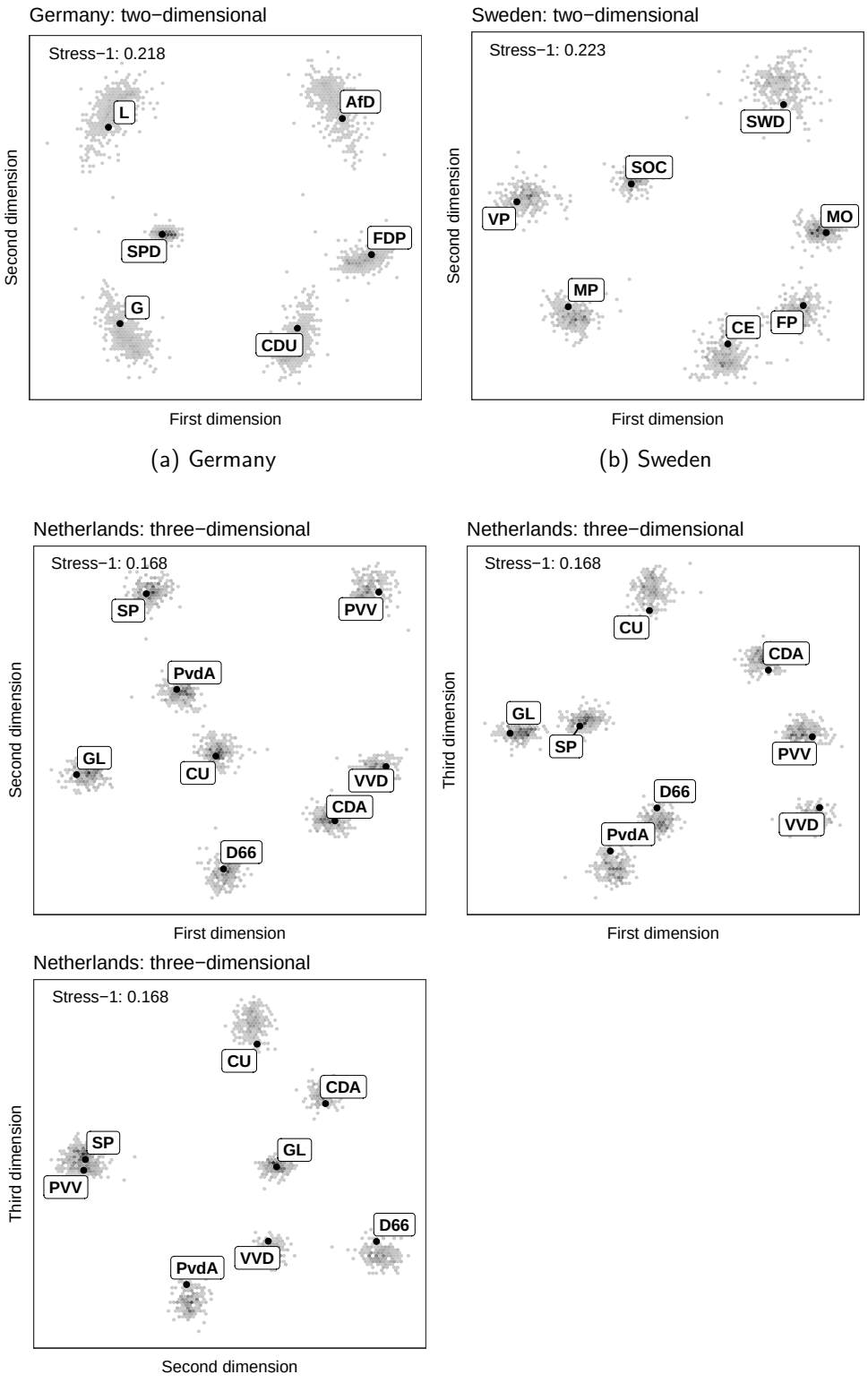
4.3.3 Perceived Political Space on the Individual Level

Figures 4.4 and 4.5 give us a better understanding how how the political parties were perceived to be located on the individual level. The IDIOSCAL model (Figure 4.4) estimates simultaneously a group space and individual spaces, which are transformations of the common group space. We can see that these models are somewhat less fitting than the aggregate level models, but essentially give us the same results as the aggregate level analysis. Estimating all individual level spaces separately and then transforming them so that they would all be as similar as possible (while maintaining the same level of fit to the data) to the aggregate spaces obtained earlier gives us the representation we see on Figure 4.5. The aggregate space is used here simply as the common point of reference. Although here we can see quite a lot of spread in individual perceptions, they are all on average rather close to what we could have seen from the aggregate data and parties are in the same regions as we saw before. The median coefficient of congruence, when comparing the individual spaces to the aggregate space, tells us that the typical individual representation is very close to what we obtained form the aggregate level analysis. Thus, all of the three kinds of multidimensional scaling that were applied here to the data support each other.

4.3.4 Variation Across Individuals

Figures 4.4 and 4.5 already indicate that there is a considerable amount of variation across individual respondents. The individual spread for the IDIOSAL models is not that large, but we can see that the model fit is much lower than for models with the same dimensionality on the aggregate level. The spread is much more visible, if we look at the individual MDS configurations that were estimated separately and then transformed with the Procrustes transformations. This raises the question that perhaps individuals perceive different kinds of spaces.

Figure 4.6 shows the distribution of the Stress-1 model fit statistics across all the individual MDS configurations that were shown in Figure 4.5. First of all, this again confirms that a uni-dimensional

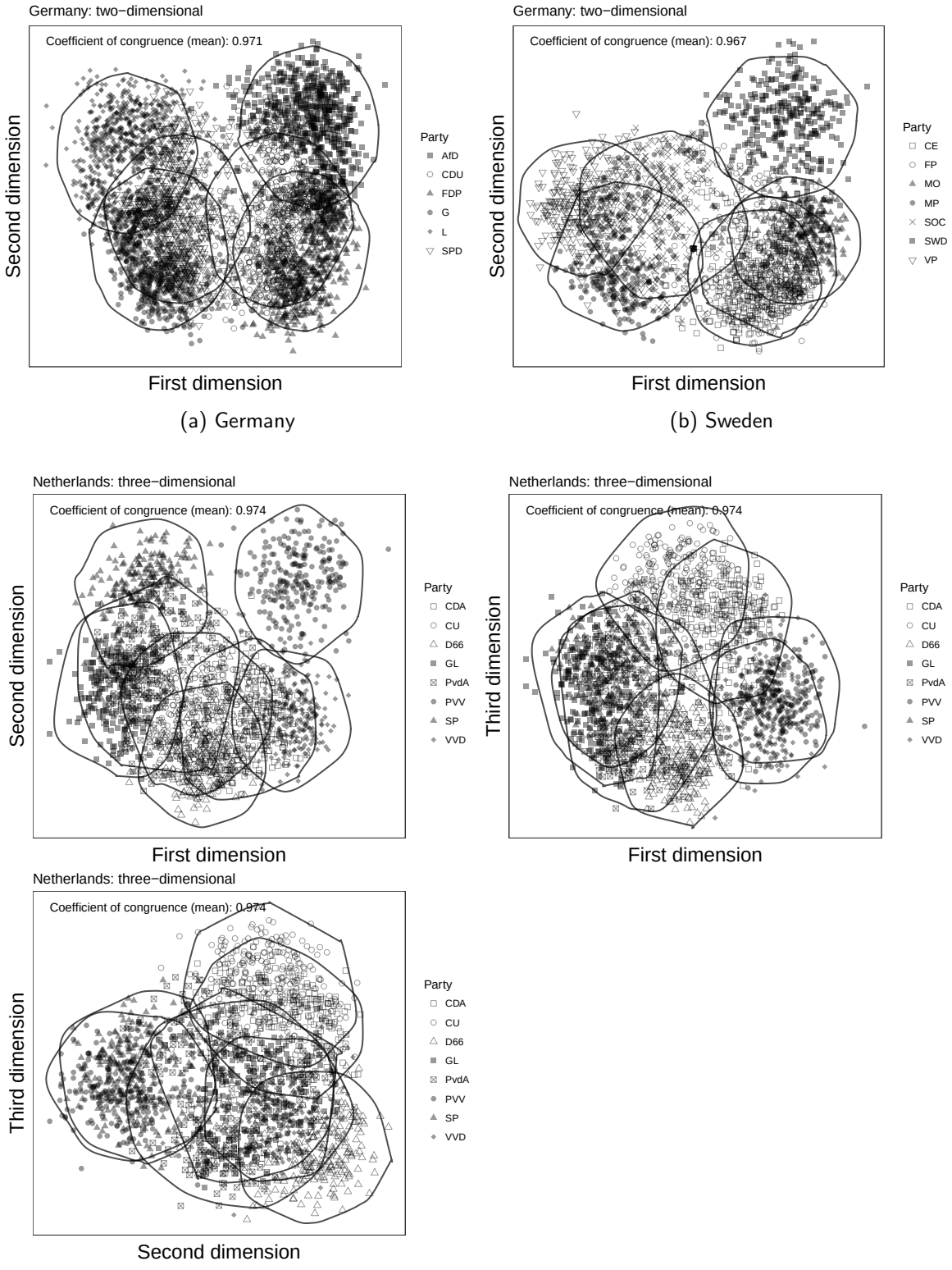


(a) Germany

(b) Sweden

(c) Netherlands

Figure 4.4: **IDIOSCAL: Political Spaces in Germany, Sweden and Netherlands.** The figures show the locations of parties in the common group space (black dots) as well as the individual spaces (grey dots).



(a) Germany

(b) Sweden

(c) Netherlands

Figure 4.5: **Procrustean Transformations: Political Spaces in Germany, Sweden and Netherlands.** The figures show the locations of parties as they were perceived by each individual respondent separately. Shapes of the points identify the parties. The coefficient of congruence refers to the median across all individuals. The circles indicate the region of the space, which includes 75% of the locations for each party.

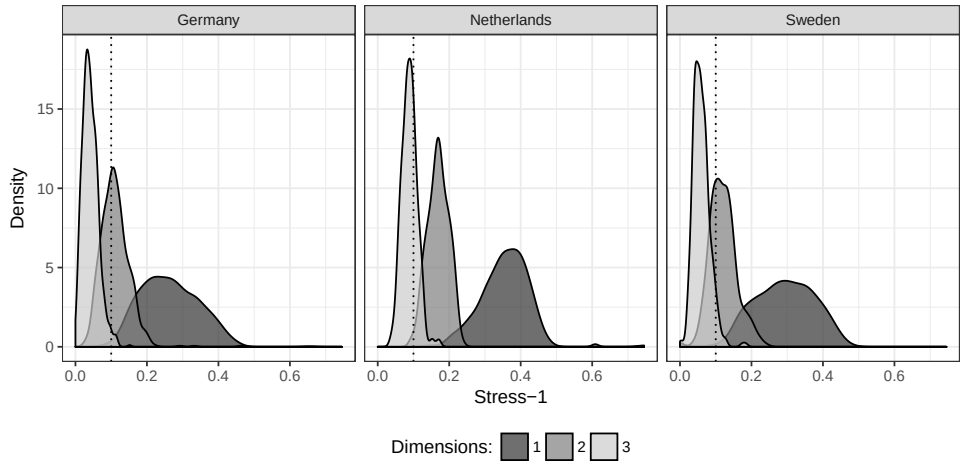


Figure 4.6: **Distribution of Model Fit for Models of Different Dimensionalities on the Individual Level** The figure shows the Stress-1 values for the models across the three countries, representing the pairwise distances in party difference spaces of 1 to 3 dimensions. The dotted line indicates the 0.1 threshold for a reasonably well fitting model.

representation of political space is not suitable for any of the countries. But it also shows that the representation in a two-dimensional space (for Sweden and Germany) or in a three-dimensional space (Netherlands) is good for only some of the individuals, but definitely not for all. Especially in the case of Sweden we can see that while the most common value for the Stress-1 statistic is around 0.1, which indicates a rather good fit, then for a considerable amount of respondents it is around 0.2. This does suggest that for some people a three dimensional representation would be more accurate.

4.4 Party Space According to Manifestos

The analysis above focussed on how people perceive the political space of parties. But how do parties themselves relate to each other? Does the political space perceived by individuals resemble the political space that is conveyed by parties in their manifestos? It is possible to compare the individual perceptions brought out above to an analysis of party manifestos? The structure and logic of the analysis would be exactly the same as for the aggregate level analysis above, the only difference being that instead of individual perceptions of party difference one would use pairwise differences estimated from party manifestos. Using a version of the index of similarity (equation 3.7), it is possible to calculate the pairwise distances based on party manifestos. The individual level data is from 2014, but for party manifestos we have data only for election years (Netherlands – 2012; Germany – 2013; Sweden – 2010). It is thus important to keep in mind that the two depictions of the party space do not come from the same moment in time. We include the same set of parties that was available for the individual level data.

Looking first at overall model fit (Figure 4.7), we can again see that a one-dimensional representation would not be very good for any of the countries. However, two-dimensional solutions seem to be appropriate for all of the countries, even the Netherlands, for which a three-dimensional solution was more appropriate on the individual level. Keeping this in mind, Figure 4.8 shows the distances between party manifestos in party spaces of the same dimensionality as were considered at the individual level so we could compare them to the maximum possible extent. We can see a number of similarities as well as a few telling differences.

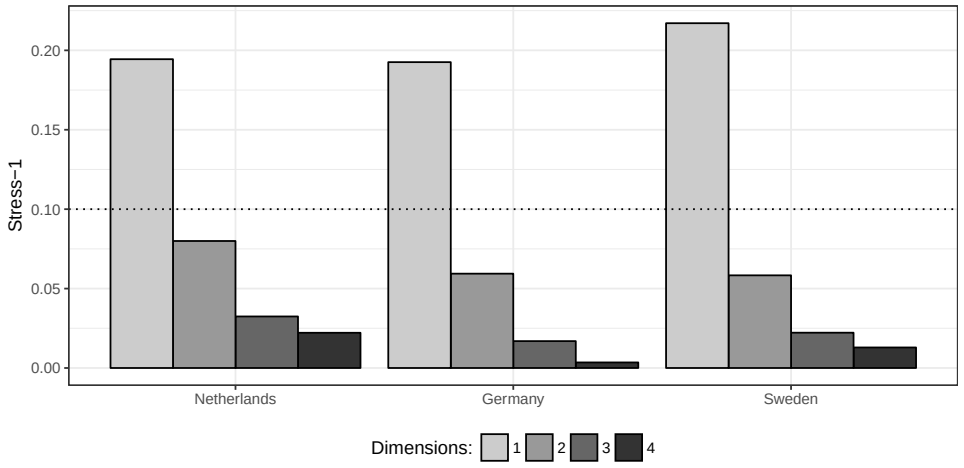
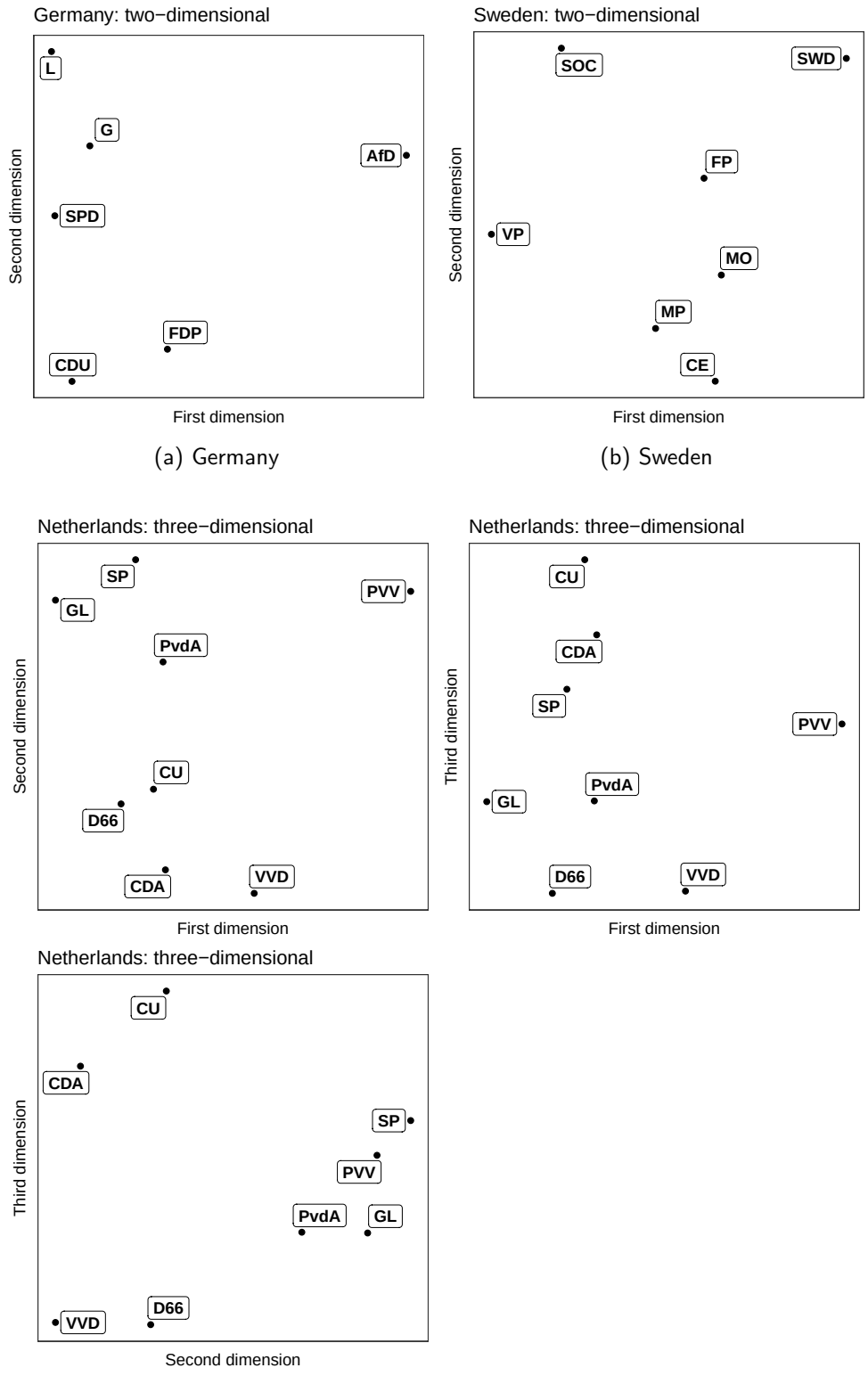


Figure 4.7: **Model Fit for Political Spaces of Different Dimensionalities Derived from Party Manifestos.** The figure shows the Stress-1 values for the models across the three countries, representing the pairwise distances in party difference spaces of 1 to 4 dimensions. The dotted line indicates the 0.1 threshold for a reasonably well fitting model.

Starting from Germany, we can see that here as well, the AfD stands out on one of the dimensions, but this time it does not include the other anti-establishment party, Die Linke. For party manifestos it is also the case that the dimension which separates the AfD comes out here as the first dimension, while the second seems to be the traditional left-right dimension. In the case of Sweden, we can also see a general resemblance to the political space that emerged form individual perceptions. There is again one dimension, which separates parties across the traditional left-right lines and a second dimension, which distinguishes perhaps most the Sweden Democrats. One should also keep in mind that the space could be rotated and the dimensions that are most meaningful do not have to be in line with the dimensions that were suggested by the MDS procedure. Finally, looking at the Netherlands, and the first two dimensions, we can again see that the first dimension seems to be the one that separates the PVV (but not the Socialists) from the rest and that the second dimension is well in line with the placement of parties in traditional left-right terms (one should again keep in mind the possibility to rotate the whole configuration). And if we look at the plane in this three-dimensional



(a) Germany

(b) Sweden

(c) Netherlands

Figure 4.8: **Political Spaces in Germany, Sweden and Netherlands According to Party Manifestos.** The figures show the locations of parties in MDS spaces derived from party manifesto data.

space that is defined by the second and the third dimension and the first and the third dimension, we can see that the third dimension is again the one that separates the two Christian parties from the rest. Therefore, we can conclude with minor discrepancies which, among other things, no doubt come from the fact that we are not looking at exactly the same moments of time and that we use two completely difference sources of data, the political spaces as they are perceived by individuals and as they are depicted by parties in their manifestos at least in these three cases are notably in line with each other.

4.5 Results in the Context of European Political Spaces

Despite the fact that we are mostly still measuring parties and party differences on the left-right dimension and using estimates from this unidimensional space in our analyses, there is an abundance of recent research, which elaborates on the complexity and multidimensionality of European political landscapes. The main contours of what was revealed above about the political spaces of these three countries is well in line with this research. As it is impossible to cover the vast extent of this topic, the focus will be only on some of the more recent empirical analyses that have looked into the political space in Europe in general or in these three countries in particular.

Overall, there seems to be an agreement that a transformation of the European political landscapes has taken place over the last two or three decades, but there is no perfect agreement on what this transformation exactly entails. Perhaps the authors that have set the tone for the most dominant recent narrative are Kriesi et al. (2006) and Kriesi et al. (2008) on the one hand and Bornschier (2010a) and Bornschier (2010b) on the other. According to these complementary accounts, the political space in European countries is two-dimensional, including a socio-economic first and a cultural second dimension, where a new conflict between the winners and the losers of globalisation has been articulated. Kriesi et al. (2006, p. 929) see the populist radical right, and not so much the populist left (who are nevertheless seen as sharing the scepticism about the EU with their right-wing opponents) as those who have appealed to the losers in this process. However, Kriesi et al. (2008, p. 182) do suggest that the populist left should perhaps deserve more focus in this emerging two-dimensional political space. The general argument about the restructuring of the overall political space is elaborated by Bornschier (2010a) and Bornschier (2010b), who pits the New Left parties that started emerging in the late 1970s and early 1980s against the New Right, which arose slightly later in the 1980s and 1990s. Thus he defines the second dimension of European political spaces to

be the libertarian/universalistic – traditionalist/communitarian dimension. This is an account, which resonates with a lot that has been published much earlier (Kriesi 2010, p. 683).

There is a wide range of authors who expand on the issues of European integration and elaborate how this has come to structure European party systems. Helbling, Hoeglinger, and Wüest (2010), in their study of discourse towards European integration in six EU countries, note that extreme parties both on the left and the right have a much more consistent discourse on EU integration than the mainstream parties and they oppose it in broad terms for the same reasons. Halikiopoulou, Nanou, and Vasilopoulou (2012) also bring out that nationalism and opposition to the EU is something that connects both the left and the right on the extreme, who together form an opposition to the mainstream establishment parties. They bring out that the opposition on the right is based on national community and culture and opposition on the left is based on opposition to neo-liberalism (ibid., p. 507). It should be mentioned, though, that there are also authors who caution against this kind of interpretation (Hutter and Grande 2014; Hoeglinger 2016).

Another concept that has been used to make sense of these developments on European political landscapes is that of populism. Although this is a concept that is primarily[5] associated with the radical right (Mudde 2007) and a clear distinction can be drawn between right-wing and left-wing populism (ibid., p. 30), there are also authors who focus on these two kinds of populist parties together. Chryssogelos (2013) focuses on a populist identity that comprises support for anti-system, anti-liberal and anti-representative-democracy parties and which extends to both parties on the left and on the right as populism has become detached from any specific ideology, at least in the classical left-right sense. He notes that since the 2010s, the defining element of such populist parties has been their opposition to the mainstream (ibid., p. 79). The distinction between left- and right-wing populists is also collapsed by van Kessel (2015) in his comprehensive study of populist parties in Europe, noting that the defining elements of this kind of populism are an emphasis on a virtuous and homogeneous people, on popular sovereignty as opposed to elitism, and a distinct anti-establishment outlook (ibid., p. 33).

The second dimension that was uncovered by the analysis above, which distinguishes the Left and the AfD in Germany (opposing them most distinctly to the Greens on the left and the FDP on the right), the Sweden Democrats in Sweden and the SP and PVV in the Netherlands, is well in line with this populist, anti-establishment and anti-EU interpretation. There is a broad consensus that the right-wing parties (in the traditional sense) on this second dimension (PVV, AfD, SWD) are

[5] Most likely simply because there are numerically more right-wing populist parties in the very recent European history.

populist radical right parties, which to varying degrees share elements of opposition to immigration and to Islam, to aspects of European integration, and to the political establishment (Art 2011; van Heerden et al. 2014; van Kessel 2011; Berg and Oscarsson 2015; Hellström, Nilsson, and Stoltz 2012; Oskarson and Demker 2015; Berbuir, Lewandowsky, and Siri 2015; Franzmann 2016). On the other hand there are authors who collect the left-wing parties that were distinguished by this second dimension (the Left and SP) under the label of populist parties (Chryssogelos 2013; Mudde 2007). And finally, there are authors who consider them together as populist parties more clearly in one category (van Kessel 2015; Akkerman, Mudde, and Zaslove 2013).[6]

In this light, it seems that the second dimension that emerged in the current analysis in all the three countries could be labelled a populist dimension, as all of the parties that are separated by this dimension can almost unanimously be considered as populist parties. It might be confusing, however, to use the term "populist", as this is habitually more associated with parties on the right, and can be very broad and vague in its meaning. Therefore, it might be more informative to label this dimension here as the anti-establishment dimension, referring both to the established political parties and their "established" policies with regard to the European Union, immigration, representative democracy, etc., and to the fact that the dimension is defined by opposition to the latter, both on the right and on the left of the classical first dimension. All of these parties share the message that the political systems and the actors that have been running those systems have reached a dead end on a course that cannot be followed any more. Thinking of an anti-establishment dimension in this sense is more informative as a label than thinking of a populist dimension.

Furthermore, thinking in terms of this two-dimensional space in the context of these empirical findings is more verisimilar than thinking in terms of the general spaces that were suggested before by Kriesi et al. (2008) or Bornschier (2010a). The second dimension that we see here is not about opposition between the New Left and the New Right, it is something much more general, but also more recent. It is true that for example in the Netherlands we see that the second dimension pits PVV against D66 or AfD against GL in Germany. But this is only part of the story. There is an opposition between the New Left, which has become part of the establishment, and the New Right, the challengers, but this seems to be happening in a more general framework where both parties on the extreme of the traditional left and the traditional right share in common an opposition to the establishment. The are on the same side of the line, not on opposite sides.

Before concluding these reflections, it is also noteworthy to realise that the apparently religious

[6] Although van Kessel notes that the SP was populist only until the 2000s.

third dimension, which we see in our analysis in the case of the Netherlands, has almost completely been overlooked in the studies that have been covered here. Pellikaan, de Lange, and van der Meer (2016) assume that a two dimensional (economic and cultural) space describes the political landscape of the Netherlands. This two dimensional representation is quite out of chord with what our analyses reveal, as the cultural dimension captures something rather different (see ibid., p. 17) than the second anti-establishment dimension. Also, when Kriesi and Frey (2008) write about the political space of the Netherlands, they depict it as "a contrast between a libertarian-cosmopolitan-multicultural world view, and an authoritarian-nationalist-monocultural view." (ibid., p. 172), which seems to refer to something different than was revealed here. Benoit and Laver's analysis of expert data, however, shows that the Dutch political landscape could be considered three dimensional (Benoit and Laver 2006, pp. 114-116), although the first of the dimensions is clearly dominant. They note that the first dimension is the classical left-right dimension, the second dimension is related to EU and the third to social liberalism. This interpretation is well in line with the results of the analysis in this chapter, as the two religions parties can be considered socially conservative.

4.6 Conclusions

The aim of this chapter was to show that direct pairwise comparisons as a survey instrument and MDS as a method of analysis for such data can provide a feasible and insightful means for the inductive study of perceptual spaces that people have in mind when they think about political parties. On the individual level, we currently have mostly left-right estimates for people's perceptions of positions of parties and there is very little evidence about the structure of the overall political space that people use to differentiate between them. We thus lack an understanding of how some of the most important actors in political systems – the citizens – perceive their political landscapes in their full extent. This analysis shows that it is possible to gain further insight into this by having people assess the difference between parties in pairs and analysing such differences with multidimensional scaling.

The spaces that were extracted in this analysis through different approaches to the way multidimensional scaling can be performed show us that the first dimension in all three countries broadly corresponds to the classical left-right dimension, but also that this alone might not be a very comprehensive representation of these spaces. We can see that people perceive the parties that would be most distant on the left-right dimension as the same in some respects. Looking at these parties on the extreme left (the Left in Germany and the Socialist Party in the Netherlands) and the

extreme right (the Party for Freedom in the Netherlands, Alternative for Germany in Germany and Sweden Democrats in Sweden) and how they have been characterised in recent analyses, one could suggest that this second dimension is not the cultural dimension that has usually been out forth, but rather an anti-establishment dimension, which distinguishes parties that oppose themselves to the establishment and their political consensus. Furthermore, in the case of the Netherlands, where two distinctly religious parties are present, we can see a third dimension on the political landscape, a distinction which would be lost if we were looking only at the first or the first two dimensions. The approach shown in this chapter can thus be useful for the further study of both well-researched party systems and perhaps more importantly for party systems in newer or non-Western democracies, where the traditional concepts of left and right do not seem to fit as well as in older democracies and pre-defined measurement scales are more problematic to apply.

It is important to keep in mind that this was a preliminary study with the purpose to demonstrate that this kind of data and analysis is able to provide meaningful inductive insights into the political spaces of various countries. In principle it would be able to provide much more than was done and shown here. Expanding the individual level analysis, it would be possible to analyse how individual differences in the perceptions of the locations and distances between parties might correspond to socio-demographic characteristics of the respondents. For this, a more diverse sample would be needed. Furthermore, if we would ask people to additionally rate the parties on certain prominent issues, we would be able to use that information to study in more detail the content of the space that emerges (Kruskal and Wish 1978, pp. 35-45), instead of just looking at the relative locations of the parties and using our prior knowledge about their political profiles.

Chapter 5

Pairwise Comparisons and Party System Polarisation

> Briefly put, we have polarisation when we have ideological distance (in contra-distinction to ideological proximity).
>
> – Giovanni Sartori, *Parties and Party Systems*

The idea that there is a measurable difference (distance) between the political profiles of parties comfortably extends to the idea that we can characterise the overall amount of political difference in a set of parties as a function of the individual locations of or distances between parties. This is habitually called polarisation, although different labels like "political divergence" (Dow 2011) or "dispersion" (Andrews and Money 2009) have also been used and might be more suitable as the measurement and the original conceptualisation of polarisation diverge. Originally the term "polarisation" referred not just to the aggregate amount of divergence in a set of parties, but a particular spatial configuration (Sartori 2005) where the mainstream centre was opposed on both extremes of the main ideological dimension by anti-establishment parties. Nevertheless, I will use here terms like "polarisation" and "divergence" interchangeably to refer to aggregate divergence between parties as this is the common usage of these terms in the discipline.

Despite the fact that the overall amount of political difference between parties is considered one of the fundamental measurable characteristics of a party system (see e.g. Ersson and Lane 1987; Klingemann 2005), there is in fact little effective agreement over how individual party positions or differences should be translated into an overall measure of polarisation. This is evident in a proliferation of different measures for aggregating individual party positions or the differences between parties and a lack of systematic comparison between them. Surprisingly, there is also very little

consensus over what exactly is related to polarisation and how, as we will see below. Different studies of supposedly the same phenomenon often provide conflicting or diverging results. This forces any analyses that tread onto this ground to be tentative and careful at best.

Just like for other endeavours into party politics, the manifesto data set is likely to remain one of the primary sources of information about party positions in analyses of polarisation, although there is also a range of research into this topic that has been based on survey data (e.g. Alvarez and Nagler 2004; Dalton 2008; Curini and Hino 2012). When the manifesto data has been used, the RILE index has been the most common measure for estimates of polarisation (e.g. Pontusson and Rueda 2008; Matakos, Troumpounis, and Xefteris 2015; Han 2015), although there are also authors who have constructed their own scales from the data (e.g. Andrews and Money 2009). Most of the measures of party position that are at focus here, including the index of similarity, have never entered polarisation research. If we combine this range of measures for party positions with the different ways of aggregating the differences in a set of parties that are discussed below, we potentially have an intractable amount of different estimates of polarisation. We know that they will give different results, which means that to the extent that they are supposed to measure the same thing – and so far an argument has not been made that there are different kinds of aggregate divergence between parties – they cannot all be valid to the same extent. Some of them are bound to capture the phenomenon that we are interested in more and some less.

The concept of party system polarisation, despite its issues, gives us a setting where to test out the pairwise measure of difference *vis-à-vis* various measures for party position on a left-right dimension. If they are all measuring in broad terms the same thing, but to different degrees, then this should be reflected in models that test the associations of polarisation with other phenomena that we can reasonably expect are related to it. And if a measure of something is not related to anything, we should have serious doubts about the validity of the measure because in that case assuming the latter also means assuming that one aspect of social or political reality can exist in complete isolation from others.

Although there has been surprisingly little empirical analysis into the possible covariates of party system polarisation, we do have a basic understanding of what should be related to varying degrees of overall difference between parties. This enables to set up a basic model to test the measures that are in focus here. If we know what polarisation should be related to, the measure that captures the phenomenon best should provide the best fitting model. And to the extent that all of the measures are tapping into the same phenomenon, there should not be vast disagreements between the models

with regard to the directions of relationships that they show.

This chapter will proceed as follows. It will first give a brief overview of how the concept of party system polarisation entered political science and the various ways it has been operationalised. Of the whole range of possibilities, two of the most common are chosen – one that reflects the spread of parties around the centre of political gravity in a party system and another, which is based on the distances of all parties from each other. Thereafter, it gives an overview of the most important empirical research into the causes or correlates of party system polarisation. Based on most recent research and findings, a basic model for polarisation is built that includes aspects of party system disproportionality, social inequality, party system fragmentation and electoral turnout, as well as a few other possible covariates.

The objective of the model is not to provide any ground-braking insights about the correlates of polarisation, but a minimal model of more or less proven covariates that would allow us to compare the various indices for party positions and difference. The last parts of the chapter provide an overview of the variables that have been used, the range of data for which the latter are available as well as the results of the model comparisons. The results show that the index of similarity preforms well and most of the left-right measures of party position provide a seemingly less fitting description of reality. It is also important to note here that a lot can depend on the kind of measure that is used for polarisation – of the two types that were considered, the one based on the weighted mean position of parties, the so called ideological standard deviation measure, seems to be performing better, but this is due to the fact that it is mechanically related to the number of parties and the fragmentation of the system.

5.1 Conceptualising and Measuring Polarisation

Party system polarisation is a concept that came into contemporary political science at its very inception in the work of Downs (1957) and it has been in focus ever since. It is considered one of the more important aspects of a party system and inter-party competition. For example Klingemann (2005) sees it as one of the essential aspects next to fragmentation and volatility and Ersson and Lane (1987) additionally consider social cleavages as a separate fundamental characteristic. The concept of polarisation as we understand it now was largely defined by the classical works of Anthony Downs and Giovanni Sartori. They introduced the idea of spatial polarisation, articulated some of the fundamental concerns surrounding that notion, and suggested the basic associations between

polarisation and other phenomena in party and voting behaviour research, which are subject to empirical study until today.

5.1.1 The Idea of Polarisation

The idea of polarisation began to take shape in the work of Downs (1957) and although his focus was on the rationale of voting and on parties' competition over votes, the latter was closely tied with parties' locations in a unidimensional political space and their movement therein. In Downs' model as in the general spatial models afterwards, "parties formulate policies in order to win elections" (ibid., p. 28) and citizens vote for a party that provides them with the greatest utility when in office (ibid., pp. 38-39), with some exceptions in the case of multi-party systems (ibid., pp. 47-48). Parties are moving in a political space in relation to each other in a competition over votes and thus there should be party systems with varying amounts of political distance between parties, depending primarily on the distribution of voters and the characteristics of the electoral system.

While Downs' introduction of this particular spatial metaphor of politics to political science made thinking of polarisation as we now know it possible and set out some of its broader contours, it was mostly the work of Giovanni Sartori on party systems that established the concept as a central characteristic of party systems. For him, the concept of "ideology" was inextricably linked to "ideological distance" (Sartori 2005, p. 111). In this sense the idea of polarisation is an inevitable part of thinking about politics in terms of ideology. However, for Sartori it did not mean just distance, but a certain kind of distance, a particular configuration or type of party system. For him, the number of parties in the system and the ideological distances between them are both related to polarisation and a polarised party system, but the latter is not just simply a function of distance. Anti-system parties, those usually at the very extremes of the ideological spectrum, are a characteristic of polarised pluralism. These are parties that undermine the legitimacy of the regime (ibid., pp. 117-118). It is also important for Sartori to emphasise that such extremes at the opposite ends of the ideological dimension are mutually exclusive – they constitute bilateral oppositions to the parties in the centre (ibid., pp. 118-119). In a slightly confusing use of terminology, he calls such systems "multipolar" (ibid., p. 119) as opposed to a "bipolar" system, which is not centre-based.

In the sense of Sartori, a polarised party system is thus a specific kind of fragmented party system, which is characterised both by high ideological distance between the extremes as well as a number of non-negligible parties at the centre. It is a system where the degree of incompatibility between parties is high – the parties at the extremes are not only incompatible with each other, but also with

the parties of the centre, the governing parties, to which they are much closer than to each other. It is a configuration that for him also had clear negative connotations – it came with an irresponsible opposition, one which could make promises and claims that could not possibly be fulfilled, because the opposition would not expect to be held accountable for them in government, and a political style of outbidding (Sartori 2005, pp. 120-124). All of this, needless to say, is problematic for the smooth functioning of a democratic regime.

Sartori was writing at the point in the development of political science when empirical research into party politics was in its infancy. In his classical book on party systems he thus relies on qualitative-intuitive (and categorical as opposed to continuous) assessments about the ideological nature of parties and (unlike for fragmentation) does not offer an empirical definition – an operationalisation of polarisation. The range of work that followed immediately in his footsteps, however, has quite a lot to say about how and why one should measure polarisation. In the next section I give an account of the main kinds of measures that have been suggested for polarisation before moving to an overview of the most notable empirical associations that have been uncovered in recent research into this or very closely related topics.

5.1.2 Measures of Polarisation

In broad terms, polarisation has been measured in two kinds of ways – one reflecting the idea of "ideological variance" or standard deviation already present in the work of Downs (1957, p. 100) and the other reflecting a very close yet distinct notion of an aggregate amount of distance between political parties when compared to each other in pairs, passingly mentioned also by Sartori (2005, p. 106). Neither of the classics gave an actual form, no matter how obvious, to a measure of polarisation, but the research that was building on their ideas and concepts elaborated on these problems extensively. What follows here is but a brief discussion of that, ignoring the source of information about party locations (like mass or expert surveys or party manifestos), the specific topic of the analysis and role of the polarisation variable (*explanandum* or *explanans*), focussing just on the mechanics of transforming party locations or differences into a measure of polarisation. These two kinds of measures mentioned here encompass all parties in the system. Additionally, there are measures, which focus only on some parties, which will be mentioned last.

Measures of ideological variance / standard deviation

From a statistical point of view it is perhaps easiest to think of polarisation as based on ideological variance, because this is the most basic way that we think about the spread of values (in this case the locations of parties on an ideological dimension) of a variable. If we have a unidimensional and continuous concept of ideology, we thus do not need to think of a fundamentally new measure, we can just borrow one that is already known and used in statistics. The formal definition of variance is the average squared deviation from the mean of the variable and a standard deviation is the square root of that. The idea of measuring polarisation on the basis of the squared distance from the mean of the ideological dimension, either as standard deviation or as variance, has been extensively applied in research on polarisation. In one of the first empirical definitions involving party system polarisation, Taylor and Herman (1971, p. 34) effectively define polarisation on the basis of variance as

$$P_{var} = \frac{\sum_i^n f_i \left(x_i - \bar{x}\right)^2}{n} \tag{5.1}$$

where n refers to the number of seats in parliament, f_i to the number of seats of party i, x_i is the ideological position of party i and $\bar{x}$ is the position of the mean of the seat distribution (they use ordinal positions, i.e. a ranking of the parties in the left-right dimension).

One notable difference from the definition of variance is that here we are taking relative party sizes, as measured by their seat distribution in parliament, into account. Instead of average square distance from the mean we are measuring weighted average square distance, reflecting the idea that parties of varying sizes matter differently. Essentially the same measure has been adopted subsequently by several other authors (e.g. Sigelman and Yough 1978; Lachat 2008; Lupu 2015).

There are some authors who have, instead of ideological variance, opted for a measure of ideological standard deviation, which essentially constitutes a square root of the ideological variance measure. The most known application of this has been perhaps by Dalton (2008), but there are others before (e.g. Warwick 1994) and after (e.g. Curini and Hino 2012; Dejaeghere and Dassonneville 2015; Matakos, Troumpounis, and Xefteris 2015; Han 2015; Singer 2016) who have used this measure or something very similar (Ensley 2012). Polarisation as weighted standard deviation can thus be empirically defined as:

$$P_{sd} = \sqrt{\sum_i^n w_i \left(x_i - \bar{x}\right)^2} \tag{5.2}$$

where w_i is the weight of party i and $\bar{x}$ is the weighted average of the ideological dimension.

Of course there is no fundamental reason why in this case we should be looking at squared distances from the centre of ideological gravity. For example, van der Eijk, Schmitt, and Binder (2005) use a measure based on absolute distances. If we take the logic of the variance/standard deviation measure apart, then one could have even more slightly different measures, e.g. those based on not the mean on the ideological dimension by the median.

Even though such measures borrow concepts that are familiar for us from statistical analyses, it should also be noted that in one respect (in addition to aggregating the distances in a set of parties) they are reflecting the initial idea of Sartori rather well. They measure distances from the centre of gravity of the distribution. This reflects the idea the polarisation is a configuration were the centre of the political spectrum is opposed on both sides by anti-system parties. This compatibility exists, however, only if there actually is such a centre, because the mean of a distribution can also exist where there is no actual party.

Measures of pairwise ideological distance

The second type of measure that has set the tone for polarisation research takes into account the locations of all parties in the system and nothing else. In comparison to the measures above this so to say cuts out the middle man and goes straight to the source. The standard deviation and variance based measures first have to determine the ideological centre of gravity of a political landscape and will then use the locations of parties in relation to that constructed centre to assess polarisation. It is as if we create an imaginary location on the political landscape, a hypothetical party to compare all other parties to. It might correspond to an actual party, but not necessarily. In contrast to this, there is a class of measures that derive an estimate of polarisation directly from actual party positions on an ideological dimension by comparing parties to each other.

This kind of a measure of party polarisation was first proposed by Gross and Sigelman (1984), who consider all pairwise distances in a party system in the following way (notation has been changed to be compatible with other formulations in this chapter):

$$P_{gs} = \sum_{i}^{n} \sum_{j}^{n} \frac{w_j}{1 - w_i} |x_i - x_j| \tag{5.3}$$

where w_i and w_j are the seat shares of parties i and j and x refers to the position of parties i and j on the ideological dimension in question.

A more elaborated pairwise distance measure was adopted a decade later from the work of Esteban and Ray (1994), which has gained notably more attention and application. They suggest an index of polarisation, that can be expressed as follows:

$$P_{er} = K \sum_{i}^{n} \sum_{j}^{n} \pi_i^{1+\alpha} \pi_j |y_i - y_j| \tag{5.4}$$

where K is a positive constant, π_i and π_j are weights, α is a parameter that controls the extent to which weight differences are taken into account, and y_i and y_j are locations on a dimension. This measure can be simplified and generalised

$$P_{er} = K \sum_{i}^{n} \sum_{j}^{n} \pi_i^{1+\alpha} \pi_j d_{ij} \tag{5.5}$$

so that d_{ij} refers to the distance between two parties on not just one dimension, but in any imaginable political space. The equation can further be simplified, by dropping the K and the α, which simply means that the differences in the sizes of the parties are not additionally taken into account (beyond what is reflected in party sizes used as weights) and that the eventual scale is not further adjusted. This equation would then have the following form:

$$P_{er} = \sum_{i}^{n} \sum_{j}^{n} w_i w_j d_{ij} \tag{5.6}$$

where w_i and w_j simply refer to the seat or vote shares that are used as weights for the parties.

The Esteban and Ray measure has found applications in a number of later studies on party system polarisation or political difference between parties, like Rehm and Reilly (2010), Indridason (2011), Han (2015) and many others. However, it also seems that the idea of aggregating pairwise distances, even though it has caught the attention of many party researchers, has not reached an agreement over a specific form. Thus, for example Klingemann (2005) uses a different solution for aggregating pairwise differences, which is, among other things, not weighted by relative party size and Lupu (2015) uses a formulation which weights each pairwise distance by the sum of the relative sizes (vote shares in that case) in the pair divided by the number of parties minus 1.

In addition to being simpler – by not involving the additional step of calculating the centre of gravity of the political space, there is one other clear advantage for the formulations of party system polarisation that takes pairwise distances as input. They are compatible with all possible political spaces, as long as there is an estimate for the distances between the pairs of parties in that space.

The mean-square-based measures, in contrast, are designed with only one dimension in mind and are not able to provide an estimate of political divergences across dimensions, although it is possible to aggregate the separate polarisations for each dimension.

Other measures of polarisation

In addition to these two most widely used measures – the pairwise measure and the standard deviation/variation-based measure – there are several other operationalisations of party system polarisation that have been suggested and used in party system research, reflecting other nuances of the concept. One version is the maximum distance among parties in a system, referring to the idea that polarisation is defined by the existence of extreme, anti-system parties on both sides of the ideological spectrum. This measure is used, for example, by Dejaeghere and Dassonneville (2015), Matakos, Troumpounis, and Xefteris (2015) and Andrews and Money (2009). Another measure, which reflects a similar idea, is the proportion of extremist parties in the party system. This has been used among others by King et al. (1990) and Warwick (1994). A tangent measure, which has found application in closely related research into voting behaviour, is the measure of party system compactness suggested by Alvarez and Nagler (2004) that takes also the dispersion of voters into account (and is thus suitable for only such cases, where comparable information about the political positions of voters is available, severely restricting the range of application). This measure has been used in party system polarisation research among others by Ezrow (2008) and Dow (2011).

5.1.3 The Number of Parties: A Problem and a Solution

Before moving away from the issue of measuring polarisation we have to address, however, an often forgotten, but important problem that can undermine many empirical studies into polarisation – the problem with the number of parties. It is known that the Esteban and Ray measure of polarisation is more related to the number of parties than the standard deviation based measure (Vegetti 2014). The nature of this association, however, has received little attention. If this reflects the fact that more fragmented systems really are more polarised, then there is no problem. However, if this is a mechanical result of how the index is constructed and used for the study of party system polarisation, there will be a problem, because then party system fragmentation and polarisation will be related to each other by operational definition. This operational definition of polarisation would not have discriminant validity (see section 3.5.1).

If we take the Esteban and Ray measure and the ideological standard deviation measure, the

two most common measures of polarisation, and simulate their association to fragmentation, we can better understand the problem. For the following, hypothetical party systems of 2 to 10 parties were generated with party positions and weights randomly drawn from separate uniform distributions 10,000 times. I use the Esteban and Ray measure (equation 5.6) and the ideological standard deviation measure (equation 5.2) to calculate the amount of polarisation for each configuration and the effective number of parties (Laakso and Taagepera 1979) to determine fragmentation. The results of the simulation are shown on Figure 5.1.

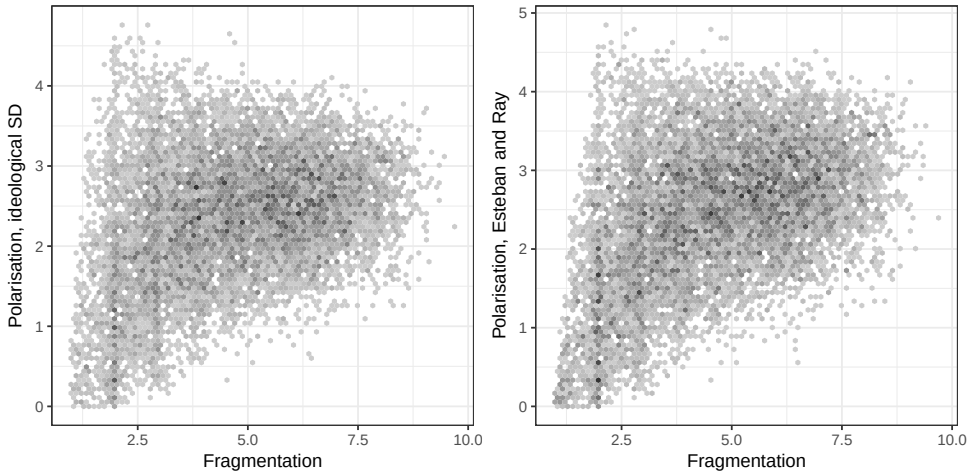


Figure 5.1: **Simulation of Association between Fragmentation and Polarisation.** The figure shows 10,000 replications of a party system with $N = \{2...10\}$ parties and weights and positions randomly drawn from uniform distributions.

We can see that both the Esteban and Ray measure and the ideological standard deviation based measure are related to the number of parties in the system (fragmentation). As fragmentation rises, there seems to be a very clear increasing lower bound to the values of polarisation and thus the expected value of polarisation increases as the number of parties increases.

Another way to think of this mechanical association is to ask what would happen for a given party system if we added a number of parties with random ideological locations to the system. Let's assume we have a party system with 4 parties with certain fixed relative sizes and fixed ideological positions. How would the polarisation of the system increase if we added 1 to 4 parties to the systems with randomly varying sizes and ideological locations? The results of this thought experiment are shown on Figure 5.2.

We can clearly see that adding additional parties is very likely to result in higher polarisation, regardless of the positions of the parties. If there is a mechanical relationship between polarisation and party system fragmentation, then this is a problem, because the two phenomena can then no longer be separately studied. If polarisation is on the left hand side of the equation and the number

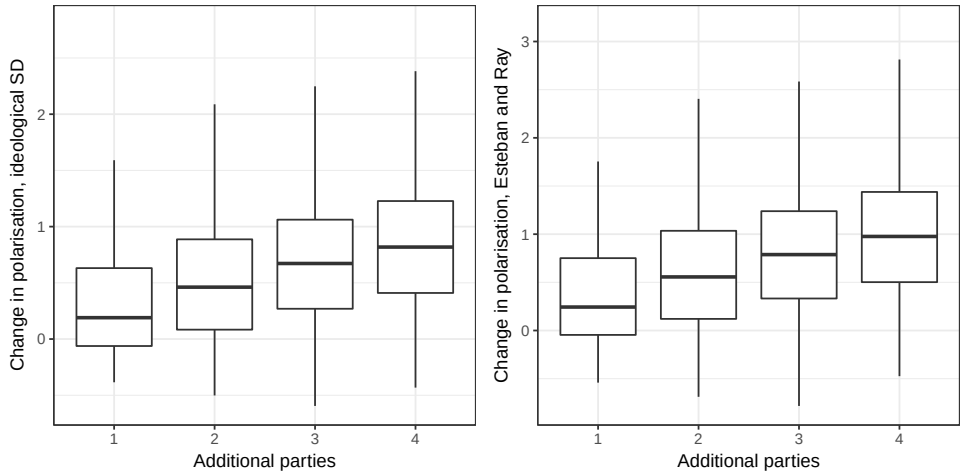


Figure 5.2: **Polarisation and Additional Parties in the System.** The figure shows the distributions of 10,000 replications of a party system with $N = 4$ parties to which 1 to 4 parties are added with random positions and relative sizes. The box-plot shows the inter-quartile range (median in the middle) and the whiskers the largest/smallest value no further than 1.5 of the inter-quartile range from the edge of the box.

of parties or fragmentation is added to the right hand side, the model will show an association and model fit will improve regardless of the actual association between fragmentation as polarisation.

Therefore, we need an alternative measure of polarisation, one not dependent on the fragmentation of the party system. As we would prefer a general measure that could aggregate distances along one or many dimensions, a possibility that is based on pairwise differences in any number of dimensions is considered here. For each party we can calculate the distance from every other party and thus as a first step we could characterise each party by the average distance it has from every other party. Taking the weighted average of such average pairwise distances would result in a pairwise polarisation measure that can be expressed as follows:[1]

$$P_{pw} = \sum_{i}^{n} \sum_{j}^{n} w_i \frac{1}{n-1} d_{ij} \tag{5.7}$$

where w_i is the weight of party i, d_{ij} is the distance between parties i and j and n is the number of parties. The fundamental difference from the Esteban and Ray measure is that instead of weighting each pairwise distance by the product of w_i and w_j, the same weight $\frac{1}{n-1}$ is used for all parties, which effectively applies only for parties $i \neq j$ in d_{ij}, because the distance of a party from itself is by definition 0. This measure is uncorrelated with the number of parties or party system fragmentation and the results of the above simulations for this measure can be seen on Figure 5.3.

Instead of the Esteban and Ray measure for polarisation, this version will thus be used, as it

[1] A slightly different solution is suggested by Schmitt (2016).

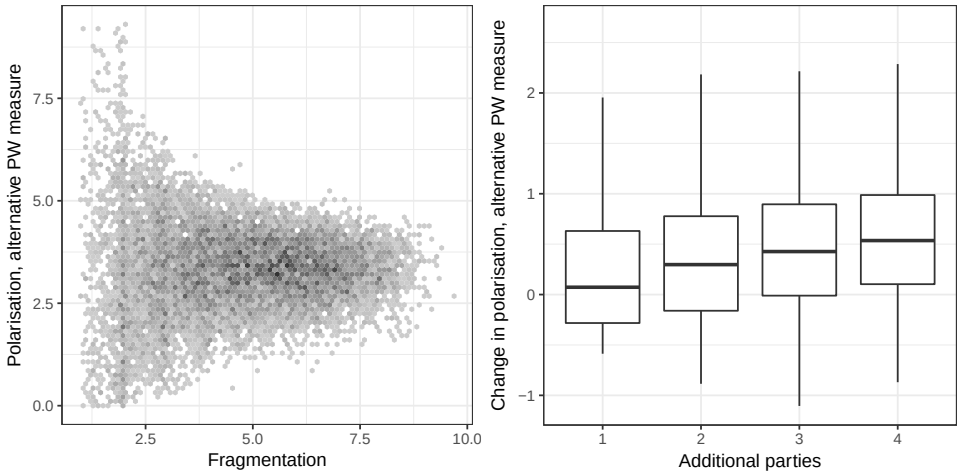


Figure 5.3: **Polarisation, Fragmentation and an Alternative Pairwise Measure.** The figure shows how an alternative pairwise measure that is suggested here performs in the above mentioned simulations. The box-plot shows the inter-quartile range (median in the middle) and the whiskers the largest/smallest value no further than 1.5 of the inter-quartile range from the edge of the box.

clearly has more desirable properties than the alternatives. The estimate of polarisation does seem to go up as additional parties are added to the system, but this increase is much weaker than for the other two indices. And it should be noted that it does have a problem with heteroskedasticity – the possible values of polarisation have a much higher variance, especially if fragmentation is at or below two parties. This is also a problem for the other two measures. However, such low fragmentation rarely exists in the party systems that we are looking and thus this cannot be a major problem here. Furthermore, unlike the ideological standard deviation and the Esteban and Ray measures, this proposed measure has a rather simple interpretation – it is the weighted average of the mean pairwise distance of each party from all other parties.[2]

5.2 Covariates of Polarisation

Even though the concept of polarisation is considered one of the fundamental dimensions of party systems and has been measured in various ways since the 1970s, there is still much doubt and ambiguity about its possible causes and consequences. It seems that at least within political science the bulk of research looking at these empirical relationships has been concentrated into the last decade. The following will give an overview of the main variables that have been associated with polarisation,

[2] Given the centrality of the concept of polarisation to the analysis of party politics, it is surprising that there is so little research into how different measures of polarisation behave and how they can be by definition related to fragmentation. The only recent work that comes close to addressing this and some other problems with measures of polarisation is Schmitt (2016).

with an emphasis on supply side phenomena – other aspects of parties and party interaction, as well as the broader socio-economic context. There is a whole strand of research, which has studied polarisation in the context of individual level voting behaviour. The following will give a brief overview of the main findings from that research direction, but the focus in this comparison will be on other aspects of the party arena (supply side) and its socio-political context.

Much of what follows below are echoes of Downs and Sartori. In their account of political spaces and party competition one can find, in addition to the quite straightforward associations with the number of parties and types electoral systems, hints about the political or ideological distance between parties being related to certain nuances of voting behaviour, as well as more broader phenomena, like social inequality or the quality and viability of democracy. And indeed, many of the general associations that they were either non- (Downs) or half-empirically (Sartori) speculating about, ended up being borne out by some systematic empirical evidence (but not by others).

5.2.1 Fragmentation and the Electoral System

I will not repeat the non-empirical arguments of Downs (see Downs 1957, pp. 115, 124) and Sartori (see Sartori 2005, pp. 307-312) with regard to fragmentation, the electoral system and polarisation that were already mentioned above. Suffice to say here that this idea – different electoral systems condition the number of parties and their political dispersion in different ways – was recurring also in other early contemporary political science writings (see e.g. Duverger 1967). The basic idea was always the same: proportional as opposed to majoritarian electoral systems go together with a higher number of parties and higher amount of aggregate distance between them. This association has also been illustrated by formal modelling (Cox 1990; McGann, Koetzle, and Grofman 2002; Merrill and Adams 2002), suggesting that ideological dispersion is associated with district magnitude and/or the number of parties in the system.

Empirical research into these questions has provided some clarity, but with qualifications and without ultimate certainty. In one of the earliest empirical studies into the topic of the number of parties and polarisation, Gross and Sigelman (1984), using their pairwise measure, suggested that even though conceptually fractionalisation and polarisation are separate dimensions, they tend to be empirically highly correlated.[3] In a later study Andrews and Money (2009), using a measure based on the distances between the extreme parties in a two dimensional political space, have also

[3] Which is not surprising as their measure, akin to the Esteban and Ray measure, is also by definition correlated with the number of parties.

suggested an empirical association between fragmentation and polarisation, but also indicating that the association might top out at a certain level of fragmentation.

Closely related to the concept of fragmentation is the proportionality of electoral systems. It is usually the case that the latter influences how many parties can exist in a party system (see Taagepera 2007). Therefore, proportionality has recently received perhaps even more attention in polarisation research than fragmentation and despite the fact that these two are related, they have often been considered separately. For example Dalton (2008), using a version of the ideological standard deviation measure, claims that there is no bivariate association between polarisation and fragmentation, but that there is one with district magnitude, an important indicator of disproportionality.[4] Also Dow (2011), using the measure of party system compactness by Alvarez and Nagler (2004), has shown that ideological dispersion and disproportionality (district magnitude and effective threshold) are related to each other.

In contrast, Ezrow (2008), using various kinds of data sources for the political positions of parties and the party system compactness measure, reports no association between the proportionality of the electoral system and policy extremism as well as no association with the number of parties. No association between polarisation measured as ideological standard deviation and fragmentation or the number of parties has recently been claimed also in the Latin-American context (Singer 2016).

Perhaps the two most thorough studies focussing on fragmentation or disproportionality and polarisation have been by Curini and Hino (2012) and Matakos, Troumpounis, and Xefteris (2015). Curini and Hino (2012) use the Comparative Study of Electoral Systems survey data to test if there is a relationship between polarisation (using the ideological standard deviation measure) and the number of parties that is dependent on coalition expectations. The logic of this association is the following. A larger number of parties is related to the likelihood of forming a coalition government. In such conditions, parties are incentivised to be more moderate in order to increase their coalition potential. They postulate an interaction with coalition/minority cabinet formation and party system fragmentation, measured by the effective number of parties (Laakso and Taagepera 1979). They control for disproportionality using the logarithm of district magnitude and measure coalition habits with a dummy variable indicating whether coalitions were formed in the past. They also look into whether other elections and certain characteristics of the electorate are associated

[4] District magnitude, the number of representatives elected from a district, determines what is called the effective threshold (Taagepera 1998). The lower the district magnitude, the higher the proportion of votes a party would need to get elected and the higher the likelihood that the votes given to smaller parties will be "wasted" because they will fail to get elected. Thus, the higher the discord between vote and seat shares, an important symptom of disproportionality (Gallagher 1991).

with polarisation. Their results show, among other things, that district magnitude and party system fragmentation by themselves are not related to party system polarisation, but associations emerge between fragmentation and polarisation if the model is supplemented with other variables. Most importantly, fragmentation has a positive association with polarisation if there are no coalition habits and a negative association if there are.

Matakos, Troumpounis, and Xefteris (2015) also look into the association between polarisation (using both the standard deviation measure and the distance between extreme parties measure), fragmentation, and disproportionality and add a further nuance to this possible association. They use the RILE index of the manifesto dataset to claim that polarisation is decreasing with disproportinality and increasing with the number of parties, but that the latter effect only holds if polarisation is measured on the basis of the two most extreme parties and not Dalton's ideological standard deviation measure. In their results, the disproportionality of the electoral system is an important determinant of party system polarisation – the higher the former, the lower the latter. Their study suggests the impact of how polarisation is measured – some fundamental associations might be there if we use one measure and not there if we use another. By implication, this also suggests that looking at the distance between the two most extreme parties and looking at ideological dispersion might mean looking at different phenomena, at least to some extent.

5.2.2 Government Stability

Next to associations with fragmentation, a considerable amount of effort has been devoted to looking into the association between polarisation and government stability. The logic here is that more polarised party systems are supposed to be a sign of a more complicated bargaining environment due to political or ideological incompatibilities between parties. This, in turn, undermines the extent to which parties are able to govern together as being in a coalition means having to make political compromises. Indeed, one of the first empirical analyses involving polarisation chose to look systematically into this very issue. Taylor and Herman (1971) found that ideological divisions, especially the proportion of seats held by anti-system parties, have important implications for government stability. Numerous later studies have added evidence in favour of this association (Laver and Schofield 1990; King et al. 1990; Warwick 1994).

5.2.3 Turnout, Volatility and Ideological Voting

There is an entire tradition of research that has been looking into the associations between voting behaviour and polarisation. To some extent these analyses venture into the domain of individual level data, which is out of bounds for the current comparison. However, many of the aspects considered here are also relevant for the following analysis.

Several analyses suggest an association with turnout, employing the following explanatory narrative (see e.g. Crepaz 1990; Dalton 2008; Steiner and Martin 2012). The more parties are distinct from each other in terms of their policies, there more is at stake at elections in terms of who might get the chance to rule. It should thus matter more for citizens who will form the next government and who will not. And thus there should be more motivation for people to participate in elections. But some of the empirical results in this respect are also mixed – for example Aarts and Wessels (2005) in their analysis of six countries, conclude that there are opposite bivariate associations between turnout and polarisation. In some countries it seems to be positive and in some negative. Other empirical evidence about this particular association is scarce.

One can also conceive of an association with polarisation and changing votes between parties on the individual level or electoral volatility on the aggregate level. If parties are closer together, then it should be easier for voters to switch from one party to another as doing so they do not have to jump over an ideological chasm. Indeed, there is research looking at either individual level party switching or aggregate level volatility that has confirmed these associations. Roberts and Wibbels (1999) have shown that polarisation (measured as the dispersion of the voters away from the centre) is negatively associated with electoral volatility in Latin-American parliamentary elections. Tavits (2005) looks at the relationship in the case of Eastern European countries, showing that polarisation (measured as the maximum distance between the government and opposition) is indeed negatively related to volatility also among that set of countries. Dejaeghere and Dassonneville (2015) also look into the individual level aspects of this phenomenon (party switching as something distinct from volatility) across party systems and show that party system polarisation is an important predictor for changing one's vote across elections.

Furthermore, there is a whole range of research that looks into the relationship between polarisation and ideological voting (van der Eijk, Schmitt, and Binder 2005; Lachat 2008; Singer 2016, e.g.) – the association between voters' ideological orientations and their party choice. This research seems to be rather unequivocal about the fact that higher polarisation is related to a stronger association between voters' ideological orientation and their party choice.

5.2.4 Social Inequality

What has also found more attention in recent analyses into party system polarisation is the possible association with the distribution of wealth in a society. The latter is supposed to determine the distribution of preferences and the latter, in turn, can be related to polarisation as parties adjust their political profiles to this distribution. Increased societal divisions are translated into larger divisions between parties. This relates back directly to what Downs was writing about social heterogeneity, the distribution of voter preferences and ideological variance (Downs 1957, pp. 100-118).

In a study of over sixty elections in 12 OECD countries, Pontusson and Rueda (2008) test the association between social inequality and the positions of left and right parties using the RILE index from the manifesto data set. Their hypothesis is a familiar one – greater inequality changes the preferences of voters, which in turn moves the ideological profiles of parties. However, they add an important qualification. We know that economically disadvantaged people are also less politically mobilised. Thus, the effect of inequality, particularly on parties on the left, should be the greatest when lower income people are more highly mobilised. Using voter turnout and unionisation as proxy measures for lower-class mobilisation, and both wage and overall household inequality (which includes wages, but also government transfers and returns on financial assets) as measures for the distribution of wealth, their results show that parties do react to inequality. At high levels of low income mobilisation, wage inequality is related to left skewed polarisation and at low levels of low income mobilisation household inequality is related to polarisation more towards the right (ibid., p. 346). It should be noted that they do not test the association between inequality and polarisation as such, but between inequality and the locations of different kinds of parties (left or right) on the left-right dimension. Yet, this is very close to the idea of polarisation and is thus also relevant in the context of the current comparison as evidence that polarisation and inequality can be related under certain conditions.

Another recent study, however, looks directly at the association between inequality and polarisation. Han (2015) probes into the effect of inequality (top income shares) on polarisation (relying primarily on the ideological standard deviation measure, but also testing the results with the Esteban and Ray measure) through its interaction with disproportionality. The overall logic here is the same – inequality causes social polarisation and parties might want to respond to that. But the crucial element here is how permissive the electoral system is. In highly disproportional systems, where a slight loss in votes might induce a major loss in parliamentary representation, parties might be more reluctant to move away from the median voter as that would carry a risk. In their analysis, dispropor-

tionality is measured by district magnitude and polarisation with the RILE index from the manifesto data set. A range of variables are used as controls – among others, economic growth, unemployment, inflation as well as turnout (as a proxy for low income mobilisation), ethnic fractionalisation, regime type and coalition habits. The results show no direct association between polarisation and income inequality, as well as no effect of disproportionality when interactions are not considered. Supporting the results of Curini and Hino (2012), he reports an interaction between coalition habits and fragmentation. Most importantly, however, the effect of inequality on polarisation seems to be dependent on district magnitude (disproportionality) and is stronger in more proportional systems. The results therefore seem to indeed show that more permissive electoral systems lead to more polarisation with increasing inequality.

5.2.5 Democracy and Affluence

Next to more or less established empirical associations between polarisation and other macro characteristics of political systems there are also a few associations which have been implied and which seem plausible in the context of what we know about the general development of Western political regimes. For example, Klingemann (2005, p. 33) has brought out an argument called "the end of ideology hypothesis", which relates polarisation to broader macro-sociological developments in Western societies. As the traditional social cleavages have lost their role in structuring the political landscape, a factor that should keep up the distinctness between parties as they are trying to appeal to their core constituencies, polarisation has also eroded. If this is true, then over the last half of the 20^{th} century we should be observing a gradual decrease in the polarisation of party systems.

An association with time, however, would conflict with an other association that has been suggested – that with the general level of affluence in societies, as the latter also tends to increase with time and thus its independent effect would be difficult to discern. With regard to the association with affluence, Sigelman and Yough (1978) looked at two contradictory hypothesis about political diversity and affluence. They hypothesised that on the one hand, social diversity and thus political polarisation might be muted in an affluent society. However, on the other hand, it can also be the case that affluence implies tolerance towards diverging points of view and thus allows for higher polarisation. They find support for the latter hypothesis, but not the former. Also, with regard to overall affluence, Pelizzo and Babones (2007) claim, using the historical examples of France and Italy, that worsening economic conditions can be related to increased levels of party polarisation. These two findings are contradictory to each other and there has not been much further research into the

association between the general wealth of a country and the polarisation of its party system. This association, thus, remains ambiguous.

There is, however, an association, which has been rather explicitly stated and accepted, but which has not been empirically tested at all – one with the level of democracy. This is something that was clearly present in the works of Downs (1957) and Sartori (2005), but which has not made its way into the analysis of polarisation yet. In brief, the argument of Downs was that ideological polarisation will make government policy across governments unstable, which can result in political chaos and possibly even revolution (Downs 1957, p. 120). The argument of Sartori was similar – anti-system parties at the extremes result in a politics of outbidding, which undermines the political life of a country. If the extremes become too strong and overtake the stabilising centre, the political system can fall apart. Therefore, one could expect an association between increased polarisation and lower levels of democracy. With democracy measures abound (e.g. Coppedge et al. 2016b), this is rather straightforward to test empirically.

5.3 Data and Design of Comparison

As we can see from the above, there are numerous suggestions and varying degrees of evidence for what could be related to polarisation, understood as both an explanatory variable and as something to be explained. The design of the current comparison will not differentiate between the two roles. It is not striving to set forth a causal claim for explaining polarisation or about its role in causing something else. It is simply treating polarisation as the variable on the left hand side of a regression equation and is interested in gathering on the right hand side a set of core variables for which an association with polarisation has been claimed or shown. What the analysis is looking for is simply association and what it is assuming is that the better measure of polarisation is more associated with phenomena it should be causing or being caused by alike.

As discussed above, two different measures of polarisation are used – the classical ideological standard deviation measure (equation 5.2) applicable only for measures of party position on a single dimension and the alternative pairwise measure (equation 5.7) that is applicable regardless of dimensionality and consists of the weighted average of the average pairwise distances of each party with every other party. The following analyses will focus on the comparison of the measures of ideological position and the index of similarity and the contrast between the two ways of aggregating individual positions or pairwise differences is to show how results can depend on the mechanics of the measure

(see Section 5.1.3).

The data that is used in the comparison below is obtained for the most part form the 2014 stable version of the ParlGov data set (Döring and Manow 2014), the Standardized World Income Inequality Database (Solt 2016) (based on data from the Luxembourg Income Study), the Quality of Governance data set (Teorell et al. 2016) and the Varieties of Democracy data set (Coppedge et al. 2016b). The objective of this analysis is not to test specific associations with polarisation (although this will also be comment on below), but to provide a plausible model given what we know about the possible associations with polarisation in order to compare the measures for party differences. The analysis will therefore focus only on those variables that have been central to the theories and analyses that were discussed above and will not focus on the myriad of "control" variables that some of the analyses have included. Thus, the model includes the following (the abbreviations in capital letters are used in the figures and tables below):

- **Polarisation (POL).** Based on the following measures of party position or difference (see Section 3.3):
  - **EELR** Elff's left-right scale
  - **FKLR** Franzmann and Kaiser's left-right dimension
  - **J** Jahn's left-right dimension
  - **K** König et al.'s left-right dimension
  - **KFRILE** version of RILE proposed by Kim and Fording
  - **LRILE** RILE using the logit scale of Lowe et al.
  - **PLR** Prosser's left-right dimension
  - **RILE** left-right index of the manifesto data set
  - **SIM** the index of similarity

  Using these indices, polarisation is operationalised through the weighted average pairwise distance measure (**PW**) (equation 5.7) and the ideological standard deviation (**SD**) (equation 5.2) measure. The values are standardized for the final set of cases so that the model coefficients would be comparable in their substantive magnitude.
- **Fragmentation (FRAG).** Measured as the effective number of parliamentary parties (Laakso and Taagepera 1979), calculated from the ParlGov data.

- **Disproportionality.** Measured as the Gallagher index (Gallagher 1991, p. 40), which is based on the difference between seat shares and vote shares, calculated from the ParlGov data set.
- **Voter turnout.** Percentage of the electorate that turned out to vote. Obtained from the Quality of Governance data set.
- **Electoral volatility.** Volatility is separated into that, which happens among established (continuous) parties and that, which can be attributed to the emergence of new parties. The data on volatility is obtained from the Dataset of Electoral Volatility and Its Internal Components in Western Europe (1945-2015) (Emanuele 2015).
- **Government stability.** The average duration of governments (in months) that were formed during the parliamentary term that is associated with a given election. Calculated from the ParlGov data set.
- **Level of democracy.** Measured using the electoral democracy (polyarchy) index form the Varieties of Democracy data set. This index is supposed to reflect the most basic aspects of democracy – a democratically functioning electoral process.
- **Inequality.** Household inequality before taxes, Gini index. Obtained from the Standardized World Income Inequality Database (Solt 2016), which in turn uses data from the Luxembourg Income Study. The original data set contains 100 estimated values for each included country year. Their mean as the best estimate for any given year is used in this analysis. The data set does not cover every year and thus it can happen that for a given election year, data is missing. In such cases data from up to three years in the past is used.[5]
- **GDP growth and inflation.** In some of the analyses that were mentioned above these are just used as "control" variables, but they reflect important indicators of economic conditions, which can influence party positions and are thus included here. Data for both is obtained from the Variates of Democracy data set.
- **Coalition habits.** Instead of a dummy variable indicating whether coalitions or minority governments formed in the past, the current comparison uses a more nuanced measure that should capture the same underlying phenomenon better. One would need a measure that captures not only if coalitions form, but also how open they are. If there are two fixed party blocs

[5] If there were still gaps in the middle of a continuous series of data, they were filled with averages of the adjacent values. Of all the data that is used here, data on inequality is most restricted in terms of availability as for most countries it is available only from the 1970s or 1980s onwards. Losing further cases would thus undermine the analysis more than using adjacent values for the missing election years.

that govern alternatingly, one would not expect that this would lead to decreasing distances between the blocks due to coalition expectations. This openness of coalitions is captured by the measure of government alternation (Casal Bértoa and Enyedi 2016). The measure ranges from 0 to 100, where 0 means that each time a government changes about half of the composition also changes and 100 means that there is no change in government or that there is complete chance. We could thus expect that lower values of alternation (which on this scale means more alternation) are related to lower polarisation.[6]

The effect of many of the covariates listed above has been hypothesised to be manifesting primarily or additionally through interactions (e.g. between fragmentation and coalition habits, inequality and turnout and inequality and disproportionality). These interactions will be tested, but they will be included in the model for overall comparison only if they have a notable impact on the quality of the model (model fit).

In order to ensure that all models are comparable to each other, the set of cases is restricted to only those for which data across all the 9 polarisation measures is available. Taking this and the extent of the data that is available for the right hand side variables into account, the coverage of the data set used in the following analysis is 148 elections across 13 countries and is brought out on Figure 5.4. The descriptive statistics of the variables used in the model are brought out in Appendix C.

Data about party system polarisation has both a temporal and a spatial dimension. We have observations for elections within countries over time. Thus, we are dealing with time-series cross-sectional data (TSCS), with a limited number of units repeatedly observed over time. Any analysis of this data should take its specific structure into account, especially the fact that the observations within countries are likely to be related to each other and more similar than across countries. The analysis thus uses the framework suggested by Beck and Katz (1995), Beck and Katz (1996), De Boef and Keele (2008), and Beck and Katz (2011) as the starting point and adopt a model specification that suits the particular characteristics of the data at hand.

Previous research that has looked into various aspects of party system polarisation has been

[6] The data that is used in the analysis is obtained from the authors. A version of the measure is used, that is based on a value of alternation for each year. The yearly values are first calculated as follows. If a government changes several times per year, the value for that year is is the average value for all government changes. If there is no government change, the yearly value is 100. In order to reflect the idea that years do not exist in isolation, a weighted average of all the previous values in the party system (weights linearly decreasing to 0 when they reach the beginning of the party system) is used to characterise each year. Such weighted average yearly values for a given election year are used in the current analysis.

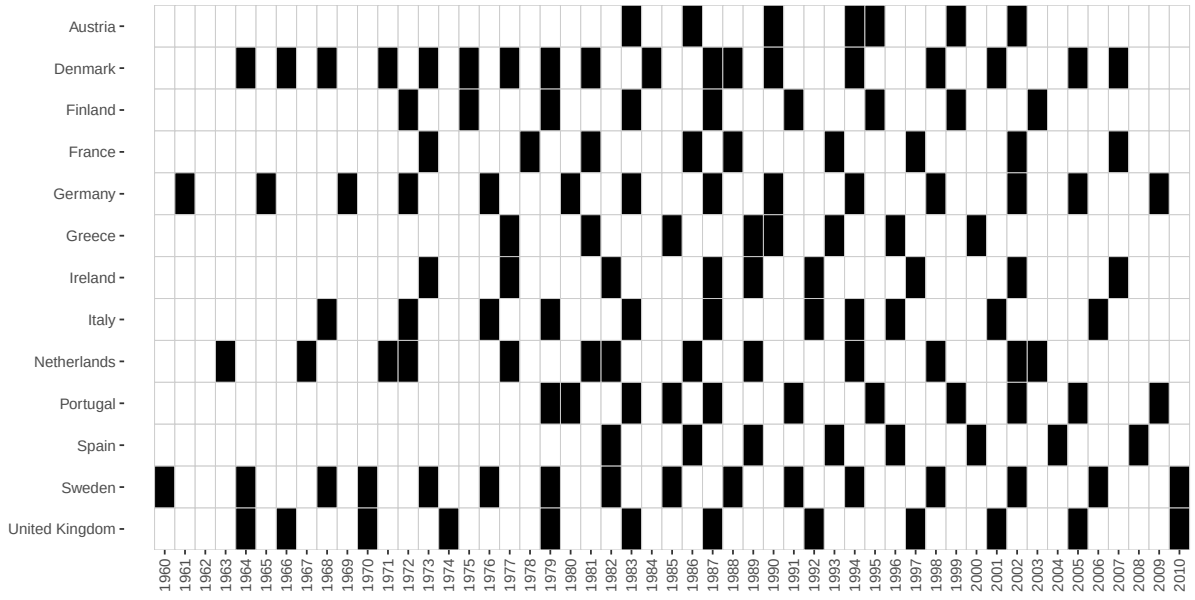


Figure 5.4: **Data Coverage.** The figure shows the years for which data for an election (or elections) was available for the listed countries.

heterogeneous both in terms of the data that has been used and partly as a consequence of that, also in terms of the modelling techniques that have been applied. Many of the studies have relied on survey data, especially the comparative study of electoral systems (CSES) (Dalton 2008; Dow 2011; Curini and Hino 2012; Dejaeghere and Dassonneville 2015). Survey data is limited in the sense that it does not give us observations across many time points and thus it is not possible to model the temporal dimension of the data. Therefore, the studies using this kind of data have relied on simple OLS, perhaps taking into account the clustered and temporal structure of the data by using some form of corrected standard errors.

Using the manifesto dataset, with its extensive temporal coverage, in contrast, opens up possibilities for using models that are more in line with the TSCS nature of the data. Analyses that have relied on the manifesto data set, either using the RILE index (Pontusson and Rueda 2008; Matakos, Troumpounis, and Xefteris 2015; Han 2015) or custom dimensions derived from the coding categories (Andrews and Money 2009), have employed models that have taken the spatial (country) heterogeneity as well as the temporal dimension into account. Han (2015) and Andrews and Money (2009) have both used a dynamic model (including a lagged dependent variable in the model) with corrected standard errors. Han (2015) recognizes the fact that country heterogeneity should also be modelled with country fixed effects, but does not use this option as some of the variables that he is interested in are inert or unchanging over time and are thus not possible to include into the fixed effects model. He does use a random effects model for robustness checks, which is theoretically less

suited for this kind of data (Frees 2004, p. 73; Hsiao 2014, pp. 48-49; see also Beck and Katz 1996; Clark and Linzer 2015), but models both country differences as well as allows for country invariant predictors. Matakos, Troumpounis, and Xefteris (2015) use both fixed and random effects models, the latter for the same pragmatic reason – to include country invariant variables.

The current analysis will begin with a static fixed effects model, which is somewhere between the most simple, restrictive model – a pooled (no country fixed effects) static model (only contemporaneous associations at time t) and the most general model, the autoregressive distributed lag (ADL) model, which models both the short and the long term effects of the variables (De Boef and Keele 2008). The analysis will use the static fixed effects model to have a first look at how the two different ways of measuring polarisation perform across the indicators of party difference and position and how this modelling strategy fits the nature of the data. It is checked whether the estimation of country specific intercepts and the inclusion or exclusion of the dynamic component are justified.[7]

5.4 Comparing Models of Polarisation

If we start with the static fixed effects model for all measures of party difference, and before we move on to model comparison, the first two questions we should ask are – can this model be simpler or must it be more complex? For simpler models we have only one option – the pooled model, which assumes that there are no systematic differences between countries that are not accounted for by the variables that are included in the model. Regardless of whether we use the Lagrange Multiplier Test or the F-test[8] to see whether there is evidence that country fixed effects are needed, the conclusion is the same – it is not justified to fit a model that would ignore the unobserved heterogeneity between countries.

But is this kind of model complex enough to represent the data adequately? When for simpler models we had only one option, then for more complex models there would be many possibilities with varying degrees of complexity (De Boef and Keele 2008; Beck and Katz 2011). A first indication of whether the static fixed effects model is adequate is related to the question of serial correlation in the residuals, which constitutes both a violation of the basic assumptions of OLS as well as being an

[7] This does not intend to argue with De Boef and Keele (2008), who note that for untangling the specific associations between the independent and dependent variables it would be most justified to start from the most general ADL model and test whether any restrictions to that model are justified. However, since the objective of the current analysis is overall model comparison, we will be satisfied with a reasonably well suited model that does not grossly violate any of the characteristics of the data, keeping in mind that this might not give the full picture of the underlying associations.

[8] Implemented in the `plmtest` and `pFtest` functions in the "plm" package in `R`.

indicator for model misspecification. Both the Breusch-Godfrey/Wooldridge test for serial correlation in panel models and the Durbin-Watson test for panel models[9] show that serial correlation is clearly present and substantively large for some of the measures, but not for all. This is especially a problem for the latent variable measures of party position constructed by König, Marbach, and Osnabrügge (2013), as well as the Franzmann and Kaiser (2006) left-right measure, both of which have explicitly assumed that party positions in election t must be related to or even in part derived from party positions at $t-1$. This results in measures of polarisation that are highly correlated from one election to the next in a way that is not explained by the changes in all the other variables in the model.

In broad terms, there are two ways in which the problem of serial correlation could be resolved in this case. One would be to treat it as a nuisance and use a modelling technique like the Prais-Winsten transformation to change the data so that serial correlation is eliminated[10], the other option would be to try to explicitly model this dynamic relationship, assuming that it tells us valuable information about how the variables in the model are related to each other (for a longer discussion on this, see Beck and Katz 1996; De Boef and Keele 2008; Beck and Katz 2011). Both of these can be problematic, especially if we want to use the same model for all of the indices, as this is the only way to ensure that the fit of the model is comparable. We might be throwing away valuable information when we transform the data (and end up interpreting a model that is fitted to data, the meaning of which we no longer clearly understand), while including a dynamic component in a model, which does not require one, can also do more damage than it would be of use, as well as complicate the interpretation of the model (De Boef and Keele 2008).

The analysis will thus proceed as follows. Two dynamic models are fitted, one which only contains the dynamic component (the lagged dependent variable) and one that contains all of the other variables. We also look at a static model that includes all of the latter, but no lagged DV. We can think of the first as an ignorance model – it does "explain" the change in the DV through its past values, which include all the possible effects of all possible previous explanatory variables, but without modelling them, this does not tell us anything meaningful about the phenomenon. The model only captures and model fit only indicates serial correlation in the dependent variable. We might think of the difference between that and the dynamic model that includes the rest of the variables as the

[9] Implemented in the `pbgtest` and `pdwtest` functions in the "plm" package.

[10] This method estimates the serial correlation based on the data and then uses this to calculate new values for the variables, from which the part that is responsible for the serial correlation has been removed.

amount that the latter contribute to the explanation of the phenomenon in this model specification, the amount of interpretable information they bring in. We should focus on the difference between the "full" and the "empty" dynamic model for the indices for which this is the more adequate model (the FKLR and the K measures) and on the static model for the rest.

The following will show only the results from models that use the pairwise measure of polarisation (PW) and the results from the models using the ideological standard deviation measure are brought out in Appendix D.2. Figure 5.5 shows model fits across the measures and models and Figure 5.6 brings out more clearly the difference between the dynamic model with only the lagged dependent variable and the dynamic model that also includes the other variables in order to show their contribution to model fit and thus that part of the latter, which is not a function of autocorrelation in the variable of interest.

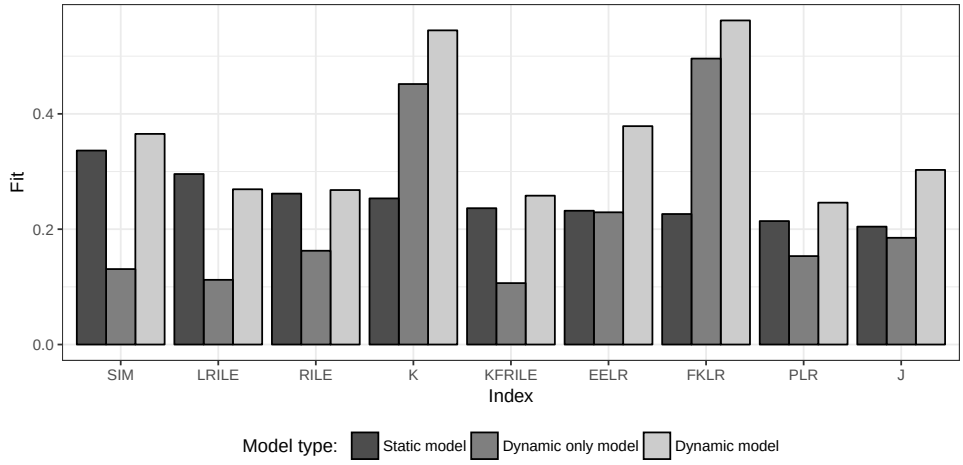


Figure 5.5: **Model Fit Comparison Across Types of Models and Measures.** Fit is measured by the R-squared of the models using the pairwise measure of polarisation.

If we compare the fit of the models, we can see first that the measures, which indicated the highest residual autocorrelation in the static model – the Franzmann and Kaiser (2006) (FKLR) and König, Marbach, and Osnabrügge (2013) (K) measures – are also the best fitting models in the dynamic specification. There is, however, not much difference between the "empty" dynamic specification and the one which includes additional explanatory variables. This level of fit is thus deceiving as it does not really indicate that we have a good explanation. What it rather shows is that the particular measure of polarisation is highly correlated with itself over time and other possible explanatory variables that we include in the model do not seem to give us a much better explanation, at least as long as model fit is considered a benchmark for the quality of explanation.

Among the rest of the measures of polarisation, for which the static model can be considered

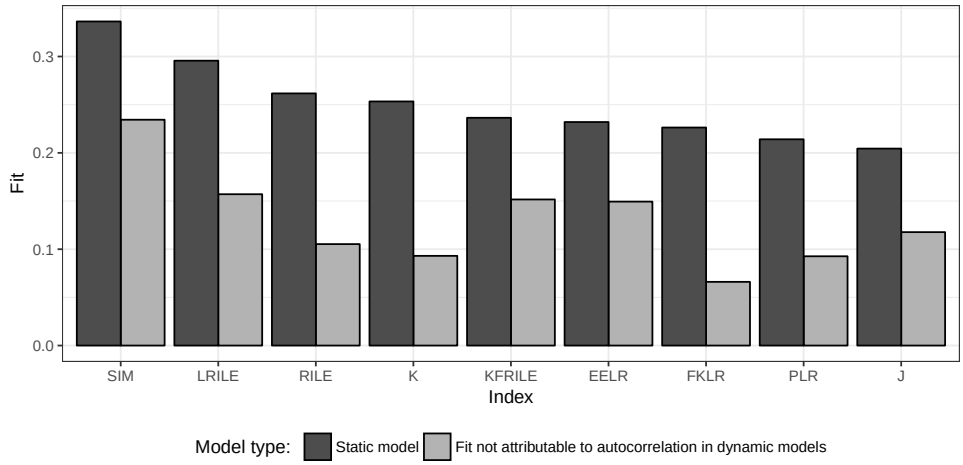


Figure 5.6: **Model Fit Comparison Across Types of Models and Measures.** Fit is measured by the R-squared of the models and the latter use the pairwise measure of polarisation.

adequate, we can see that the measure of polarisation that is based on the index of similarity gives us the best fitting model, while the RILE and its logit version also show higher levels of fit. We can also see that most of the other measures, all of which were suggested as improvements over the RILE index, do not really give us much better explanations of party system polarisation. It thus seems that the alternatives, at least in this context, do not really improve over the original flawed RILE index.

If we were to use the ideological standard deviation measure (see Appendix D.2), the main difference would be that model fit would be slightly higher across the board for the left-right measures, but still not higher than for the index of similarity. But we should keep in mind here what was mentioned above – the right hand side of the models includes fragmentation (effective number of parliamentary parties), which is mechanically related to the ideological standard deviation measure, but not the pairwise measure. This higher fit is almost certainly attributable to this association. We can see the role of fragmentation if we look and compare model outputs shown here in Tables 5.1 and 5.2 and in the Appendix in Tables D.4 and D.5. The ideological standard deviation based measures show a much stronger association with fragmentation across all the measures, while this is not the case for the pairwise measure that is shown here. We cannot therefore say that the ideological standard deviation measure is a better measure for polarisation, just that it is a measure that is by its nature related to the number of parties in the system. Of course there is no fundamental reason why these two should be defined separately, but that would preclude any question of analysing associations between the two.

Looking at the pairwise measures of polarisation that are not by definition related to fragmentation, the latter has an unambiguous positive association with polarisation only if the Jahn (2010)

Table 5.1: **Model Output, Fixed Effects, Pairwise Measure of Polarisation.**

	Dependent variable:								
	SIM	RILE	KFRILE	LRILE	PLR	EELR	FKLR	J	K
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GDP growth	−0.065**	−0.043	−0.055	−0.054	−0.023	−0.029	−0.043	−0.034	−0.047
	(0.024)	(0.033)	(0.035)	(0.032)	(0.030)	(0.029)	(0.034)	(0.029)	(0.030)
Inflation	0.029*	0.042	0.048*	0.036	0.057*	0.022	0.062*	0.036*	−0.001
	(0.014)	(0.021)	(0.021)	(0.021)	(0.023)	(0.023)	(0.024)	(0.018)	(0.021)
Fragmentation	0.035	0.127	0.154	0.174	0.194	0.234	0.301*	0.392**	0.322*
	(0.070)	(0.095)	(0.094)	(0.090)	(0.120)	(0.130)	(0.135)	(0.133)	(0.160)
Coalition habits	−0.028*	0.032	0.038	0.023	0.032	0.019	0.044*	0.005	0.064**
	(0.013)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.021)	(0.021)	(0.023)
Disproportionality	−0.024	0.024	0.024	0.029	0.032	0.005	0.051	0.057	−0.009
	(0.024)	(0.033)	(0.034)	(0.032)	(0.035)	(0.030)	(0.036)	(0.031)	(0.040)
Inequality	−0.003	−0.011	−0.021	−0.031	0.018	−0.028	0.023	−0.019	−0.006
	(0.010)	(0.018)	(0.018)	(0.017)	(0.017)	(0.018)	(0.021)	(0.017)	(0.022)
Turnout	−0.002	0.004	0.013	−0.008	−0.027	0.029	0.005	0.015	−0.001
	(0.013)	(0.019)	(0.019)	(0.019)	(0.022)	(0.021)	(0.017)	(0.017)	(0.024)
Democracy	−8.648***	−13.196***	−8.817**	−14.369***	−13.171***	−5.628	−5.339	−2.478	−0.859
	(1.493)	(3.131)	(2.929)	(2.846)	(3.127)	(3.358)	(3.846)	(3.679)	(4.519)
Volatility continuous	−0.009	−0.011	−0.007	−0.017	−0.031*	−0.028*	−0.029*	0.004	−0.025
	(0.010)	(0.012)	(0.013)	(0.010)	(0.014)	(0.013)	(0.013)	(0.013)	(0.017)
Volatility new	0.047	−0.020	−0.035	−0.009	0.017	−0.032	−0.040	−0.080*	−0.064
	(0.028)	(0.031)	(0.032)	(0.031)	(0.038)	(0.034)	(0.036)	(0.034)	(0.040)
Government duration	0.013	0.093	0.150*	0.161*	0.064	0.044	0.086	0.080	0.091
	(0.047)	(0.069)	(0.068)	(0.067)	(0.070)	(0.049)	(0.051)	(0.049)	(0.055)
Observations	148	148	148	148	148	148	148	148	148
R^2	0.336	0.262	0.236	0.296	0.214	0.232	0.226	0.204	0.253
Adjusted R^2	0.213	0.125	0.095	0.165	0.068	0.090	0.083	0.057	0.115
Note:									*p<0.05; **p<0.01; ***p<0.001

Table 5.2: **Model Output, Fixed Effects, Dynamic Model, Pairwise Measure of Polarisation.**

	Dependent variable:								
	SIM	RILE	KFRILE	LRILE	PLR	EELR	FKLR	J	K
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged DV	0.164*	0.210*	0.207*	0.100	0.256**	0.345***	0.722***	0.354***	0.646***
	(0.071)	(0.089)	(0.089)	(0.099)	(0.082)	(0.087)	(0.050)	(0.077)	(0.080)
GDP growth	−0.053*	−0.015	−0.035	−0.024	−0.016	−0.007	0.010	−0.028	0.030
	(0.024)	(0.029)	(0.030)	(0.027)	(0.032)	(0.027)	(0.024)	(0.030)	(0.025)
Inflation	0.023	0.036	0.041*	0.033	0.046*	0.026	0.032	0.033	−0.004
	(0.013)	(0.020)	(0.020)	(0.020)	(0.022)	(0.020)	(0.018)	(0.018)	(0.016)
Fragmentation	0.063	0.160	0.198*	0.206*	0.143	0.256*	0.132	0.314**	0.193
	(0.067)	(0.090)	(0.094)	(0.087)	(0.111)	(0.119)	(0.087)	(0.117)	(0.102)
Coalition habits	−0.030*	0.025	0.030	0.020	0.027	0.028	0.026	0.0003	0.036*
	(0.013)	(0.018)	(0.019)	(0.017)	(0.017)	(0.016)	(0.017)	(0.019)	(0.015)
Disproportionality	−0.042	0.004	0.008	0.024	0.009	−0.005	−0.012	0.016	−0.036
	(0.026)	(0.034)	(0.034)	(0.035)	(0.036)	(0.030)	(0.025)	(0.027)	(0.028)
Inequality	−0.011	−0.008	−0.019	−0.025	0.005	−0.031*	−0.006	−0.023	−0.032
	(0.010)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.014)	(0.017)
Turnout	−0.0003	0.013	0.023	−0.002	−0.015	0.032	0.005	−0.00001	0.005
	(0.015)	(0.018)	(0.020)	(0.019)	(0.022)	(0.021)	(0.011)	(0.019)	(0.019)
Democracy	−6.180***	−6.552*	−4.588	−9.981**	−7.574*	−2.756	4.279*	−2.461	1.479
	(1.729)	(3.123)	(2.752)	(3.542)	(3.509)	(3.523)	(2.072)	(3.295)	(2.564)
Volatility continuous	−0.005	0.001	0.011	−0.010	−0.030	−0.027	−0.006	0.002	0.002
	(0.014)	(0.012)	(0.014)	(0.011)	(0.018)	(0.017)	(0.012)	(0.015)	(0.013)
Volatility new	0.038	−0.036	−0.056	−0.020	0.029	−0.010	−0.023	−0.043	−0.012
	(0.027)	(0.031)	(0.031)	(0.028)	(0.035)	(0.032)	(0.031)	(0.033)	(0.026)
Government duration	0.004	0.021	0.086	0.082	0.080	0.044	−0.006	0.072	0.052
	(0.050)	(0.063)	(0.063)	(0.060)	(0.074)	(0.057)	(0.038)	(0.061)	(0.051)
Observations	134	134	134	134	134	134	134	134	134
R^2	0.365	0.268	0.258	0.269	0.246	0.379	0.562	0.303	0.545
Adjusted R^2	0.225	0.107	0.095	0.108	0.080	0.242	0.466	0.149	0.445
Note:									*p<0.05; **p<0.01; ***p<0.001

left-right measure is used. The Franzmann and Kaiser (2006) and König, Marbach, and Osnabrügge (2013) measures, for which we should interpret the dynamic model, are not as clear on this. The interpretation of the dynamic model is further complicated by the fact that now we have to distinguish between the short term or instantaneous effect, which is shown by the coefficients as usual and the long term effect, which is the product of the coefficient of the explanatory variable and the inverse of the complement of the coefficient of the lagged dependent variable (De Boef and Keele 2008; Beck and Katz 2011).

Overall, the clearest and most consistent association seems to be that with democracy – higher levels of electoral democracy go together with lower levels of polarisation, as expected. In this overall context it is notable that the Franzmann and Kaiser (2006) left-right measure shows some indications of an opposite association. For the rest of the explanatory variables, it seems to be the case that much depends on the measure of polarisation that we are looking at, especially if we are interested in the level of "significance" that is reported by such models. GDP growth has a negative association with polarisation, as expected, but only if we use the index of similarity. This effect can be explainable by the fact that an economic downturn will create political tensions between parties that are manifested in increased distances between manifestos. Inflation has a positive association indicated by some, but not all of the measures, which is similarly explainable by parties' diverging reactions to worsening economic conditions. Coalition patterns (coalition alternation) have a negative association when measured by the index of similarity, which means that the more unchanging the coalition game is, the less polarisation we can observe. This runs counter to what one might expect and does not have an obvious explanation one could give here, especially considering that some of the other measures show hints of an expected positive association. Rushing a bit ahead, Figure 5.7 shows, however, that this negative association for the index of similarity is driven by one country – Portugal. If the latter is excluded, we would not observe a significant negative association. Portugal also seems to be an outlying case as far as volatility among existing parties is concerned. If Portugal would be removed from the data, we could see a negative association between polarisation as measured by the index of similarity and that kind of volatility. We can see this association also in the case of some of the other measures of party position. This is in line with expectations – larger differences among parties would make it more difficult for people to jump from one party to another.

While thinking about these substantive associations, it should in general be kept in mind that we are talking about associations that are conditional on the set of cases that are included in the analysis as well as the variables that we are looking at. Bivariate associations can look very different, as well

as the overall results, were we to look at other sets of countries. To give an example of the latter problem and to understand better the associations that are shown by the measure of polarisation based on the index of similarity, which can be considered the best model in this case, we can perform something akin to the jackknife procedure – rerunning the analysis excluding cases one by one, in this case countries. We can have a look at the variability of the t-ratios, which one can think of as an indicator of clarity and direction of the association – the ratio of the coefficient to its associated "noise". The results of this are depicted on Figure 5.7, where the name of the country shows the value of the t-statistic should that country be excluded.

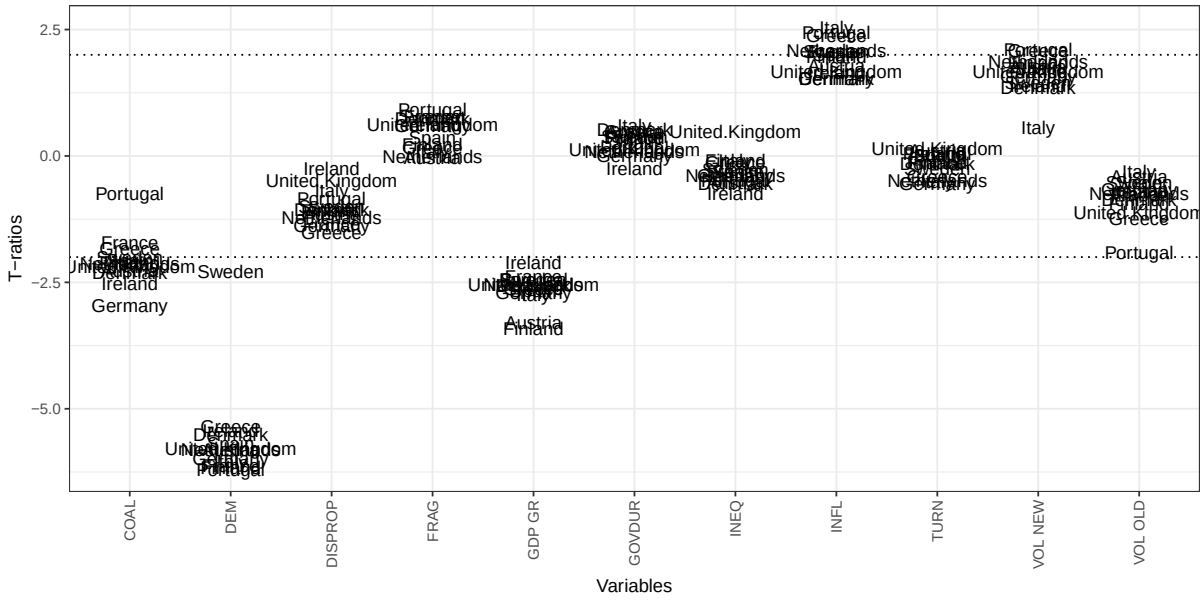


Figure 5.7: **Country "Effects" for the Model Using the Index of Similarity.** Countries are left out of the analysis one by one and the name of the country represents the value of the t-ratio for the coefficient of that variable, should that country be excluded from the analysis. The dotted lines represent the values for conventional levels of "significance".

We can see that in some cases a lot can depend on which countries are included in the analysis. For example, leaving Sweden out would weaken the association with democracy quite remarkably (which can be explained most likely by the anomalous hike in the polyarchy index for Sweden in the early 1970s). More crucial issues with regard to Portugal were mentioned above. The objective here was simply to look at and compare models in terms of their overall fit. The fact that the interpretation of the models and the variables that are included in them depends on the type of measure that is used for polarisation or the specific set of countries that is under observation is brought out here simply as an overall note of caution. Even if we use the best measure and the most appropriate model, nuances of the variables and cases can determine our overall conclusions about the substance of the models and the nature of the overall relationships, should we want to draw

conclusions about them.

5.5 Conclusions

Despite the fact that polarisation is considered to be one of the fundamental characteristics of party systems, there is very little agreement over not only what is related to it and how, but also about how it should be measured, and, for that matter, what the best measure for it should be. Empirical analyses seem to pick and choose without any systematic comparison between different options. The current analysis has provided such a comparison with a focus on various ways that the fundamental building blocks of polarisation, the differences between parties, can be determined, but also commenting on the basic ways that these differences can be aggregated into one measure. I have taken note that when the pairwise measure suggested by Esteban and Ray is used for operationalising polarisation, with party sizes as weights, we will get a measure of polarisation that is mechanically related to party system fragmentation, which is thus problematic for empirical analyses as it does not separate between the two fundamental aspects of a party system. The same seems to be true for the other classical measure of polarisation – the ideological standard deviation, which also uses the relative sizes of parties as weights to determine the ideological centre of gravity of a party system as well as to weigh the distances of individual parties from that centre. I thus used an alternative pairwise measure – the weighted average of the mean pairwise distance of each party from every other party – which is unrelated to fragmentation.

I compared nine different ways of determining the position of and difference between parties on the basis of the manifesto data set, contrasting the index of similarity to measures of left-right position. All of these measures and the models that are built around them use exactly the same data from exactly the same cases and aim to measure exactly the same thing – the differences between the political profiles of parties that should matter in their interaction and in relationships to adjacent phenomena. What we can see from the models is that the measure of polarisation, which is based on the index of similarity, provides the best fitting model, i.e. the best description of the underlying phenomenon of an aggregate amount of difference between parties in a system. Furthermore, at first sight there does not seem to be any sharp and fundamental disagreements between the models in terms of the associations that they show, although we do have to keep in mind that a lot can depend on the specific set of cases that are included in the analysis and there are a few indices that seem to stand out. Nevertheless, we can presume that overall the different measures of polarisation based

on different measures of party position do not measure contrasting phenomena, but something very closely related if not completely similar.

This comparison is the first piece of evidence that the pairwise index of similarity, which uses the manifesto data set as it is and does not transform the data in order to reach an estimate of party position that in turn could be used for estimates of party difference, gives us a better measure of the differences between parties. It uses all the information about each party manifesto, it does not pick and choose issues that should matter either *a priori* or empirically, but assumes that across all counties and parties and times, all issues and differences can potentially be important. It does not take the data and transform it into one dimension from its initial 56-dimensional form, which inevitably entails a loss of information. And it is much simpler, being just a measure of distance in a 56-dimensional space. As far as calculations of distance in space are concerned, 56 is as simple as 1. It should therefore be unsurprising that it is able to give a description of the overall amount of difference between parties in a system that is more closely related to other aspects of reality than the alternative measures compared here, as the latter involve numerous transformations of the original data. The next chapters will show how the index of similarity outperforms the measures of party differences that are derived from estimated ideological positions in the context of coalition formation and party change from one election to the next.

Chapter 6

Coalition Formation and Measures of Political Difference

This chapter, in a slightly different structural form, was published as Mölder (2017).

> "Politics makes strange bed fellows" we say to express our bewilderment at some new coalition which belies our expectations from past knowledge of the participants.
>
> – William Gamson, *A Theory of Coalition Formation*

The concept of polarisation focusses on the entire party system and is a general phenomenon, a characteristic or a state of the system like volatility or fragmentation. However, the very same concept – the idea that there is a measurable aggregate amount of political divergence in a set of parties – has also found application in a much more specific context. The idea that political differences between parties matter for who gets into government or not or which kinds of coalitions eventually form has been around for a while and the causal role of political divergence in this strand of research has been much more established and unambiguously verified than the role of general polarisation either as an *explanandum* or as an *explanans*. Coalition formation is thus another excellent process though which we can get a sense of how well the index of similarity and all the considered left-right indices capture what they purport to capture – the differences between parties that should matter in inter-party cooperation.

This chapter will follow the general design and aim as the previous. First, the main research on coalition formation is reviewed with a particular focus on how the aspect of political differences has been studied in this field. On the basis of the current state of research into coalition formation, the analysis thereafter focusses on two basic ways we can compare the indices. First, we can simply

measure the difference or distance of each party from the party of the future prime minister and see through that how well the indices classify the parties that actually ended up in government. Or we can model the relative probability each possible coalition alternative has depending on either only the amount of political difference among the parties in the coalition or by including additional basic explanatory variables that have been indicated in previous research. Both of these analyses give a sense of how well the different ways of measuring divergence between parties echo actual party interaction. The premise of the comparison is the same – if political differences between parties do matter for which coalition will form and which will not, then the measure that captures those differences better should predict coalitions or coalition membership better.

6.1 Coalitions and Political Differences

The extent of research into coalition formation is immense. In a concise, but comprehensive recent summary, Nyblade (2013, p. 14) notes that it is one of the most active areas of comparative politics over the last 40 years. A lot has changed as well as remained the same over those years. The first accounts of coalition formation that were picked up by political science (e.g. Gamson 1961; Riker 1968) focused on game theoretic elaborations of possible coalition formation outcomes, based on a limited range of assumptions about the objectives of political actors, the kinds of coalitions that should form, and the context of the bargaining process. The first empirical research into coalition formation between political parties that began to appear in the late 1960s and early 1970s (see e.g. Browne 1971) quickly pointed out that theories, which only focused on considerations of party and coalition size, were rather poor at predicting actual coalition formation outcomes. This initial simplicity was quickly replaced by both methodological and theoretical elaborations, which continue to shape this strand research until today.

de Swaan (1973) was one of the first to show the fact that political differences between parties can play a role in coalition formation. It became the expectation that the less politically diverse a coalition, the more likely it should be to form. Indeed, some of the first empirical studies including political variables that were conducted during that time (Taylor and Laver 1973; Franklin and Mackie 1983; Franklin and Mackie 1984), as well as those constituting the most recent and up to date research into this topic (Martin and Stevenson 2001; Bäck and Dumont 2008; Glasgow, Golder, and Golder 2012; Glasgow and Golder 2013), regard political difference as one among many important variables to consider. The idea that politically more compact coalitions should be more likely to form

is born out by the results of empirical analyses. The ways in which this has been included in actual analyses, however, have considerably changed over the years.

6.1.1 Changing Data and Methods

First, there have been notable developments in terms of the kinds of measures for party politics that have been available for coalition researchers. de Swaan (1973) and Taylor and Laver (1973) used expert judgement based ordinal measures of party locations on salient ideological dimensions, which were varying by country, but not over time. We can suspect that this was the case also for the analyses of Franklin and Mackie (1983) and Franklin and Mackie (1984), although the papers referred to here do not include any elaboration on how they operationalised ideology. Up until the late 1980s and early 1990s expert judgement was the main source of information about the ideological positions of parties (Laver and Schofield 1990, pp. 246-248) and it has been fruitfully used even later. Warwick (1996) used factor analysis of several expert surveys to determine the positions of parties on a left-right dimension in his research into coalition membership and Isaksson (2005), Bäck and Dumont (2008) and Glasgow, Golder, and Golder (2011) also use expert data.

In the late 1980s and early 1990s several seminal works were published (Budge, Robertson, and Hearl 1987; Laver and Schofield 1990; Laver and Budge 1992) that brought the manifesto data set and the RILE index into the centre of much of the subsequent research that has needed estimates of party ideological positions and differences. It has become the measure that is used most often in coalition research to determine party differences (see, e.g. Martin and Stevenson 2001; Mattila and Raunio 2004; Kang 2009; Martin and Stevenson 2010; Glasgow, Golder, and Golder 2012; Glasgow and Golder 2015). Among the more outstanding recent research there are only a few examples where the authors have opted for a different measure or a data source (e.g. Isaksson 2005; Bäck and Dumont 2008; Glasgow and Golder 2013).

Second, what has changed even more perhaps, is the design of the analyses as well as methodological choices for estimating which of the possible coalitions is the likeliest to form. The first empirical research into coalitions grew out of game theory and focused on modelling the whole range of possible coalitions. This research produced, in line with each version of theory, a set of possible coalitions that could form and the success of such theories was evaluated upon whether the actual coalition that formed was among those that were predicted (see Browne 1971; Taylor and Laver 1973). Such analyses, which essentially constituted a classification scheme of alternative kinds of coalitions, were rather poor at differentiating within these broad classes. Developing this approach

further, Franklin and Mackie (1983) and Franklin and Mackie (1984) applied multiple regression for constructing a model to better predict which of the possible coalitions would actually form. Almost two decades later a methodological turning point in coalition research was a fundamental article by Martin and Stevenson (2001), which introduced conditional logit (McFadden 1973) as the most appropriate method for predicting which of all the possible coalitions in a formation opportunity would actually form.

Conditional logit treats each choice situation, i.e. a coalition formation opportunity, separately and estimates which of all the possible coalitions is most likely to materialise depending on the characteristics of the possible coalition, e.g. size, whether it contains a particular kind of party or is of a certain type. In short, it essentially assigns a probability (or odds, to be more precise) to each coalition alternative and we consider the one with the highest probability to be the one that is predicted to form. A recent continuation of this innovation has been the suggestion by Glasgow, Golder, and Golder (2012) to use mixed logit modelling for such analyses, as it avoids some of the assumption violations of conditional logit and is thus able to provide more valid estimates of the effects of the variables in the model. Mixed logit allows the effects of the explanatory variables to vary across choice situations, accounting for unobserved heterogeneity and providing a more meaningful account of the effects of specific variables and a more valid account of hypothetical scenarios using these coefficients (ibid.).

6.1.2 Coalition Formation as a Sequential Process

Another strand in coalition research has been to focus not on all the possible coalitions that could form at once, but on the sequential steps in the process, which begin with the selection of the *formateur* and end with the latter choosing coalition partners to form a government. Such research focuses on individual parties and their chances of either becoming the *formateur* or entering the government. In this manner Warwick (1996) looks at the choice of the *formateur* and the likelihood of becoming a cabinet member using logistic regression, as does Mattila and Raunio (2004), who look at the role of electoral success in government formation. Logistic regression in this kind of research is also the method of choice for Isaksson (2005).

Awareness of the sequential nature of the process of coalition bargaining has brought these two angles – one focussing on parties and the other on all possible coalitions – together in analyses that first estimate the selection of the party of the future prime minister or the *formateur* and then connect this with an analysis of the range of possible coalitions (Bäck and Dumont 2008; Kang 2009). These

studies rely, like the studies referred to above, on conditional or mixed logit modelling. Even if the interest is on single parties' likelihood of becoming coalition members, Glasgow and Golder (2015) recommend using conditional or mixed logit to estimate the probabilities of all possible coalitions as this is methodologically more sound than using logistic regression on single parties as cases. The probability of one party joining the government is not unrelated to the probabilities of other parties joining and therefore we should be looking at possible coalitions as wholes.

Although since the work of de Swaan (1973) there has been a consensus that political factors are important enough to be included in models estimating both the selection of the *formateur* and the coalition as a whole, and that political divergence has a negative effect of the likelihood of a coalition forming, a few things should be pointed out about the nature and details of this effect. Assumptions about a unidimensional ideological space and the exceptional position of the median party, i.e. the party that is at the "centre" of this space, have led the latter to be included in virtually all models predicting the party of the prime minister, even though there have been doubts about the concept of the median party (Nyblade 2013, p. 16). It seems that at least for predicting the party of the prime minister, the role of size is primary to the extent that the median party adds very little to the predictions (see e.g. Bäck and Dumont 2008; Kang 2009). Other studies (Glasgow, Golder, and Golder 2011; Döring and Hellström 2013) have noted that the median party is a good predictor in Western, but not in Eastern Europe.

With regard to predicting coalitions as a whole, already the earliest studies (Taylor and Laver 1973; Franklin and Mackie 1984) noted a lot of variation in the role of political or ideological differences across countries and the sets of cases that are considered, which ties in with the problem on unobserved heterogeneity mentioned above. It should be kept in mind though, that the analyses that have been conducted later that have taken this into account have not indicated much unobserved heterogeneity with regard to the effect of policy across formation opportunities (Glasgow, Golder, and Golder 2012, p. 258). Nevertheless, we should expect that political differences might be more important in some instances than in others, as well as each and every one of the other predictors, and thus much can depend on the specific set of cases under consideration. I will return to the question of how to take into account the uncertainty arising from this heterogeneity and the ultimately arbitrary (depending e.g. on data availability) set of cases we analyse.

6.1.3 Other Predictors of Coalition Formation

In addition to political differences, countless other factors have been tested in models of coalition formation. At times these models can grow to be very large and are not so much selected on the basis of model fit and the contribution of individual variables to the latter as they are put together to test the countless hypothesis that have been proposed about what could or should have an effect on coalition formation. It is the yearning for stars that takes precedence over finding the most parsimonious description of the coalition formation process (model) among equally good descriptions (model fit). For example, the best model that Martin and Stevenson (2001) suggest includes 17 explanatory variables, among them variables for coalition type, the number of parties, ideological divisions not only in the coalition, but also the opposition, whether the coalition includes various kinds of parties or the previous prime minister, whether it is the incumbent coalition returning and many others. The substantive importance of none of these variables in the model is evaluated. This list of variables is updated in their later analysis (looking at e.g. coalition partner availability, bargaining costs, parliament seat share) with still no explicit focus on overall model fit or the substantive contribution of the variables (Martin and Stevenson 2010).

If we look at the most recent research (Bäck and Dumont 2008; Martin and Stevenson 2001; Glasgow, Golder, and Golder 2012; Martin and Stevenson 2010), then the most relevant and consistent variables in the models, in addition to ideological divisions, concern:

- whether the coalition is the previous coalition returning to office;
- whether it contains the largest party;
- whether it is minimal winning;
- the number of parties in the coalition.

The analysis here takes this as the basis for building a basic model for predicting coalition formation, one that would not include all possible variables, but the most important ones and which could thus serve as a benchmark for comparing the different measures of party position. We return to a few issues of variable selection after the introduction of the range of data that is available for this analysis.

6.2 Data and Design of Comparison

6.2.1 Data on Cabinets

The following analysis uses data from the 2015a version of the manifesto data set (Volkens et al. 2015a) and the 2014 stable version of the ParlGov data set on elections and cabinets (Döring and Manow 2014). Information about party seats in the legislature, seat shares and the coalition membership of parties is taken from the ParlGov data set. Although the ParlGov data set provides matching party codes from the manifesto data, there were many discrepancies and omissions, which were amended before the data was used. For additional information on the data, see Appendix C.

The availability of data differs across the measures of ideological position. In order to ensure that all the models are directly comparable to each other, only that subset of the data that is available for all measures is used. The merged data set in its broadest extent thus includes information on 228 coalitions from 14 countries: Austria (15), Belgium (22), Denmark (21), Finland (27), France (24), Germany (23), Greece (1), Ireland (12), Italy (34), Luxembourg (16), Netherlands (19), Portugal (4), Sweden (9), United Kingdom (1).[1] This includes coalitions that formed both immediately after elections as well as in the middle of the parliamentary term. Caretaker coalitions are excluded as they form under exceptional circumstances where one cannot expect that the same rules apply. Across all measures, only those coalition formation situations are included in the analyses where there is data for all members of the coalition and even though yearly data was provided by the König et al. measure, the data for the most recent election year was used so that all measures would refer back to the same time point. The data coverage is brought out on Figure 6.1.

For comparing the performance of the measures, we will not rely on the results from only the initial set of cases, but on results obtained from bootstrapping (see Mooney and Duval 1993) from among the coalition formation situations. A random sample with replacement is repeatedly drawn from among the unique coalition formation situations to obtain 1,000 bootstrap samples of the same size as the initial set of cases (coalition formation situations). The analyses are performed on each of these bootstrap samples and the results are recorded. This gives 1,000 estimates for each parameter of interest. I use the distributions of these estimates to compare the models and the indices. In this way it is possible to assess the uncertainty of the results.

[1] Earlier versions of this analysis, comparing the index of similarity one by one to all the other indices, used pairwise complete observations (between the index of similarity and the rest of the measures). The overall results of these analyses were the same. However, using different sets of cases for different index pairs complicated the comparisons. Using the same set of cases for all the indices is a more straightforward way to make the same point.

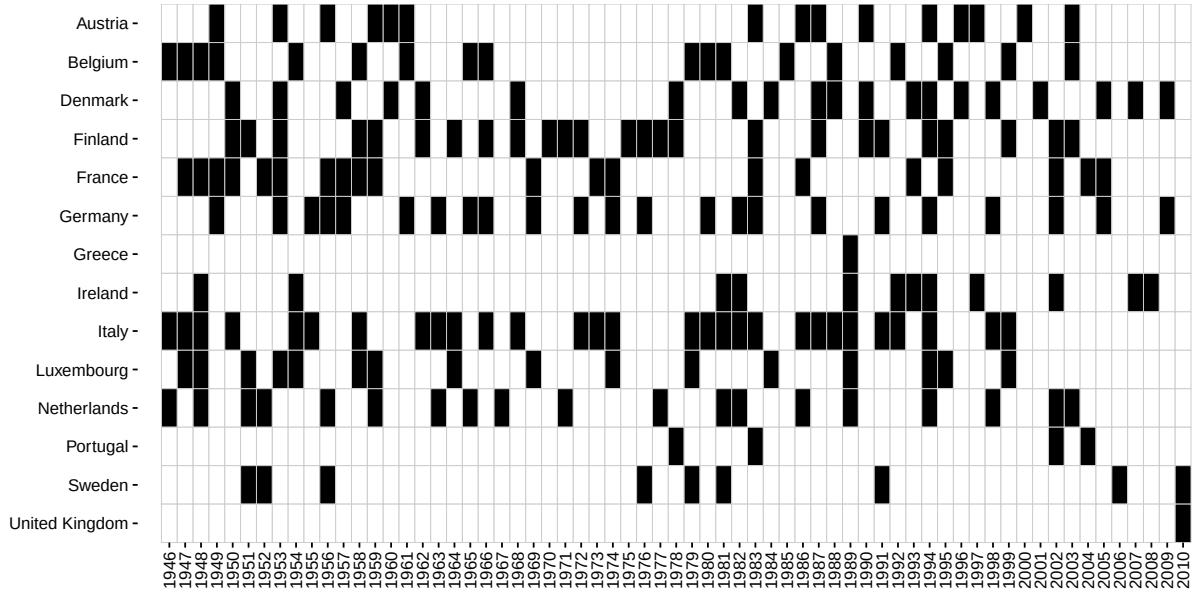


Figure 6.1: **Data Coverage for Coalitions, Manifesto and ParlGov Data Sets.** The figure shows the years where a coalition was formed and for which there is data available and usable in the manifesto data set as well as the ParlGov data set.

6.2.2 Coalitions and the Comparison of Policy Measures

Before considering models that try to select among all of the possible coalitions, a simple classificatory exercise is conducted as a way of comparison. When the main question is how do political or ideological differences matter for being included in a coalition, if that is all we are interested in, then we can assume that the other aspects of the puzzle are known. Thus we can assume that we know the *formateur* (the party of the prime minister in the coalition) and that we know how many parties the *formateur* will include as coalition partners. In this context, comparing the measures of political difference would boil down to comparing how estimated distances from the party of the future prime minister help to classify parties either as members of the coalition or not. Size and other party characteristics can be left out of the picture as the purpose of the exercise is just to compare estimates of political difference.

The second comparison involves modelling coalition formation in the way that has been adopted in coalition research. It is assumed that the identity of the *formateur* is known, and that it is the party that holds the position of the prime minister in the future government (this is akin to the assumption in the second stage analysis of Kang 2009). Conditional logit modelling (McFadden 1973) is used to predict which of all the possible coalitions in a formation situation is most likely to form. The analysis uses the `clogit` function from the "survival" (Therneau 2015) package in `R` (R Core Team 2015) to estimate the models. The model can be represented as follows:

$$Pr(y_i = m|x_i) = \frac{e^{x_{im}\beta}}{\sum_j e^{x_{ij}\beta}} \tag{6.1}$$

$Pr(y_i = m|x_i)$ refers to the probability of a particular coalition alternative m in coalition formation situation i, x is the characteristics of the possible coalitions j in coalition formation situation i and β is model parameters (see Long 1997, p. 179).

It is true that mixed logit modelling would be more appropriate for understanding the nature of the effects of individual variables and for constructing counterfactual scenarios after the analysis (Glasgow, Golder, and Golder 2012). But the purpose of this analysis is not to test hypothesis about the effects of individual variables, nor to provide a model that is as fitting or as comprehensive as possible. It is to compare the various measures of party difference by evaluating their contribution to model fit. Therefore, an incomplete model is not a major flaw, as long as all models that are tested are incomplete in the same way, just as systematic bias would not be a problem for comparison as long as all measures are biased the same way.

Conditional logit uses maximum likelihood estimation and there are several ways to evaluate the fit of such models. The simplest and most interpretable approach is to look at the proportion of cases that are correctly classified, which is quite common for evaluating logit models, including logistic regression. I specifically focus on what is called sensitivity – the proportion of true positives (Hosmer and Lemeshow 2000, p. 157). I focus on this and not the overall classification rate as the latter is inflated by a high number of true negatives – the coalition alternatives that are correctly predicted not to form.[2]

In addition to correct classification, there is a range of fit indices that are based on the log-likelihood of the model. Out of the two primary measures based on log-likelihood – AIC and BIC, the current analysis takes a look at the latter, as it is interpretable in model comparison as Bayesian posterior odds, the relative support for one model over the other evident in the data (Fox 2008, p. 617). A BIC difference of more than 10 corresponds to 99% probability in favour of the model with the lower BIC value (ibid., p. 618). The BIC can be used to compare models that are estimated for the same data (same set of cases) and have the same dependent variable as the value of the BIC is calculated from the log-likelihood of the model.[3] BICs from two different samples, which in this

[2] E.g. a coalition formation situation with $n = 5$ parties has $\sum_{k=2}^{n} \binom{n}{k} = 26$ coalition combinations, so most would inevitably be classified correctly as not to form.

[3] The formula for BIC is: $-2 \times LL + k \times ln(n)$, where LL is the log-likelihood of the model, k is the number of parameters and n is the number of cases.

case would have a different number of government formation situations and/or a different number of coalition alternatives, would not be comparable. The difference in the BICs of models fitted to the same set of cases with the same coalition alternatives, be it a bootstrap sample or the initial set of cases, are comparable.

The comparison focusses on each coalition formation situation where a coalition was actually formed and considers only those possible coalitions that include the future party of the prime minister. As the objective of the chapter is not to test theories or hypothesis about specific variables, the analysis will not endeavour to include the full range of predictors that have been part of some of the main recent analyses (Martin and Stevenson 2001; Bäck and Dumont 2008; Martin and Stevenson 2010; Glasgow, Golder, and Golder 2012), but only those, which are of central importance.

Following the discussion on party system polarisation in section 5.1.3, the amount of political difference in a set of parties is operationalised as the weighted mean of the average pairwise distances of each party with every other party (see equation 5.7). This measure is applicable in the same way for the index of similarity as well as the measures of ideological position and it is not related to the number of parties nor fragmentation, a problem for the Esteban and Ray measure as well as the ideological standard deviation measure (see section 5.1.3). The analyses are performed in parallel with the latter and the results are reported in Appendix D.3. The values are standardised across the different indices so that the model coefficients would be comparable.

Table 6.1: **Model Specifications.** The table lists the independent variables that are included in the models.

	Politics only model	Extended model
1. political differences	x	x
2. seat share		x
3. seat share^2		x
4. incumbent		x
5. minimal winning		x

Two model specifications are tested to compare the various ways of measuring political difference. First, the analysis looks at models that only include the political difference variable as a predictor for the potential coalitions. This indicates the contribution of politics without the impact or interference of other variables. This is compared to a model specification that includes it as well as other central variables in predicting coalitions that have been defined by previous research – the seat share of the coalition in parliament, a dummy variable indicating if the coalition is a minimum winning coalition (1) or not (0) and a dummy variable to indicate if it is the incumbent coalition (1) or not (0). The seat share variable is also included in its squared form to reflect the non-linear relationship (Mattila

and Raunio 2004; Glasgow and Golder 2015). These specifications are summarised in Table 6.1. The values of the political difference variables are standardised so that their coefficients would be comparable across models. The descriptive statistics for the data set that is used for the conditional logit models is brought out in the Appendix, Table C.6. The data set includes all the possible coalitions in all coalition formation situations, which include the party of the future prime minister. This gives us a total data set of 12,864 possible coalitions across 228 coalition formation situations.

6.3 Predicting Coalitions and Coalition Membership

The abbreviations in the tables in this section as well as the Appendices refer to the indices as follows:

- **EELR** Elff's left-right scale
- **FKLR** Franzmann and Kaiser's left-right dimension
- **J** Jahn's left-right dimension
- **K** König et al.'s left-right dimension
- **KFRILE** version of RILE proposed by Kim and Fording
- **LRILE** RILE using the logit scale of Lowe et al.
- **PLR** Prosser's left-right dimension
- **RILE** left-right index of the manifesto data set
- **SIM** the index of similarity

6.3.1 Classification and Distance from the Prime Minister

Let's start from a classification based on the distance of each party from the party of the prime minister, assuming that the number of parties the coalition would include is known. Using each index, the parties are ranked according to the distance from the party of the PM. Based on the ranking, as many parties as the eventual coalition would additionally entail are counted and they are considered to be predicted as members of the coalition. It is then possible to determine if coalition/opposition status for each party in the coalition formation situation was correctly classified, as well as to look at the composition of each coalition as a whole. To compare the indices it is possible to calculate the proportion of parties that were correctly classified as being in the coalition or in the opposition and the proportion of cabinets that were correctly classified as a whole.

This classification is performed for the initial set of cases as well as for 1,000 bootstrap samples, which re-sample from the former (with replacement) in order to simulate potential uncertainty in the data. For each bootstrap sample the index that provided the best classification is recorded in both cases and for each index the proportion of the latter across all re-samples is shown. Table 6.2 presents the results of such an analysis and the distribution of the correct classification rates across the bootstrap samples is also shown on Figure 6.2.

Table 6.2: **Classification of Parties and Cabinets.** The table shows what proportion of individual parties and cabinets as a whole we would classify correctly on the basis of each party's distance from the party of the prime minister. The table also shows the proportion of bootstrap samples in which each of the indices provided the best classification.

Index	Party correct	Party boot best	Coalition correct	Coalition boot best
SIM	0.69	0.92	0.39	0.91
RILE	0.56	0.00	0.25	0.00
KFRILE	0.56	0.00	0.22	0.00
LRILE	0.56	0.00	0.24	0.00
PLR	0.61	0.00	0.29	0.00
J	0.61	0.00	0.30	0.01
FKLR	0.65	0.08	0.32	0.04
EELR	0.61	0.00	0.31	0.01
K	0.62	0.00	0.32	0.04

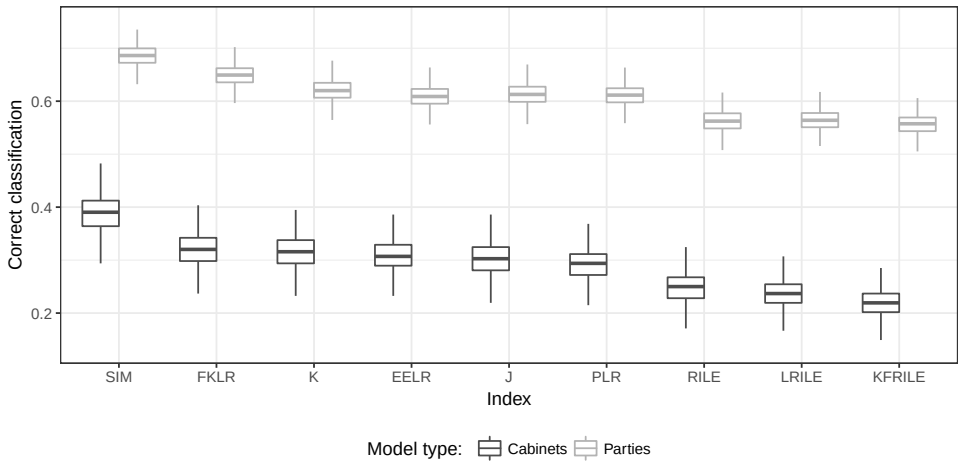


Figure 6.2: **Distribution of Correct Classification across Bootstrap Re-samples.** The figure shows the distributions of correctly classified cabinet and parties. The box-plot indicates the inter-quartile range (median in the middle) and the whiskers the largest/smallest value no further than 1.5 of the inter-quartile range from the edge of the box.

Given the above mentioned assumptions, it can be clearly seen that the index of similarity provides better accuracy in classification than the left-right measures. The proportion of parties and coalitions that it classifies correctly (the columns "Party correct" and "Coalition correct") is notably higher than the competing measures. In this comparison, assuming that we know the party of the prime minister and the number of parties in the future coalition, it classifies 69% of parties correctly according to their coalition/opposition status and 39% of the cabinets correctly in terms of their

whole composition. This is notably more than any of the alternative measures. And if we look at the 1,000 bootstrap re-samples of the original set of cases, we can see that the index of similarity is the best measure overall in almost all of the re-samples (the "boot best" columns show the proportion of bootstrap samples where each index was the best predicting index). If all indices were equally good, they would on average show the best results about 11% of the time – the inverse of the number of indices.

6.3.2 Predicting the Most Likely Coalition

Next we turn to the comparison of the indices through conditional logit models, which is also done both for the initial set of cases as well as 1,000 bootstrap re-samples. Table 6.3 shows the sensitivity and the BIC values for the politics only model as well as the extended model across all the measures of political difference between parties. Furthermore, like in the case of classification, the proportion of bootstrap re-samples in which each of the measures proved to be the best measure (the "boot best" columns) is shown.

Table 6.3: **Model Fit Statistics, Pairwise Measure of Difference.** The models cover all possible coalitions that include the party of the PM.

	Politics only model				Extended model			
		BIC		Sen.		BIC		Sen.
Index	BIC	boot best	Sen.	boot best	BIC	boot best	sen	boot best
SIM	1,305	0.72	0.21	0.39	1,088	0.96	0.40	0.53
RILE	1,378	0.00	0.18	0.02	1,148	0.00	0.37	0.04
KFRILE	1,390	0.00	0.14	0.00	1,157	0.00	0.37	0.02
LRILE	1,391	0.00	0.15	0.00	1,161	0.00	0.38	0.05
PLR	1,368	0.00	0.20	0.14	1,152	0.00	0.39	0.15
J	1,355	0.00	0.18	0.02	1,148	0.00	0.38	0.22
FKLR	1,338	0.05	0.19	0.06	1,137	0.00	0.37	0.03
EELR	1,395	0.00	0.20	0.19	1,164	0.00	0.37	0.05
K	1,329	0.22	0.21	0.29	1,132	0.04	0.36	0.08

Regardless of whether we look at the model which includes only the political differences among the parties in a possible coalition as the predictor or the model, which includes the additional predictors, we can again see that the index of similarity performs best, although the differences are not as stark as they were in the case of the classification above. If we look at the BIC values for both models for the initial set of cases, then the model using the index of similarity is clearly the best. Furthermore, for 72% of the bootstrap re-samples in the case of the politics only model and 96% of the bootstrap re-samples for the extended model, the measure of difference provided by the index of similarity showed the best model.

For sensitivity, the differences between the indices are slightly smaller. For the politics only model

we can see that some of the other indices (PLR, K, EELR and FKLR) show the same or almost the same level of correct classification. Across the bootstrap re-samples, the index of similarity is still the best measure overall, showing a higher fit in 39% of the bootstrap samples. For the extended model, the difference in correct classification is again much more clearly in favour of the index of similarity. For our set of cases, it predicts the correct coalition in 40% of the cases if we look at the initial sample. Across all bootstrap re-samples, it gives us the most correctly classifying model in 53% of the time, which is much higher than the next best measure, which here would seem to be Jahn's left-right index. A visual representation of model fits across the indices and bootstrap re-samples is brought out on Figures 6.3 and 6.4.

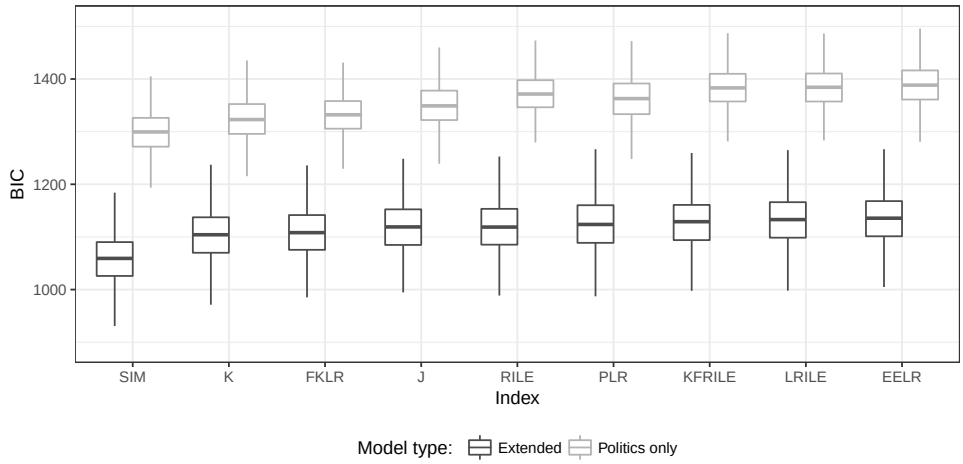


Figure 6.3: **Distribution of model fit across bootstrap re-samples, BIC.** The distribution of the BIC values (lower is better). The box-plot indicates the inter-quartile range (median in the middle) and the whiskers the largest/smallest value no further than 1.5 of the inter-quartile range from the edge of the box.

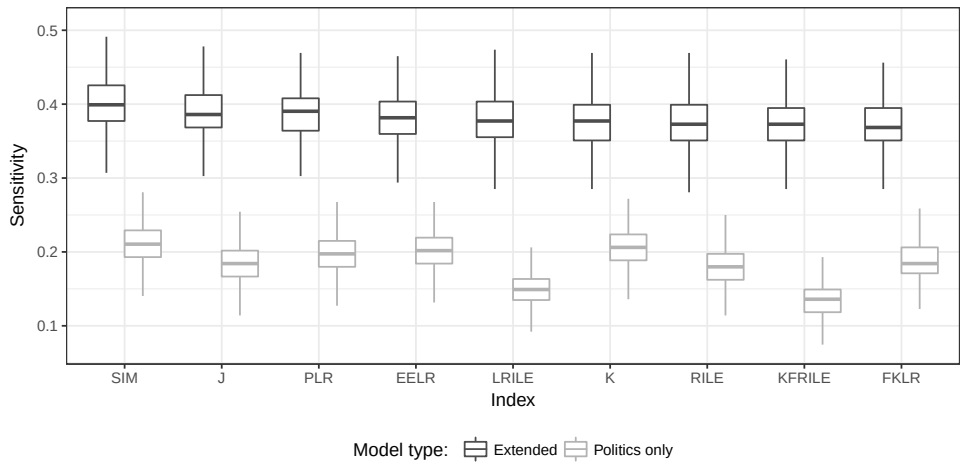


Figure 6.4: **Distribution of model fit across bootstrap re-samples, sensitivity.** The distribution of the sensitivity values (higher is better). The box-plot indicates the inter-quartile range (median in the middle) and the whiskers the largest/smallest value no further than 1.5 of the inter-quartile range from the edge of the box.

If the same analysis was performed with the ideological standard deviation measure, then the overall conclusions would be the same, with one by now expected difference (shown in Appendix D.3). Like in the case of party system polarisation (see Chapter 5), the problem of the association with the number of parties is also relevant here. The ideological standard deviation measures are correlated with the number of parties in the set, the latter ranging from $r = 0.16$ in the case of the Jahn (2010) measure to $r = 0.36$ in the case of the Franzmann and Kaiser (2006) measure and $r = 0.33$ in the case of the König, Marbach, and Osnabrügge (2013) measure. The measure of difference based on the index of similarity is uncorrelated with the number of parties ($r = -0.008$). Therefore, the measure of ideological standard deviation seems to additionally contain information about the number of parties, which the measure using the index of similarity does not.

Thus, if we would use the ideological standard deviation measure and the politics only model, we would see that many of the measures of ideological position predict coalitions much better than the index of similarity for which only the pairwise method of aggregation is applicable.[4] We should thus remember that this advantage is not the advantage of the underlying measure of party difference, but a mechanical effect of the measure of aggregation being related to the number of parties. And as we would expect in this case, for the full model this difference is not there, as the model includes the seat share of the coalition, which is moderately correlated with the number of parties ($r = 0.55$).

The model output from the conditional logit models is shown in Tables 6.4 and 6.5. We can see that all the relationships are as expected and in line with what we saw from comparisons of model fit – political differences measured with the index of similarity show the strongest negative association with the odds of a particular coalition forming. Also, all the other relationships are as expected – the positive coefficient of seat share and the negative coefficient of seat share squared indicate that at first, as the seat share is increasing, the likelihood of a coalition forming is also increasing, but that at one point increasing seat share will start to indicate a decreasing likelihood of a coalition. Also the odds of a coalition forming are much higher if it is the previous incumbent coalition or if it is a minimal winning coalition.

With regard to the results of the extended model, an aspect is well worth highlighting before we conclude. The average sensitivity of the model, which includes variables about political differences, coalition size, incumbency and whether the coalition is minimal winning (and assumes that the identity of the *formateur* is known and that a coalition will form), is about 40% for the index of similarity and a few percentage points lower for the rest of the measures of difference. The fit would

[4] This can be seen from Table D.6 in the Appendix.

Table 6.4: **Model Output, Politics Only Model.** The models are identified by the name of the measure that is used for measuring political differences.

	SIM	RILE	KFRILE	LRILE	PLR	J	FKLR	EELR	K
Pol. diff.	−1.709	−0.809	−0.655	−0.776	−0.838	−0.980	−0.896	−0.567	−0.744
	(0.158)***	(0.117)***	(0.107)***	(0.132)***	(0.110)***	(0.119)***	(0.097)***	(0.101)***	(0.079)***
Observations	12,864	12,864	12,864	12,864	12,864	12,864	12,864	12,864	12,864
Log Likelihood	−647.719	−684.359	−690.156	−690.786	−679.111	−672.963	−664.319	−692.614	−659.898
LR Test (df = 1)	121.968***	48.687***	37.093***	35.834***	59.183***	71.480***	88.766***	32.178***	97.608***

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

Table 6.5: **Model Output, Extended Model.** The models are identified by the name of the measure that is used for measuring political differences.

	SIM	RILE	KFRILE	LRILE	PLR	J	FKLR	EELR	K
Pol. diff.	−1.608	−0.744	−0.599	−0.670	−0.661	−0.752	−0.709	−0.488	−0.583
	(0.167)***	(0.121)***	(0.109)***	(0.132)***	(0.112)***	(0.126)***	(0.103)***	(0.101)***	(0.081)***
Seat share	0.133	0.099	0.096	0.094	0.109	0.114	0.101	0.104	0.109
	(0.037)***	(0.036)***	(0.035)***	(0.035)***	(0.036)***	(0.036)***	(0.036)***	(0.035)***	(0.037)***
Seat share sq.	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001
	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***
Minimal winning	0.555	0.721	0.720	0.725	0.662	0.633	0.731	0.628	0.717
	(0.187)***	(0.183)***	(0.182)***	(0.183)***	(0.183)***	(0.185)***	(0.185)***	(0.184)***	(0.184)***
Incumbent	2.643	2.747	2.775	2.758	2.692	2.671	2.757	2.781	2.708
	(0.224)***	(0.225)***	(0.223)***	(0.225)***	(0.226)***	(0.226)***	(0.225)***	(0.225)***	(0.229)***
Observations	12,864	12,864	12,864	12,864	12,864	12,864	12,864	12,864	12,864
Log Likelihood	−520.165	−550.419	−554.986	−556.787	−552.527	−550.339	−544.775	−558.423	−542.326
LR Test (df = 5)	377.076***	316.566***	307.434***	303.831***	312.351***	316.727***	327.855***	300.559***	332.753***

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

be just slightly lower if we did not assume that the identity of the prime minister is known. It would still be comparable to the fit of much more complex models that have been proposed in recent coalition research, but which include many more explanatory variables – for example Martin and Stevenson (2001) report a correct prediction rate of 44% with a model of 16 predictors. The fact that such a parsimonious model used here preforms so well ensures the validity of the comparison, because one can be sure that we are not missing a major relevant predictor that has been indicated in previous research. And it also suggests that these handful of variables hold the bulk of predictive power that has been identified with regard to coalition formation.

Before concluding, it would also be interesting to have a look at how the different indices predicted particular governments compared to each other. This is shown on Figure 6.5, which indicates the proportion of times a pair of indices predicted the same government (from the set of all governments that were predicted by at least one of the two). Two things stand out from this, the first more clearly and the second a bit more vaguely. We can see that the different versions of the RILE index are very similar to each other compared to the rest. And we can see that the index of similarity is slightly different from all the other indices in terms of the governments that it predicts. No doubt, it would be interesting to look at specific cases, but this would already be a topic for a different kind of a

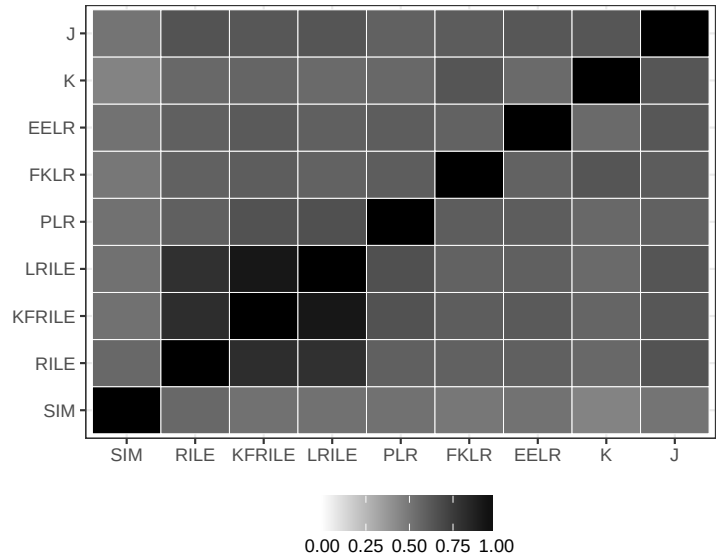


Figure 6.5: **Proportion of Times Predicting Together, Extended Model.** The figure shows how often the indices predict the same government as a proportion of all the governments which were predicted by at least one of the indices in the pair.

study.

6.4 Conclusions

From numerous studies over the last 40 years we can be sure that political differences play a role in coalition formation – more similar parties are morel likely to end up governing together than parties that have major political differences between them. We have usually measured this distance on the left-right dimension. However, as this chapter has shown, there is also a fruitful option to measure the political difference between parties directly through the index of similarity. In the majority of cases this measure performs better in predicting coalitions than the left-right indices that have been generated from the manifesto data. In some isolated cases it would be possible to conclude that the difference is not very clearly in favour of either, but the overall evidence is rather strongly in favour of the the index of similarity capturing the differences between parties better. The chapter used various designs of comparison and different model specifications, lest anything be overlooked. Although some of these measures might work better than others, one should, however, still keep in mind that all of them share the problems that have been raised with regard to the data set as a whole (see e.g. Mikhaylov, Laver, and Benoit 2012; Gemenis 2013).

The objective of this analysis was not to explain a difference, but to compare different ways of measurement in order to see if there was a difference to begin with. Nevertheless, one might ask

at this point – what does this contrast between the index of similarity and ideology measures mean and what could be a plausible explanation in this context? On the one hand, one can think of purely mechanical explanations. The end result that we want out of these measures is the same – an estimate of how different any two parties are from each other in terms of their political profiles. All of the measures were based on the manifesto data set. If the beginning is the same and the end result different, then something must happen along the way. For the index of similarity the way is rather short – we get an estimate of difference straight from the data. For the ideology measures, however, we need to downscale the data to a single dimension and we need to make certain assumptions about this dimension and this down-scaling. It is therefore not surprising that something important might get lost on the way. Differences that are there in the original data and that are relevant for party interaction in coalition formation seem to be captured better by the index of similarity, which is much simpler than any of the ideology measures. Occam's Razor is rather sharp here – the simplest measure is the best.

On the other hand, coming back to the distinction between programmatic heterogeneity and ideological polarisation mentioned above (Franzmann 2011) (see section 2.2.3), one might also suspect that the index of similarity, which strictly focuses on programmatic differences, and the measures of ideological position, which focus on certain abstractions of these differences, actually measure slightly different things and are thus suitable for different purposes – the index of similarity gives us just the difference between two parties. A measure of ideological position, however, aims to tell us also something substantive about the locations of parties separately. Franzmann (ibid.) locates the first measure more on the supply side of politics and the latter more on the demand side. One could expect that manifestos matter more to parties themselves and ideological dimensions, which are used to represent and communicate polarisation, matter more in the domain of the electorate or the society at large. The latter refer to the arena, where parties articulate social divisions and create and communicate heuristics, which would enable their voters and supporters to easily identify them in a certain region of a political space. The complete political profiles of parties do not enter this picture as they are, but only as imperfect summaries. In this context it is also not surprising that the index of similarity, which captures programmatic profiles in more detail, performs better where these profiles can matter more – where parties have to find as much overlap in their issue positions as possible in order to come up with a commonly agreed governing agenda.

Chapter 7

Comparing Measures for Change in the Political Profiles of Parties

> If parties and voters did not change their positions between elections in reaction to events and government performance, there would be little reason for more than one election.
>
> – Russell Dalton and Ian McAllister, *Random Walk or Planned Excursion? Continuity and Change in the Left-Right Positions of Political Parties*

It does not matter whether we confine ourselves to idealized constructs of party behaviour or if we look at how actual parties evolve from one election to the next, there is one thing we would agree on in any case – that the political profiles of parties should and do change over time. However, if we only focus on what we empirically know about party policy change, then we rather see a lack of consensus. As political scientists we should all hope that there is regularity in observable political change, but the empirical research we have until now is hesitant to allow such a conclusion. We can suspect that political change might be related to parties' changing electoral fortunes, changes in party leadership, rival parties, public opinion or wider social conditions. And indeed there is research, which shows all of these connections, but there is also an equal amount of research that does not show them or that conditions them on other factors. At best there is consensus over what phenomena should be related to programmatic change, but there is much less consensus on what actually is and how.

The only thing that all research on political change almost without exception agrees on is that the data that is to be used is the manifesto data set and that the measure that is to be used is the RILE left-right index. This is the case for the overwhelming majority of such studies over the last two decades and there are only a few exceptions where a different data source or a different measure derived from the manifesto data set have been implemented. Although there are good reasons for why this data set is the best source of data for the analysis of party change (see Meyer 2013, pp. 31-

35), there are few excuses for why the RILE index should be the only option. This fact alone makes a comparison of different measures of party left-right position that are based on the manifesto data set and the index of similarity an insightful endeavour in this particular context. Especially keeping in mind that all of these measures are supposed to be improvements over the RILE index. Tradition is not a very good excuse for the continuing use of a measure that has been extensively criticised and for which a broad range of alternatives have been proposed.

The structure of the current chapter will follow the basic template of the ones that preceded. After a review of the state of research into party policy change and its caveats, a benchmark model that can be used for the comparison of the indices is outlined. Like the models for coalition formation or party system polarisation, it does not include all the nuances and intricacies that have been the focus of previous research, as this would not be feasible in the context of a single study with an alltogether different purpose. Instead, it will include the most important variables and associations that have been suggested. This general model is used to compare the measures for party change, focussing on both the overall fit of the model, which tells us how good the description of reality provided by that model is compared to other models, and the associations that are indicated, as this will allow us to compare the models to previous research and to each other substantively.

7.1 Research on Party Policy Change

Like polarisation, the movement of parties in political space was already an integral part of the Downsian spatial model of party politics. If the latter even remotely reflects reality, then as a minimum parties change their location in relation to the electorate so as to gain votes and improve their position *vis-à-vis* their competitors. But how do people know where parties stand and how do parties know what people prefer? We might assume that parties use their election manifestos to, among other things, communicate their political intentions and the discrepancy between that and the demands of the electorate is to some extent materialised at the polls. This is part of the communication through which people and parties can learn where they stand or where they should move. If we would compare the position a party took in the previous election to the one it took at the subsequent election, and compare its fortune at the polls, we would already have the beginnings of an explanatory framework in the Downsian paradigm of how parties move and change. If we add other parties to the picture, the different goals parties can have in terms of office, policy or votes (Strom and Müller 1999), characteristics of the political or party systems that parties inhabit, as

well as indicators of social or economic change, we would soon reach more complex models of party change than our data can endure.

This chapter will stop just short of that. The analysis will look into empirical research on the changing political profiles of parties (as opposed to empirically detached theorising and formal modelling) over the last decades and focus on the main factors that have been associated with party policy change on the macro level. The goal is the same as in the two previous chapters – to build a core model for party change, which will serve as a benchmark for comparing the index of similarity to measures of ideological position on the left-right dimension as both can be used as indicators of political change.

Looking into recent research into party change can be discouraging, as one quickly learns that even though all of the studies are built on the foundations of the spatial model of party competition, there is little agreement over what exactly and how relates to party policy change. There are many more or less well-formed theories and hypotheses, but the results of empirical studies are often conflicting or conditional to the extent that it is a challenge to outline a consistent general theory or model of change. Different kinds of parties can change under different conditions according to different logics, it seems.

Fagerholm (2015) gives a very succinct overview of the state of this research, which is divided into two traditions – internal party change and spatial competition with other parties. He outlines eight factors that have been associated with political change: party leader change, dominant party faction change, internal party structure, previous electoral performance, previous shifts by rival parties, government status, previous shifts in public opinion and economic change. He notes that there is very little evidence in support of the first two possible associations, but varying degrees of evidence for the rest. The next sections will elaborate on the research that has been recently conducted to uncover and study these associations. The following will start with the three factors – changing vote shares, party type ("nicheness") and changing public opinion – for which there is agreement if not about the nature of the association to policy change then at least about the fact that they are something which should be included in a model.

7.1.1 Empirical Covariates of Change

Changing electoral fortunes

Perhaps one of the primary factors one would expect to be associated with change in political profiles is changing fortunes at the polls – if parties lose votes, this can be because they have put forth an

unappealing policy programme and a loss in popularity would then be an indicator to alter the former. Indeed, some of the earliest empirical research into programmatic change by Robertson (1976) and Budge (1994) looked, among other things, into this association.

Robertson (1976) focuses in his analysis on the two major British parties between the 1920s and the 1960s. His analysis looked primarily at the relationship of changing programmatic positions to changing vote shares, but also economic conditions (changes in unemployment, balance of payments, industrial production – reflecting varying economic conditions that parties should react to). He found support for both of these factors. It is important to note, though, that in the analysis he was looking at the two major parties separately, often noting conflicting associations with possible explanatory variables between the parties. It was thus not a general model that he proposed, but idiosyncratic explanations per party.

Much of the groundwork for recent explanatory analyses of party policy change was laid by Budge (1994) in an article where he introduces the manifesto data set and the RILE index as data sources for such analyses and outlines six possible models of how and why parties change their manifestos (ibid., p. 461). Prominent among them is the possibility that parties will change in the same direction if they gained votes in the previous election, and will change in the opposite direction if they lost votes. His tentative empirical analysis found hints of support for this suggestion, as well as for the fact that parties tend to alternate their directions of change regardless of results Budge (ibid., p. 465). Parties seem to go one way in one election and the opposite way in the next election, supposedly to satisfy different, either more moderate or more extreme, factions within the party. If instead of direction we are simply interested in the absolute amount of change, then these results and suggestions end up being rather general, if not trivial – parties change from one election to the next whether they win or lose votes and also if their electoral fortunes remain unchanged. Fortunately, a lot of subsequent research has helped to make these expectations or conclusions somewhat more solid and specific.

Janda et al. (1995) also use the manifesto data and, focussing on 8 parties from the US, Germany and Britain in the post World War II period, conclude that poor electoral performance is a necessary condition for manifesto change, but not a sufficient condition. This means that major manifesto change almost always happens after a disaster at the polls, but it can also happen when election performance was not bad at all. In a more recent and more fine-grained analysis, Somer-Topcu (2009), looking at 1384 policy shifts (absolute changes on the left-right dimension) from 165 parties in 23 Western countries, argues that parties tend to change more when they have lost votes than when they gain votes, but that this change depends on the time since last election. The more time

since the last election, the weaker the effect. To add a further nuance to this association, Harmel et al. (2016) note that a manifesto is made to satisfy two audiences at once – party leaders and members on the one hand and the potential electorate of the party on the other. Relying on the ambiguous distinction between position and salience, they note that issue positions (which constitutes the identity of the party) cater for the members and issue emphasis (the image of the party) caters for the electorate and that these two change according to different logics. Again, using manifesto data, they show that position change and electoral defeat are not related, while image change and electoral defeat are.

Additionally, there is a long line of research that has included vote share change as an explanatory variable, but which has had a different overall aim. Few of them will be in focus below, suffice to say here that some of them have found support for a relationship between vote change and policy change (Ezrow 2011; Ezrow et al. 2011) while others have not uncovered such an association (Adams et al. 2004; Adams et al. 2006; Somer-Topcu and Zar 2014; Clark 2014; Abou-Chadi and Orlowski 2016).

Public opinion

While there was a fair amount of uncertainty about the role of changing electoral fortunes, which theoretically should have a strong association to policy change, the factor for which there is probably most empirical consensus is changes in public opinion (Fagerholm 2015). If this was not the case, we would seriously have to reconsider some of our beliefs about the viability of representative democracy. Fortunately, Adams et al. (2004), using the RILE index form the manifesto data set, do show that parties react to public opinion with changing their political profiles, but only when public opinion is shifting away from them. In a later study, Adams, Haupt, and Stoll (2009) conclude that the reaction of parties to changing public opinion as well as changing global economic conditions is dependent on party type. Parties in the centre and on the right tend to react more, while the left is not that responsive to changing public opinion and the global economy.

The special case of niche parties

Not only is the association with public opinion dependent on the kind of party – there is an entire strand in policy change research that focusses on the specificity of niche parties. The latter are usually defined as parties in the communist, green and nationalist or far-right party families. The general argument is that niche parties are more ideological, more activist-driven and more narrow or specialised in their appeal and thus they are not subject to the same pressures and incentives for

programmatic change as mainstream parties. This attention to niche parties ties in with research on the association with public opinion as well as other factors influencing party policy change.

Adams et al. (2006), using the RILE index and focussing specifically on niche parties (communist, green and nationalist), show that such parties are indeed unresponsive to changes in public opinion, while mainstream parties do respond to changes in the position of the mean voter in the country. This result is also supported by the findings of Adams and Somer-Topcu (2009). Ezrow et al. (2011) refine this conclusion when they show, again using the manifesto data set and the RILE index, that mainstream parties tend to be responsive to the whole electorate, while niche parties are more responsive to the changing opinion of their supporters. Abou-Chadi and Orlowski (2016) complicate the role of niche parties even further, noting that if parties expect the forthcoming elections to be competitive, they are more likely to change their political profile in comparison to the previous election, and that this change depends on the character of the party. Mainstream parties will moderate and niche parties will go more extreme. Unlike other research that has looked into niche parties by reference to party family, their analysis uses party size as a proxy for nicheness, because niche parties usually tend to be smaller parties (ibid., p. 877). The conclusion that smaller parties are not so responsive is also confirmed by the results of Somer-Topcu (2009). Other studies that have not focussed on the role of niche parties explicitly, but have included the variable in their models, are Lehrer (2012), Meyer (2013), and Clark (2014).

Reaction to other parties

A fundamental feature of the spatial model of party competition is that parties do not exist in a vacuum and that their movement in political space depends on where other parties are located and how they move (see Budge 1994). Taking this as a point of departure, there are a number of studies which look into how parties' changing political profiles are related to other parties' locations and changes.

Adams and Somer-Topcu (2009) use the manifesto data set and the RILE index to show that parties' movement on the left-right dimension depends on the movement of other parties. They argue that parties shift in the same direction as their opponents in the previous election and are especially responsive to the shifts of their neighbours, defined as members of the same party family. These conclusions are born out by a reanalysis of the model of Adams and Somer-Topcu (ibid.) using more nuanced ways to take into account the shifts of other parties depending on their spatial distance from the party in question (Williams 2015). And it is also from this perspective that niche parties

seem to be special, at least to some extent. Green-Pedersen and Mortensen (2015), focussing on Denmark and their own data about the issue content of party manifestos, conclude that parties are more responsive to other parties in their own party family and that large mainstream parties are more responsive to other parties in the system than small niche parties. Abou-Chadi (2016), again using the RILE index, argues that mainstream parties react to the changes of certain niche parties, but not all. It is the radical right parties which seem to have an impact on mainstream parties, while green parties do not. Furthermore, it seems that this effect depends on the ideological position of the mainstream party.

Governing status

It has also been suggested that governing status might have an impact on how much parties change their political profiles at an election. Several of the studies on policy shifts have included government status of the party before the election as a variable and have found various degrees of support for this hypothesis. Abou-Chadi and Orlowski (2016) find this association in some of their model specifications, but not in others, while Clark (2014) and Somer-Topcu (2009) find no association with government status. The explanatory sequence involving government status is taken to the relative extreme by Somer-Topcu and Zar (2014), who argue that opposition parties use European elections as a source of information to change their political positions at national elections, but only if the latter are close in time and at a similar level of turnout. This is because manifestos as a means of communication are more important for opposition parties, who, unlike the government, do not have such a range of other means and channels to communicate their political positions.

Electoral system, disproportionality and fragmentation

Naturally, there are also studies that have looked into how policy change is related to the fundamental characteristics of the party system like its disporportionality and fragmentation, as well as the electoral system of the country, which is related to the former two. For example, following the spatial theory and some of its nuances it could be argued that proportional systems or systems, which contain more parties are those where parties usually change less simply because the political space is more crowded and parties want to avoid leapfrogging one another (Budge 1994).

Among the studies of party system context, Ezrow (2011) looks at the role of the electoral system in determining how changes in public opinion are reflected in party change. He finds that parties in proportional systems do respond systematically to changes in the position of the mean voter, while

parties in disproportional systems do not. This means that all other things being equal, it should be more likely to observe party change in proportional systems, meaning also more fragmented systems, which runs counter to the expectation that was suggested above.

Other studies have looked at the direct effect of disproportionality or fragmentation and have found varying results. For example, in the models of Abou-Chadi and Orlowski (2016) the electoral system dummy or district magnitude as an indicator of disproportionality does not show an association, but in the study of Somer-Topcu and Zar (2014) party system fragmentation (effective number of parties) has a negative association with absolute changes on the left-right dimension. The analysis of Somer-Topcu (2009), however, shows that electoral system type is not associated with absolute change (not controlling for fragmentation). Furthermore, in the sensitivity analyses reported by Clark (2014), neither fragmentation nor disproportionality are associated with political change. A more nuanced argument involving the type of party system is put forward by Lehrer (2012), who argues that party system type matters when we are looking at how parties with varying degrees of internal inclusiveness respond to the position of the mean party supporter.

Internal party characteristics

Several studies have looked at how internal party characteristics, like its leadership structure and the role of party members in internal party decision making might influence party movement. Lehrer (ibid.) focusses on internal party inclusiveness and its role in the responsiveness of a party to changing attitudes of the party supporters. According to his analysis, it seems that inclusive parties respond to the mean party supporter position while exclusive parties respond to the median voter position in two-party systems, but not in multi-party systems. Closely related is the study by Schumacher, De Vries, and Vis (2013), who look at how parties respond to changes in their "environment" depending on the balance of power within the party, between the party leader and the party activists. They find that in parties where the activists dominate there is less political change or responsiveness to the voters than in parties where the leadership is dominant (which echoes what was pointed out above about niche parties). This is because leader-oriented parties can change their position without being constrained by the rest of the party. An opposite argument, however, has been put forth by Meyer (2013), who argues that a large and active membership of a party can be a resource that can make parties more capable of carrying out policy shifts. Indeed, his analysis shows that mass organisational strength might be related to larger policy shifts under certain model specifications.

Economic factors

Although this has received relatively little attention in empirical research into party change, it is also reasonable to assume that there might be an association with changing economic conditions and party policy shifts. If indicators of short term economic "health" like economic growth, unemployment, or inflation change dramatically between elections, it can be suspected that parties also react to the changed conditions and adapt their political profiles. However, there is not much current research into how parties react to changes in these economic indicators, although the early study by Robertson (1976) also looked into this possibility.

In the Chapter 5 on polarisation a study that linked increasing inequality with more extreme positions for left and right parties was introduced (Pontusson and Rueda 2008), which is also relevant to keep in mind here. Additionally, there is research that looks into the relationship of policy change and economic globalisation. Haupt (2010) shows that parties do change their positions in response to changing economic globalisation and openness, measured by trade volume, changes in foreign direct investment and capital flows. Her analysis shows that both left and right wing parties react to such changes.

In addition to changes in these rather broad and structural economic characteristics, it is also reasonable to suspect that parties react to changing short-term economic conditions with altering their political profiles. If the state of the economy suddenly worsens from one election to the next, we would expect that parties also react to that. Thus, one could presume an association between changes in indicators like the inflation rate and economic growth and changes in party profiles from one election to the next.

Tangent strands of research

It should also be noted that there is a range of research that uses change in the political profiles of parties as an explanatory variable or that looks at a slightly broader picture. For example, Harmel et al. (1995) look at party change in general (political change being only part of that) and conclude that the electoral fortunes of a party are not sufficient by themselves to explain party change and suggest that one should also look at internal party factors. Bawn and Somer-Topcu (2012) look at how changes in political profiles are related to electoral fortunes and conclude that government parties do better at elections when they change to the extreme, opposition parties if they change to the middle. Tavits (2007) also looks at the association between policy shifts and election results, concluding that shifts in the domain of pragmatic issues are likely to be rewarded while shifts with

regard to issues of principle are likely to be punished at the polls. Also Adams and Somer-Topcu (2009) show that certain policy changes (moderation) can be related to future electoral gains. All of of these studies look at a different problem than is at the focus in this chapter, but they do provide evidence that there is an association between shifts in votes and shifts in policies.

7.1.2 Analyses with Alternate Sources of Data

All of the studies above have used direct information about the political profiles of parties obtained from the manifesto data set or party manifestos more generally. They thus have the same foundation, same source of information about party politics (which makes the overall disagreement about results even more notable). However, there have also been a few studies recently, which have looked at the same problem – how parties change their position – but have used people's perceptions about the locations of parties as the source of information. I will consider them separately here, as it can be suspected that this kind of data provides us with rather different information about political parties than party platforms. It has also been noted that survey data omits a great deal of cross-temporal variation and should for that reason alone be avoided when studying party change (Meyer 2013, p. 33), but this does not mean that it has not been used for the study of the latter.

Dalton and McAllister (2014) use CSES and Chapel Hill expert survey data to analyse the movement of parties on the left-right dimension from one election to the next. Their models include many of the variables that were considered above – the dependent variable is absolute change on the left-right dimension and as explanatory factors they include vote change, left-right extremism, party birth year, change of leader, new democracy dummy, new party dummy, fragmentation and party system polarisation. Their results indicate that vote change as well as the newness of the democracy, party system fragmentation and polarisation all matter for political change. The reported association with fragmentation is positive, which is to some extent counter to what was discussed above, and the association with polarisation is negative – there is less change in more polarised systems. New party dummy has a negative association only in established democracies.

Dalton (2016) looks at issue change in European Parliament elections, using data generated in the context of European Parliament election vote advice applications. He includes many of the same variables as in the previous study, as well as government status and GDP change. Overall, his results indicate scarce associations with issue change. The only factors that appear to be associated with change in some of the issue dimensions considered are GDP change, which appears to be related to directional change (as opposed to absolute difference) in socio-economic issues and new democracy

indicator, which is associated with absolute change in issue positions in the EU dimension. Despite the associations that were uncovered, both of these analyses note a very high degree of stability in the positions of parties, which we can suspect is to some extent the effect of the data generation process.

7.1.3 A Model for Party Change?

In light of all of the above, it is rather difficult to highlight a single model of party policy change, or a single variable, for that matter, which would have an uncontested relationship to policy change. What the previous overview has shown is that there are varying explanations of increasing degrees of complexity, which highlight different aspects of party competition and interaction that are related to policy change and which often also conflict with each other. There might be a certain level of agreement in theoretical expectations, but if one looks at empirical results, then there is certainly more discord than harmony. If one further takes into consideration the fact that the results might differ across countries and parties and that the studies cited above are in some cases based on very different ranges of countries and parties, one should conclude that at this point it is rather hard to suggest what an undisputed explanation of party change should look like.

What this overview does show, however, is that there is consensus over certain variables, which reappear from model to model, regardless of whether they are "significant" or not or whether they are at the focus of the study or used as controls. The way forward in this context would be to concentrate on the variables over which there is at least consensus if not about their association to policy change then at least about the fact that they should be included in the model. In general, these could be vote change and time since last election, changes in economic and social conditions and/or public opinion, the "nicheness" of a party, political changes in other parties, party system fragmentation and disproportionality, party size and internal structure and party system polarisation. The next section will be devoted to describing the operationalisation of these variables and the design of the model that is used to estimate their association to party policy change.

7.2 Data and Design of Comparison

7.2.1 Model Set-Up

Part of the divergence of results in the previous research on party change is no doubt attributable to different modelling strategies that have been used. The models that have been applied to obtain

the conclusions outlined above have ranged from no statistical model at all (Budge 1994) to simple pooled OLS (Ezrow 2008) to either party (Bawn and Somer-Topcu 2012; Clark 2014; Abou-Chadi and Orlowski 2016), country (Ezrow 2011; Tavits 2007) or election (Somer-Topcu and Zar 2014) fixed effects models to 2 level multilevel models (Meyer 2013). Some of these models have also included a dynamic component – a lagged dependent variable (Adams et al. 2006; Tavits 2007; Adams and Somer-Topcu 2009; Adams and Somer-Topcu 2009; Haupt 2010; Lehrer 2012; Somer-Topcu and Zar 2014). Furthermore, many of the analyses have used different model specifications and model types (e.g. random effects models in addition to fixed effects models) for robustness checks, with few arguments about why a certain model should be used as the main model and others as suitable for robustness checks. Given the nature of the data and the substantive associations that we are looking into, it should be possible to argue for a model or at least a type of model, which would be more correct than other possibilities.

If we think about this particular kind of data – parties observed across elections (time), i.e. time-series cross-sectional data (TSCS), it is clear that we must use a model set-up that takes this into account. The range of possible models that would be compatible with this general data structure is vast, however there are both theoretical as well as statistical criteria for choosing between them. For a full range of possible models and how they are related, one can refer to the overview of De Boef and Keele (2008), who suggest starting with the most general autoregressive distributed lag model (ADL)[1] and then using both statistical and theoretical criteria to determine which restricted model is most appropriate.

The current analysis will have to strike a balance between its main objective – the comparison of various measures of party difference in their overall performance – and the possibilities and demands of modelling TSCS data. An ADL model would potentially include multiple lags of both independent and dependent variables and would be demanding on the data as well as subsequent interpretation. If one would want to fully understand how possible explanatory variables are related to political change and how these associations unfold over time, this would no doubt be the road to take. However, since the objective here is to simply compare how the different indices preform, simpler models will be used, while checking that some of the crucial model assumptions are not violated. The analysis will depart from the framework for the analysis of TSCS data as suggested by De Boef and Keele (ibid.) and Beck and Katz (2011), which focusses on dynamic or static fixed effects models using

[1] All the more familiar models, like lagged dependent variable models or static fixed effects models are special cases of this general model.

OLS and panel corrected standard errors.

Before moving on, one nuance should be kept in mind, which has not received enough attention in previous studies. Many of the hypotheses that have been formulated with regard to party policy change have hinted at level effects – e.g. certain kinds of parties (niche parties, large parties) change their manifestos more or less – which a fixed effects model would blind to (see also Plümper, Troeger, and Manow 2005). Estimating a different intercept for each party effectively means that we are looking at how variables from one election to the next are varying around the mean for a particular party. What we thus "see" is what happens to a party when it gains or loses size or nicheness, which is different from comparing what parties at different levels of nicheness do. This is something that should be kept in mind while interpreting the results below.

Even though there is little agreement over what an explanatory model of party policy change should look like and despite the fact that previous research has focussed more on exploring the twists and bends of possible explanations, there is one aspect on which there is more or less absolute implicit agreement – all the studies, with few exceptions (e.g. Dalton and McAllister 2014; Green-Pedersen and Mortensen 2015; Dalton 2016), are based on the manifesto data set and almost all studies among the latter (except e.g. Abou-Chadi and Orlowski 2016) use the RILE index. Given that the manifesto data has given rise to various alternative measures, which all should improve over the RILE index, this is therefore a very suitable context for the comparison of the different alternative measures as well as the index of similarity.

7.2.2 Thinking about Variables and Time

The central variable of interest in this analysis concerns change over time – parties change their manifestos at election t in comparison to the previous elections ($t-1$). Since this analysis has implicitly a causal interpretation, it it prudent to first devote a bit of attention to thinking about the instant in time when the explanatory variables included in the model should be measured.

If we are thinking about policy change from $t-1$ to t as a reaction to what happened to the party during election $t-1$, a party either wins or loses at the polls and makes corresponding adjustments to its manifesto for election t, then we are comparing party votes shares at election $t-1$ and $t-2$, thus covering three adjacent elections. Policy change from $t-1$ to t is related to vote change between $t-1$ and $t-2$. It is more difficult to justify an assumption about how parties react to changes in other parties. One could think that the change in party i is related to both the simultaneous change in another party and also the change that happened between elections $t-1$ and $t-2$. The

current analysis assumes that parties are aware of how other parties are positioning themselves in the inter-election period and in the run up to the elections and that all parties react to the same changing social context between elections $t-1$ and t. Thus the change of party i can be expected to be related to change in other parties in the same time interval.

If we think about party system characteristics or changes in broader social conditions, then the choice of the focal interval or point in time might not be that clear as well. For changing social and economic conditions we can assume that parties write their manifestos with the present and the near future in mind and thus one should focus on changing social or economic conditions between $t-1$ and t. Variables like party size and nicheness, but also party system polarisation, fragmentation and disproportionality, characterise the party or the system as such and it is assumed that while compiling a manifesto for election t, the systemic conditions which will manifest themselves at that election should have a stronger association to the manifesto writing process than the conditions at time $t-1$. Thus, all party and party system characteristics that are included in the models will be measured at time point t.

7.2.3 Measurement

The dependent variable in all the models is political change of a party from election $t-1$ to election t as measured by the index of similarity (for which the scale is reversed so that 0 indicates no change and 100 indicated total change – no overlap in the content of the two adjacent manifestos of a party, see equation 3.7) and the left-right measures that are considered here. Absolute change on the left-right dimension is measured, not directional change so as to keep the models comparable to the index of similarity, which does not differentiate between the left-right direction of change. Indeed, several of the studies cited above have also focussed on absolute and not directional change (e.g. Somer-Topcu 2009; Somer-Topcu and Zar 2014; Dalton and McAllister 2014) as the former is a more general framework.

In light of the research that was elaborated above, the models will include the following explanatory variables:

- **Chance (CH) in party manifestos.** Measured on the basis of the index of similarity and the measures of ideology described above:
  - **EELR** Elff's economic left-right scale
  - **FKLR** Franzmann and Kaiser's left-right dimension

- **J** Jahn's left-right dimension
- **K** König et al.'s left-right dimension
- **KFRILE** version of RILE proposed by Kim and Fording
- **LRILE** RILE using the logit scale of Lowe et al.
- **PLR** Prosser's left-right dimension
- **RILE** left-right index of the manifesto data set
- **SIM** the index of similarity

The values are standardized for the final set of cases so that the model coefficients would be comparable in their substantive magnitude.

- **Change in closest party (CH closest).** Change (between elections $t-1$ and t) in the political profile of the party that was closest to the party in question at election $t-1$.
- **Party size (SIZE).** Measured as the the vote share of the party at election t.
- **Nicheness of a party (NICHE).** Nicheness as an attribute was included in most of the models that were described above and was always measured categorically through party family. This assumes that parties in certain families like green parties or nationalist parties are more likely to be niche parties than parties in other families. The current analysis uses a continuous measure of nicheness suggested by Meyer and Miller (2015), more specifically their measure of standardised nicheness. The measure reflects how much a party deviates from the weighted average issue emphasis of all other parties in a party system at that particular moment across all the 56 issue categories of the manifesto data set. It shows how each party is different from the midpoint of other parties and is, in effect, a measure of distinctness. Relative vote shares of parties are used as weights.[2]
- **Vote changes (VOTE R 1 and VOTE R 2).** The change in the votes of a party has been almost exclusively measured as the simple numerical change from one election to the next. It is, however, important to keep in mind that parties view electoral defeats differently (Janda et al. 1995, pp. 181-182) and it is not prudent to assume that a 5% decrease or increase in the vote share of a party is the same for a party that has received 10% of the vote in the previous

[2] The manifesto data set mostly contains data only on parliamentary parties. Using relative vote shares as weights in this context means that that the vote shares of the parties that are included in the data set for an election are renormalised to add up to 1. If not enough data is available for an election (parties with a sum total of less than 80% of the votes), then nicheness is not calculated.

election or for a party that has received 40%. The changes in vote shares should therefore be measured in relative terms. The current analysis will measure change in votes as a ratio of votes at time t to votes at $t-1$ or votes at $t-1$ to votes at $t-2$. This ratio of vote shares is transformed to a scale, where positive values show increase and negative values decrease, and which is symmetric around 0 so that 1 will indicate that a party doubled its previous vote share and -1 will indicate that its vote share was cut in half. I will include in the models vote change between elections t and $t-1$ to see if changes in a manifesto are related to anticipated changes at election t (VOTE R 1) and vote change between elections $t-1$ and $t-2$ to account for parties reactions at election t to their electoral fortunes at election $t-1$ (VOTE R 2).

- **Time since last election (TIME).** The analysis of Somer-Topcu (2009) showed that how parties react to vote changes depends on how much time has passed since the last election. The models will thus include a variable that indicates how many years have passed since the election at time $t-1$ and also an interaction between the previous electoral fortunes variable and the time variable (VOTE R 2$\times$TIME).

- **Government status (INGOV).** The variable indicates whether the party was in government during the elections at time t.

- **Party system fragmentation (FRAG).** The effective number of parliamentary parties at election t calculated according to Laakso and Taagepera (1979).

- **Disproportionality of the electoral system (DISPROP).** Measured according to the Ghallager index (Gallagher 1991, p. 40), i.e. on the basis of the difference between parties' vote and seat shares, at election t.

- **Political divergence in the party system (POL).** Measured on the basis of the index of similarity and the measure of pairwise distance that was introduced in Chapter 5 on polarisation (see equation 5.7).

- **Change in inflation (CHINF) and in GDP growth (CHGDPGR).** These measures are included to take into account changing social conditions to which we can expect that parties react to politically. Change is measured between elections t and $t-1$.

Data about the vote shares of parties, the time of elections and the government status of parties was obtained from the ParlGov data set (Döring and Manow 2014), which was used to calculate

vote share changes, time since last election, government status, and fragmentation. The data on disproportionality was obtained from Gandrud (2015) and data about inflation and GDP growth is taken from the Varieties of Democracy data set (Coppedge et al. 2016a). The analysis includes only those parties, for which data on all the measures of position and difference are available continuously for more than 5 elections. This inevitably constrains the analysis as well as the generalisability of results (although for such analysis it should be kept in mind that results would always be conditional on the set of cases included), but ensures that the models are comparable (all the models are fit to exactly the same set of cases) and are based on more reliable data. The data set covers 14 countries and 75 parties, with information about 837 political changes. On average there are 11 observations per party. The descriptive statistics of the variables and the list of parties and countries are brought out in Appendix C.5.

These variables represent a substantial range of the possible factors that were pointed out to have a relationship to the changing political profiles of parties. Furthermore, some of the variables (vote change and nicheness) as operationalised here represent likely improvements over the operationalisations in previous research. Some important factors, like changes in public opinion, and many of the nuances that were tested in previous research with various additional interactions between the listed variables, are not included here as to not excessively complicate the model. It is true that this is not a full model, but it is enough for us to see how the various measures compare to each other in being able to capture the changing political profiles of parties as they are related to possible explanatory factors.

7.3 Modelling and Comparing Political Change

If we look at previous analysis into party change and think about the structure of the data – observations above all nested within parties (but also in countries, elections, time periods etc.) – then before even having a look at the data it would be reasonable to assume that this grouped structure should be taken into account. Of course one could ignore this, but it is likely that this will be a unjustified choice and could easily be seen as such by the appropriate statistical tests. There are many possibilities for modelling the grouped nature of the data – one can think of this as a time-series cross sectional data and fit many of the models more or less suitable for this data structure (e.g. dynamic and static fixed effects models, or AR1 models) or one can think of this simply as a multilevel model. The current modelling choices will be broadly based on the framework outlined

by (Beck and Katz 1995; Beck and Katz 1996; De Boef and Keele 2008; Beck and Katz 2011) for time-series cross-sectional data. Thus, the following comparison will start from a fixed effects model (party fixed effects) and a static specification with regard to the dependent variable – the model does not include an association between change from $t-1$ to t and $t-2$ to $t-1$, although this was part of many of the analyses that were discussed above. It is tested to see whether this model is appropriate and decided whether it should be simplified or whether it needs to be made more complex in order to accommodate the data.

A Lagrange Multiplier Test and an F-test comparing pooled and fixed effects models suggests that pooling would not be appropriate in this case for any of the models of change. The Breusch-Godfrey/Wooldridge test for serial correlation and the Durbin-Watson test for panel models show that some of the models have very low levels of residual serial correlation, but this is by far small enough that we need not consider a dynamic model. Furthermore, and although the position that a fixed effects model is also theoretically more appropriate in this case (Frees 2004, p. 73; Hsiao 2014, pp. 48-49; see also Beck and Katz 1996; Clark and Linzer 2015) is true, as an F-test between a random effects models and a fixed effects model does not show in most cases any meaningful difference between the two, a random effects model is also fitted for each of the measures and the corresponding results are presented.

Starting from the most important question here – the overall level of model fit – the results are brought out on Figure 7.1. We can see that the model, which uses the index of similarity, is clearly the best fitting model, regardless of whether we look at the fixed effects models or the random effects models. As it was the case in the context of coalition formation and party system polarisation, it seems that the index of similarity as a measure of political difference between parties provides us with a description of reality that is more closely related to what we might expect it to be related to. The other alternatives to the classical RILE index, except for the index of König, Marbach, and Osnabrügge (2013), do not really seem to improve over the RILE measure, at least as far as model fit is concerned.

Before we move on to look at the content of the models, another disconcerting fact is well worth keeping in mind. Most of the models show extremely low levels of fit (R-squared[3]) and only in the case of the index of similarity do we have a model that surpasses the 0.1 level. The truth about such models would be that they capture very little from the data and the associations that we

[3] There is a notable difference between the R-squared and the adjusted R-squared here, because the latter also takes into account the degrees of freedom that are lost by estimating the mean for each party. This is also the reason why some of the adjusted R-squared measures in this case are negative.

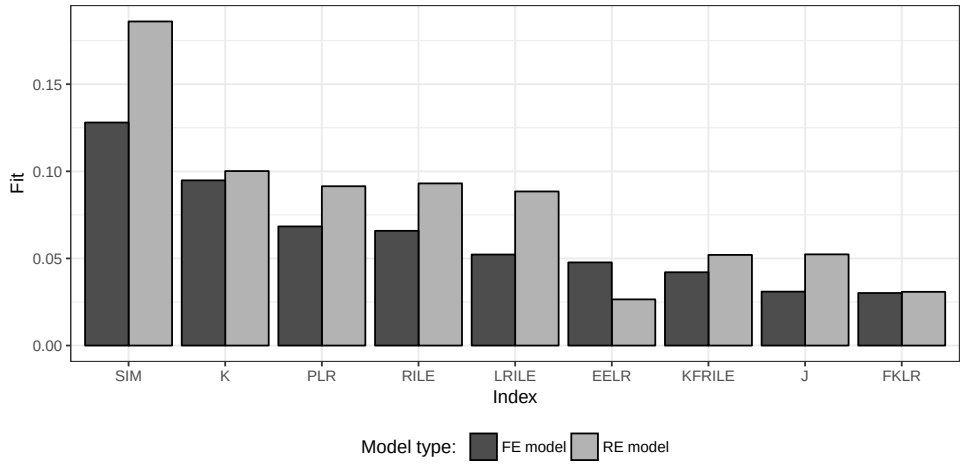


Figure 7.1: **Model Fit.** The figure shows the R-squared of the models depending on what measure they use for party differences.

would otherwise be interested in, even if some of the coefficients are shown as "significant". Their interpretation is thus precarious.

Table 7.1: **Fixed Effects Models for Programmatic Change.** Panel corrected standard errors are shown in parenthesis.

	Dependent variable:								
	SIM	RILE	LRILE	KFRILE	J	K	FKLR	PLR	EELR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change closest	0.143***	0.046	−0.009	−0.004	0.092*	−0.109**	0.099*	0.080	0.134**
	(0.036)	(0.043)	(0.041)	(0.040)	(0.042)	(0.037)	(0.042)	(0.042)	(0.045)
SIZE	0.005	0.006	0.001	−0.002	0.001	−0.019*	0.004	0.002	−0.008
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.010)	(0.009)	(0.009)
VOTE R1	−0.113	−0.078	−0.068	−0.104	−0.027	0.169**	−0.046	−0.085	0.101
	(0.059)	(0.060)	(0.061)	(0.062)	(0.075)	(0.058)	(0.067)	(0.068)	(0.065)
VOTE R2	−0.253	−0.466*	−0.075	−0.331	−0.036	0.053	−0.199	0.065	0.017
	(0.154)	(0.195)	(0.203)	(0.207)	(0.189)	(0.175)	(0.197)	(0.191)	(0.183)
NICHE	0.199***	0.161***	0.179***	0.131***	0.061	0.011	0.037	0.211***	−0.006
	(0.027)	(0.036)	(0.036)	(0.036)	(0.038)	(0.031)	(0.039)	(0.036)	(0.038)
TIME	−0.00003	−0.005	−0.013	−0.032	0.044	0.070*	−0.0002	0.008	0.024
	(0.030)	(0.040)	(0.035)	(0.040)	(0.038)	(0.030)	(0.038)	(0.036)	(0.040)
INGOV	−0.021	−0.040	0.024	0.053	0.032	−0.025	−0.017	0.105	0.126
	(0.058)	(0.076)	(0.071)	(0.077)	(0.085)	(0.071)	(0.080)	(0.074)	(0.083)
FRAG	0.068	0.139**	0.055	0.111*	0.038	0.018	0.030	0.076	0.086
	(0.042)	(0.053)	(0.062)	(0.056)	(0.049)	(0.045)	(0.059)	(0.062)	(0.056)
DISPROP	0.034	0.048*	0.031	0.034	0.039	−0.006	0.018	0.021	0.040
	(0.019)	(0.020)	(0.024)	(0.022)	(0.024)	(0.019)	(0.021)	(0.020)	(0.021)
POL	0.016***	0.016**	0.014**	0.008	0.007	−0.009*	−0.001	0.011*	−0.010*
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.006)	(0.005)	(0.005)
CH INFL	0.011*	0.007	0.002	−0.002	−0.002	0.006	−0.012	−0.006	−0.002
	(0.005)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)
CH GDP GR	0.008	0.008	0.0002	0.006	0.016**	0.003	0.016*	0.003	−0.0001
	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)
VOTE R2 x NICHE	−0.083	−0.041	0.041	0.038	−0.109	0.060	0.011	−0.069	−0.051
	(0.053)	(0.063)	(0.066)	(0.065)	(0.068)	(0.067)	(0.071)	(0.063)	(0.072)
VOTE R2 x TIME	0.083	0.152*	0.029	0.121	0.019	−0.103	0.085	−0.019	0.032
	(0.048)	(0.064)	(0.062)	(0.066)	(0.060)	(0.058)	(0.059)	(0.059)	(0.059)
Observations	837	837	837	837	837	837	837	837	837
R^2	0.128	0.066	0.052	0.042	0.031	0.095	0.030	0.068	0.048
Adjusted R^2	0.025	−0.044	−0.059	−0.071	−0.083	−0.012	−0.084	−0.041	−0.064
Note:									*p<0.05; **p<0.01; ***p<0.001

Table 7.2: **Random Effects Models for Programmatic Change.** Panel corrected standard errors are shown in parenthesis.

	Dependent variable:								
	SIM	RILE	LRILE	KFRILE	J	K	FKLR	PLR	EELR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change closest	0.187^{***}	0.048	−0.009	−0.004	0.119^{**}	-0.102^{**}	0.106^{**}	0.096^{*}	0.126^{**}
	(0.035)	(0.041)	(0.040)	(0.039)	(0.041)	(0.036)	(0.041)	(0.043)	(0.045)
SIZE	0.001	0.004	0.004	0.003	−0.003	-0.019^{***}	0.001	0.006	−0.003
	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
VOTE R1	-0.120^{*}	−0.084	−0.092	-0.123^{*}	−0.019	0.168^{**}	−0.030	−0.105	0.056
	(0.053)	(0.060)	(0.058)	(0.062)	(0.065)	(0.056)	(0.060)	(0.066)	(0.061)
VOTE R2	−0.277	-0.433^{*}	−0.052	−0.276	0.011	0.040	−0.210	0.071	0.022
	(0.154)	(0.185)	(0.187)	(0.192)	(0.188)	(0.175)	(0.199)	(0.197)	(0.176)
NICHE	0.206^{***}	0.164^{***}	0.181^{***}	0.134^{***}	0.072^{*}	0.002	0.053	0.200^{***}	0.008
	(0.027)	(0.035)	(0.032)	(0.034)	(0.035)	(0.030)	(0.036)	(0.035)	(0.035)
TIME	0.007	0.012	−0.001	−0.001	0.030	0.069^{*}	−0.011	−0.005	0.037
	(0.029)	(0.037)	(0.033)	(0.037)	(0.035)	(0.031)	(0.036)	(0.035)	(0.036)
INGOV	−0.011	−0.031	0.013	0.072	0.034	−0.047	−0.028	0.068	0.145
	(0.058)	(0.071)	(0.068)	(0.072)	(0.080)	(0.069)	(0.074)	(0.071)	(0.077)
FRAG	0.019	0.013	0.014	0.024	0.020	0.005	0.031	0.007	0.012
	(0.034)	(0.029)	(0.031)	(0.034)	(0.028)	(0.034)	(0.038)	(0.034)	(0.028)
DISPROP	0.010	0.006	0.003	0.007	0.008	−0.002	0.010	0.005	0.002
	(0.014)	(0.014)	(0.018)	(0.015)	(0.015)	(0.014)	(0.015)	(0.015)	(0.013)
POL	0.023^{***}	0.020^{***}	0.021^{***}	0.014^{***}	0.012^{***}	−0.003	0.001	0.016^{***}	−0.0002
	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
CH INFL	0.014^{**}	0.011	0.004	−0.0001	0.001	0.007	−0.011	−0.002	0.004
	(0.005)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)
CH GDP GR	0.009	0.008	0.002	0.006	0.016^{**}	0.006	0.016^{*}	0.005	0.005
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)
VOTE R2 × NICHE	−0.085	−0.055	0.045	0.029	−0.116	0.047	−0.008	−0.028	−0.070
	(0.056)	(0.061)	(0.063)	(0.063)	(0.066)	(0.066)	(0.071)	(0.065)	(0.071)
VOTE R2 × TIME	0.085	0.137^{*}	0.012	0.095	0.002	−0.102	0.089	−0.028	0.014
	(0.048)	(0.060)	(0.058)	(0.062)	(0.059)	(0.058)	(0.059)	(0.060)	(0.057)
Constant	-1.407^{***}	-1.248^{***}	-1.279^{***}	-0.972^{**}	-0.844^{**}	0.291	−0.216	-1.044^{***}	−0.172
	(0.331)	(0.322)	(0.323)	(0.326)	(0.322)	(0.311)	(0.344)	(0.314)	(0.305)
Observations	837	837	837	837	837	837	837	837	837
R^2	0.186	0.093	0.088	0.052	0.052	0.100	0.031	0.091	0.026
Adjusted R^2	0.172	0.078	0.073	0.036	0.036	0.085	0.014	0.076	0.010
Note:									*p<0.05; **p<0.01; ***p<0.001

We can see the results of the fixed effects models in Table 7.1 and the results of the random effects models in Table 7.2. As we could expect from the tests that were reported above, there is not much difference between the associations that these two kinds of models indicate. The most consistent association across the indices that we can see is that with nicheness. The index of similarity, all of the RILE indices, as well as the left-right index of Prosser (2014) show a clear positive association. As a party becomes more niche, i.e. more different from all of the other parties taken together, the more it is likely to change its position from one election to the next. This seems to run counter to what was suggested above about how niche parties should be changing from one election to the next. However, we should keep in mind here what a fixed effects model "sees" and what it does not. The positive association here does not tell us that parties at higher levels of nicheness change more. What it does tell us is that if a party becomes more niche from one election to the next – more distinct from the midpoint of the other parties – the more it also changes from that election to the next. Looking at it like this, the association makes perfect sense – a bigger move away from the other parties would also entail a bigger change form where the party was itself in the last election.

The models also show us that a change in the closest party is positively related to change in the profile of a party and that an increase in the polarisation (overall amount of political difference in the system) of a party system as a whole goes together with more change for a party from one election to the next. The positive effect of change in inflation is consistent and hovering just around the level of significance, depending of the countries that are included. Vote ratios show a negative association, although in many cases it is a very noisy association and not really distinguishable from 0. Finland and Denmark seem to be influential countries in this respect. But at least it points in the right direction – if parties lose votes, it is likely that they will change more than when they gain votes. This relationship is most clearly visible in the case of the original RILE index, in which case the interaction with time is also in the expected direction – the more time has passed since elections at time $t-1$, the less a party is likely to politically react to those electoral losses.

Although most of the measures of change clearly point in the same direction, there is one which stands out with starkly contrasting associations – this is the König, Marbach, and Osnabrügge (2013) left-right measure, which is also the second best fitting measure across the models. It tells us that the more the closest neighbour changes, the less the party changes, that high vote gains in an election are related to high programmatic change, that the more time from the past election has passed, the more parties change, and that when party system polarisation increases, an individual party is likely to change less. All of these are associations that are not indicated by any other measure and can also

run counter to what we might expect from previous literature. Considering that all the measures are based on exactly the same initial data on party manifestos, this poses but does not answer questions about the nature of the measure. At this point all that can be done is point them out and a further look into these divergences will have to be for another occasion. What we should keep in mind is that perhaps not all of the measures that are compared here capture the same phenomenon at all times and contexts.

Like in the similar analysis into polarisation, we should also keep in mind the problem of heterogeneity – between different countries or different parties. If we model all parties and all countries together, we make the assumption that the same model applies to all of them. Of course there are ways to estimate models with varying coefficients both in the multilevel and the panel data analysis frameworks, but a fully flexible model in that respect would be too demanding for the data at hand. Figure 7.2 shows the impact of leaving single countries out of the analysis for the model that uses the index of similarity to measure party change. We can see that what catches our eye can very much depend on the set of countries under observation – many of the coefficients hover around the conventional level of "significance" and whether a certain country is included or not can have a decisive impact on whether it is just above or just below the line of "significance".

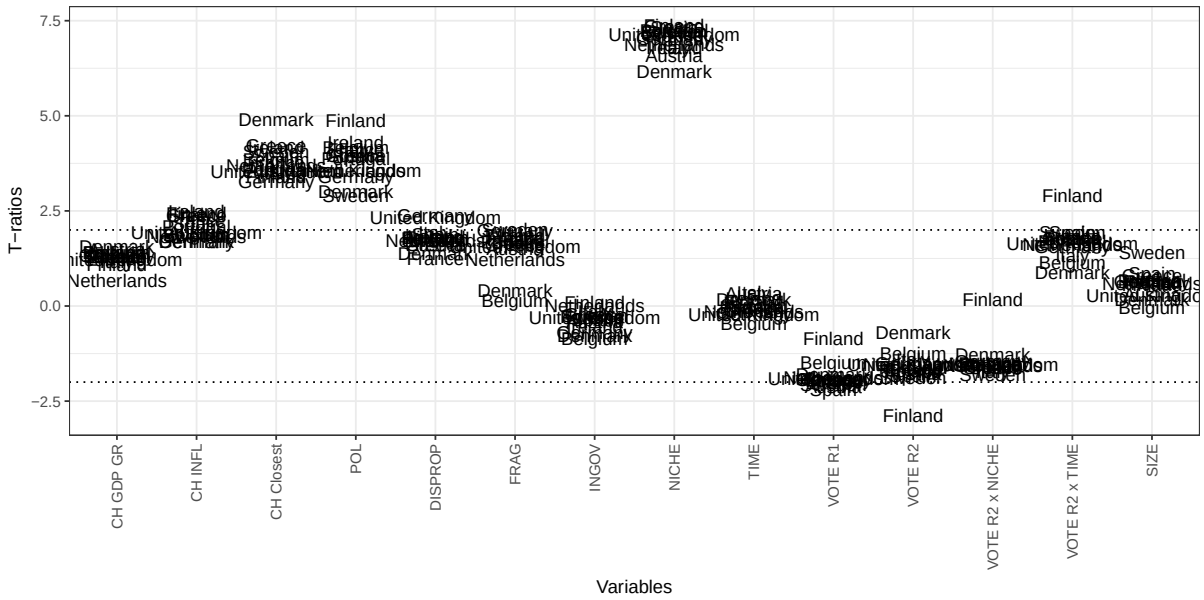


Figure 7.2: **Country Heterogeneity.** Countries are left out of the analysis one by one and the name of the country represents the value of the t-ratio for the coefficient of that variable, should that country be excluded from the analysis. The dotted lines represent the values for conventional levels of "significance". The model uses the index of similarity.

However, there are also some countries that stand out. If for example Finland would be left out, we would see that parties' reactions to past election losses would stand out much more distinctly.

And if Denmark would be left out, then the association with past electoral losses would hardly be there. But to some extent this exercise is also comforting. We can see that some associations – with change in polarisation, closest party change, nicheness – are there the way we would expect them to be no matter what country is excluded. There is some regularity to party change, it seems, after all.

7.4 Conclusions

Difference in political profiles need not be measured between parties, but can also be done for the same party in different points in time. Looking at party manifestos, we can ask how one party has changed from one election to the next and why. Focussing on the comparison of various measures for party politics that all have been derived from the manifesto data set, the overwhelmingly primary source of data for these kinds of analyses, albeit only though its flawed RILE index, this is a well suited context to determine which of them measures change better and which less so. In comparison to research on coalition formation or polarisation, there is, however, much more uncertainty in the analyses of party change. Various studies and models have often indicated conflicting associations. Building a benchmark model is thus more uncertain. However, it is still possible to outline a core set of variables that one can expect to be related to party change. And if we look at models that include these possible covariates of change and which otherwise differ only by the measures that is used to determine how different a manifesto of a party is from its previous manifesto, we can see that the index of similarity again stands out – it gives us a model which is clearly more in line with the potential covariates than any of the other measures.

Maybe by itself the conclusions of this analysis would not be noteworthy at all. In broad terms we see associations that we would expect so nothing fundamentally new is learned. It is only the left-right index of König, Marbach, and Osnabrügge (2013) that is slightly puzzling as it seems to depart from the direction where most of the rest are pointing. But we are also looking at models, which show relatively low levels of fit. For many of the indices we would be forced to conclude that the models that we get are barely interpretable, because they do not strike a chord with the data at all. But this analysis is part of a bigger picture, where it is but one small piece. And all the pieces together clearly point in the same direction and fit comfortably together. Like the previous analyses, the one that was performed in this chapter shows us that if we measure party differences with the index of similarity and not with distances between the ideological positions of parties, we get a better measure of difference. Better in the sense that the model, the description of reality that this measure

becomes a part of, is more in line with the data than the other measures that were included in this comparison.

Across all of these studies, the index of similarity thus proves to be a justified alternative if not replacement to measures of ideological position. At least in cases when we are interested in how different one party or one manifesto is from another. To know the difference between two parties or within one party over time we do not need to know what the left-right position of that party was. And not only do we not need to know, it also seems that it is harmful to know. If we transform the information that the manifesto data set has about parties into left-right positions and then use these position to estimate party difference, then we lose something. We lose something that we do not need to lose if we just focus on comparing one manifesto directly to another through the index of similarity.

Chapter 8

Conclusion: Advantages and Possibilities of Pairwise Comparison

> But [Pandora] removed the great lid from the storage jar with her hands and scattered all its contents abroad – she wrought baneful evils for human beings. Only Anticipation remained there in its unbreakable home under the mouth of the storage jar, and did not fly out; for before that could happen she closed the lid of the storage jar, by the plans of the aegis-holder, the cloud-gatherer, Zeus.
>
> – Hesiod, *Works and Days*

Zeus designed and the gods made Pandora as an irresistible gift to mankind. She was the their retribution for Promotheus' theft of fire and was accepted by men despite prior warnings from Prometheus not to accept any gift from Zeus. How could one resist someone who has been designed by the gods to be irresistible? Her harm was seen only when it was already too late, for Pandora came with a jar and when she opened it, numerous evils that were contained there spread throughout the world. While before men could live without disease and toil, now they were doomed to suffer. The only thing that remained in the jar was Anticipation – the potential for more to come (see Hesiod 2006).

There are echoes of Pandora in many aspects of this work. The manifesto data set and the left-right tools to interpret party positions, like the RILE index, are for various reasons, many of them justified, irresistible sources of information about party politics. If we consider the data set – its scope both across time and countries – then this is the only possible source of quantitative data that one could have for the analysis of party politics over a wide range of countries. Mass and expert surveys cannot reach back into the past while maintaining a pretence of validity and the behaviour of members of parliament is suitable only in very specific contexts to obtain information about the political profiles of parties. Therefore, if we want to study party politics quantitatively we are very

often left only with party manifestos to work with. And these have been conveniently coded in the framework of the manifesto data set.

And not only is the data set itself irresistible, even more so is the left-right index (RILE) that is provided with this data. It is familiar, readily available and rarely questioned if applied (although there is a range of work that has specifically focussed on the problems of this index). Everybody is familiar with the terms "left" and "right" and understand, more or less, their political meaning. And despite the fact that their content has been always contested, changing, and partial in covering all that is happening on political landscapes, we are comfortable in thinking in such terms. It is convenient, when the whole political profile of a party can be summarised with one number on a spatial dimension that should represent a well-defined ideology. It would literally be impossible to think of a more seemingly simple way to quantify information about politics and incorporate it into analyses.

But this simplicity is deceiving and to some extent only apparent. In the end we do get one number for each party, which is simple to include in analyses, but it comes with a cost that is represented in many of the assumptions that go into a left-right measure. Leaving aside all the (often untenable or potentially problematic) assumptions one might need to make in order to technically arrive at this kind of a measure, like assuming one unchanging meaning for what is "left" and what is "right" for the RILE index or how the positions of parties are related across different kinds of elections for the left-right index of König, Marbach, and Osnabrügge (2013), the biggest and the most problematic of all of them is that we assume a left-right dimension to be an adequate enough of a representation of political space. Fortunately, as far as practical research is concerned, this "adequate enough" has a rather specific meaning and testable form.

We all agree in broad terms that politics is more complicated than "left" and "right" and we know that when we use a tool based on this metaphor, we are inevitably overlooking many of the intricacies of political space. Compromises can sometimes be inevitable, as well as inconsequential. But when we use this tool and when we are not contesting this choice, we are also assuming that there is no alternative. Nothing that would be comparably simple and as easily implementable as any left-right index, but would contain more or better information about the political profiles or the political relationships between parties. It was the objective of this work to show that such an alternative does exist – in the form of directly comparing parties to each other in pairs.

This is an approach to measurement that is in line with the theory of conceptual spaces – a general account of how people represent objects and evaluate the differences between them in geometric

terms, through mental spaces. The theory emphasises an important distinction – that between phenomenal and scientific conceptual spaces. The first are mental representations that people form as they interact with the world and with each other. The second are scientific constructs that have no perceptual reality, but which help us better understand how the natural world works. Scientific spaces are artificially constructed, while phenomenal spaces have to measured and empirically determined. The left-right distinction does have a phenomenal reality reflected in its long historical use, but how people perceive politics seems to be more intricate and nuanced. Approaches to the measurement of party politics based on the latter thus have a "scientific" flavour to them, although the more scientific way in this context would be to try to get as close as possible to the perceptual space of the people involved. And this can be done through measuring the difference between parties in pairs.

A pairwise measure is only seemingly more complicated than a left-right measure. True, instead of one number for each party we would have as many numbers as there are other parties in the system. But in this case it is the complexity that is illusory. While a left-right measure seems simple, but yet is complex because of all the assumptions that it makes in the background, then a pairwise measure seems complex, but in fact for many of the same purposes that we use left-right measures is as simple and more. It seems complicated, because we start with and have to work with more data than in the case of a left-right measure. But to calculate the distance between two parties in a high-dimensional space is as simple as calculating it in a one-dimensional space. Unless we are doing it by hand – but who does that any more? And in many cases this is what we need the left-right dimension for – as a benchmark to estimate the amount of political difference between parties. If we already have this estimate of difference, then the estimates of party system polarisation or the amount of difference in a set of parties can be calculated just as we would do with left-right measures and can be included in analyses in exactly the same way.

And a pairwise measure is much more than a left-right measure simply for the amount of information that it contains. If we look at the political profiles of parties represented by 56 numbers, like in the raw manifesto data, then this is by definition more informative than their representation on a single dimension, except when the political landscape we are looking at is strictly unidimensional. And this is almost never the case. If we collect such data on party differences in pairs for all parties in a system, then a left-right dimension, if there is one, is contained in these pairwise assessments, as is information about any other dimensions that there are and that can have an impact on political behaviour. If it is just as easy to use such a measure of party differences and if it shows better results, then there is no reason, no justification to use a left-right tool.

In the light of the above, it was the objective of this work to empirically show the usefulness of measuring political differences between parties in pairs in two rather different contexts – in survey type research, where one can ask individuals to estimate the differences between party pairs and in research that uses the manifesto data set to obtain estimates of party differences. In the first case, individuals' assessments of party differences can first and foremost be used to obtain truly inductive – i.e. uncontaminated by the assumptions of the analyst – representations of political landscapes that people have in mind when they think about party politics (Chapter 4). In the second case, the difference between two manifestos can be measured through the index of similarity directly and without the need to transform the data into left-right positions. We can see from the comparisons in three very different contexts – party system polarisation (Chapter 5), coalition formation (Chapter 6) and party change (Chapter 7) – that such a pairwise measure works better than any measure of left-right position obtained from the same data – the manifesto data set.

The left-right paradigm is hegemonic in the analysis of party politics, but that does not mean that it is the best or most valid basis for measurement. In the chapters above, it was argued and more importantly shown that for many purposes a pairwise measure is more justified. It should be preferred when we are interested in the nature of a political landscape and not satisfied with just assuming it. And it should be preferred when we are interested in just the difference between parties and not their particular political profile in isolation. These two are separate questions and approaching the former through the latter, like through a left-right position, does come with a loss of information and subsequently poorer analyses. Difference can be estimated without putting an ideological label on it, when it is not necessary.

In Chapter 4 it was shown how pairwise estimates of difference can function as a survey instrument based on data from Germany, Sweden and the Netherlands. Respondents in an on-line survey were asked to estimate the differences between the political profiles of parties in pairs, which would give us a $n \times n$ matrix of pairwise estimates for all the n parties in the system. It is true that this is more demanding than simply asking people to locate parties on a left-right dimension as there would be a question for each unique party pair as opposed to just one for each party. But such information can potentially be much more valuable than left-right estimates. Pairwise distances, as the chapter showed, can be analysed with multidimensional scaling, which would give us a representation of the true political space people have in mind when they think about politics. This is something that we, being stuck in the left-right paradigm in terms of data gathering and analysis (except for such analyses which aim to show the multi-dimensionality of political spaces), almost completely lack at

this point.

Chapter 5 focussed on the archetypical situation in which one would be interested in the difference between parties, but more often than not would use estimates of left-right position to get to that difference instead of estimating the latter directly. Party system polarisation is usually calculated by aggregating the pairwise distances between parties on a left-right dimension or their distances from the midpoint of that dimension. The pairwise distances calculated from the manifesto data set using the index of similarity can be aggregated in essentially the same way. And when the estimates of polarisation derived from the index of similarity are compared to those based on left-right position representing exactly the same data, we can see that the index of similarity gives us clearly better fitting models. When we are interested in how polarisation is related to other possible phenomena in the party system, the measure we use makes a difference and we can see that there are distinctly better and worse measures, all else being equal.

Chapter 6 focussed on a similar problem – estimating the aggregate amount of difference between parties – but in a context, where we know that this difference has an impact on party interaction. From previous research we can be rather certain that the larger the political differences between parties, the less likely they are to form a coalition. This, in addition to coalition type and size, is among the essential explanations of which coalitions are more likely to materialise. Therefore, this is another excellent setting to compare the pairwise index of similarity to measures derived from left-right positions. Two different ways of comparing the indices – classification on the basis of the estimated difference from the party of the future prime minister and conditional logit analysis that evaluates the characteristics of all possible coalitions in relation to the probability of them materialising – showed without doubt that the index of similarity is able to predict coalitions better than any of the measures of left-right position.

The final analyses in Chapter 7 focussed on party change. Instead of differences between parties, we might be interested in how different a party is from itself in the previous election. This is another clear context where position does not matter and what we need is simply an estimate of difference. Even though the research on party change is not as mature as it is for polarisation and especially coalition formation, we do have a more or less clear idea of what should be related to party change. Comparing the same measures as in the previous two chapters through these possible associations again shows that the pairwise index of similarity seems to be giving us better estimates than measures of left-right position.

Across these different analyses we can thus be rather sure that pairwise measures are a better

choice than measures of left-right position in cases where we have to estimate only party differences or are interested in the true structure of a political space. The objective of this work was just to show the way, as this is a road that is almost untravelled in political science. And it is a road, which potentially goes through many central topics and issues in the discipline. It is therefore inevitable that the chapters above have touched upon problems, each of which would in any other context deserve much more attention than they have here.

After Pandora had opened her jar and spread hardship over mankind, work and suffering became part of our lives. And what was left in the jar was a promise for more. And so the current work, like the ones it builds upon, is akin to this jar – potentially an infinite amount of additional toil, with a few rewards here and there. The following paragraphs will thus highlight and outline some of the problems that got raised along the way, but which were left without due attention as they were only tangentially related to the main objective. For something with a reach as broad as this, it is a fitting way to conclude. Let these remarks be signposts on a road that leads elsewhere.

Alternatives to continuous space

The left-right metaphor as well as such pairwise comparisons that have been considered here all assume that political space is a continuous space where there is a measurable distance between points that corresponds to how different parties are from each other. Almost all thinking about party politics over the last 60 years has happened in this continuous paradigm. This need not be the case, however. As section 2.2.1 tried to argue, it seems to be that before Hotelling, Smithies and Downs, people were mostly talking about political differences in categorical terms. "Left" and "right", as many other political labels, designated different camps in politics, different categories, not points on spatial dimensions. When the geometric-spatial metaphor was adopted, its proponents did no argue or show that this kind of a tool is more in line with how people actually think about politics. Maybe categorical thinking is still more in line with reality and the idea of continuous political space is simply a fiction of economists that was contingently adopted? Of course people will adopt a spatial interpretation if we impose it on them simply because it is a cognitive schema that is already familiar to us from other domains of thought. If they are given a continuous left-right dimension, they are able to give answers that make sense in that context. But maybe it is more natural for us to think in terms of different political labels and camps and not distances in a continuous space. Fortunately this is an empirical question, which could be answered through a careful analysis of the discourse people build and use when they make sense of politics in a context where they are not given a particular

spatial framework to begin with. One could devise empirical tests and experiments to probe into this problematic. At present it seems this is a road in political science that virtually nobody has yet walked on.

What people have in mind when they compare parties?

Our understanding of what a political party is and how it is different from other parties is likely to be a holistic whole, which contains assessments of the political profile of the party as well as impressions about the party members and leadership, aspects of its organisation and whatever else we might think of when we judge parties. It might be difficult to separate the politics from the rest. Therefore, even though the survey questions that were used in Chapter 4 (see also Appendix C.2) specifically instructed the respondents to think about the political profiles of parties, it is entirely possible that other judgements entered the responses as well. If this method is to be used in the future, it might be a good idea to look deeper into this. After all, this also is an empirical question. It is possible to experiment with different question wordings and compare those that ask people about the general assessments of parties to those that have an explicitly political focus. If there is a difference, we will know that such questions function differently and that people can separate politics from the rest of the party. If the questions function the same, we will know that judgements of parties are likely to form holistic wholes that cannot be decomposed into separate parts.

The non-problem of representativeness

The analysis of Chapter 4 was based on data obtained from on-line surveys that can by no means be considered representative. However, by reference to how party positions on the left-right dimension can be predicted from people's socio-demographic characteristics or their left-right self-placement on the basis of a representative survey (European Election Study Voter Survey 2014) – they cannot – it was argued that a non-representative sample can still give us information that is valid and of wider relevance. The samples are biased, yes, but were they biased in any other way, or completely representative, the results would still be similar. How people perceive the political profiles of parties does not seem to be too much dependent on their personal characteristics. This chapter only provided preliminary evidence that this can be the case, but this is certainly worth looking into in more depth as well as in a more diverse set of countries. If people of different socio-economic backgrounds are presented with an external object like a table, most likely they would all agree that they are seeing a table and that it is of this or that colour. Perceptions of such external objects do no depend on

the characteristics of an individual. If this is more or less the same with the perceptions of political parties, then it is valuable knowledge that could potentially have important implications for how certain questions can be studied. If fully representative surveys, which are very costly to conduct, are not required for some analyses of party politics, then a number of research questions and analyses, including those about the pairwise differences between parties, become much more accessible.

Expanding the analyses on the individual level

The analyses in Chapter 4 relied only on the individual's assessments of party differences. Therefore, after the data was analysed with multidimensional scaling, the only information we had to work with was the relative locations of parties in the estimated space and our prior knowledge about the politics of these countries. Our interpretation of this space was thus dependent on information "obtained" from elsewhere. This framework for the analysis of political space, however, can be extended so that our interpretation of the space that emerges would be more strictly empirical. In addition to the locations of parties it would be possible to project into that space also other characteristics that can be associated with parties (Kruskal and Wish 1978, pp. 35-43). All we need is to collect additional information from the respondents about the parties in question, like their position on certain important issues or their style of politics. The party relations would remain unaffected by this and the additional information would help us to interpret the space better. We would be able to see what directions in the uncovered space are related to what political positions and party characteristics. Such an approach was not taken in this work, as its purpose was simply to show that such pairwise comparisons would be a feasible and useful tool for the inductive analysis of political space on the individual level. Furthermore, in order to stay in line with the inductive nature of this approach, one would need a separate study to determine which are the salient issues and important party characteristics for the respondents. Assuming such things would be the easy way out and would lead us rather away than towards understanding how people think about politics.

Distances and equivalences

Using the index of similarity stands on two rather common assumptions in political science. All of this work, like all analyses that involve the left-right dimension, relies on the assumption that distance in space is linearly equivalent to difference. And the silent assumption has been that there is a one to one correspondence between them. However, as was brought out in section 2.1, this does not have to be the case. It might be that political difference, as measured by the index of similarity, is

some other function of distance. One could speculate to one's heart's content, but in the end this also is an empirical question that could be resolved in a similar way to the comparisons that were conducted in the chapters above. One could have have different equivalence functions for the same measure of distance and test them in models that are otherwise exactly the same. It would thus be possible to get closer to understanding which and under what conditions work best. Thus, there could potentially be different indices of similarity that use different ways to estimate the distance between two manifestos.

Measures of polarisation and the number of parties

Chapter 5 on polarisation and Chapter 6 on coalitions raised the issue of how various measures of polarisation or the aggregate amount of political divergence in a set of parties can be related to the number of parties in the set (see section 5.1.3). This was known to be true for the Esteban and Ray measure and seems to be true also for the ideological standard deviation measure. When polarisation is by effective definition (they way we actually operationalise it, not how we wish we conceptualise it) related to the number of parties, then any analyses that try to look into the relationship between the two become suspect as it will not be possible to determine which part of the association is there as an artefact of measurement and which part is there in reality. In order to circumvent this problem, the current analysis used a method to aggregate pairwise differences between parties, which is applicable both to the index of similarity and party positions measured on the left-right dimension, and which is unrelated to the number of parties. However, this is a very initial solution to the problem and this question, especially how different weighting schemes are related to this problem, is certainly worth looking further into, as it concerns to many crucial analyses in party politics.

Problems of dynamic estimates of party position

Some of the measures for party position, like the Franzmann and Kaiser (2006) left-right measure and the König, Marbach, and Osnabrügge (2013) measure, but also the Elff (2013) measure, assume that party positions at elections t are in a certain pre-defined way related to party positions at elections $t-1$. This introduces a relationship over time that has an impact on the kinds of analyses that should be done with these measures. This was the case with the first two measures mentioned here and the analysis of polarisation (Chapter 5). When party positions from one election to the next resemble each other by definition, it introduces a structure to the data that has to be taken into account. In this case it was evident in the residual serial correlation after all other variables were

included in the model. It was very strong for these two indices and barely noticeable for the rest. It should be pointed out here as well that this problem did not manifest itself in the analysis of party change (Chapter 7), because in that case we were not looking at the positions of parties but their first differences. Even if the positions themselves are somehow related over time, the way they change need not. Therefore, none of the models in that analysis had an issue with serial correlation.

Measuring different things

This work has looked into the applications of pairwise comparisons using both individual level data and information obtained from party manifestos. Although the method of deriving estimates is in broad terms the same, it should still be kept in mind that these different sources might give us very different depictions of political landscapes. Both data sources can be used as they are – applying simply the pairwise differences – or they can be analysed further. In this work, the latter approach was taken for the individual level data while for party manifesto data only the raw differences were used as many analyses of party politics only require an estimate of the latter. However, the same pairwise distances obtained through the index of similarity could further be used to study the structure of political space as they have been depicted in party manifestos. Something similar has been done in a few previous analyses (van der Brug 2001; Vries 1999), but there has been no study yet that would systematically analyse how such pairwise distances obtained from the manifesto data through the index of similarity (or something equivalent) would scale down to lower dimensional spaces with an emphasis on the adequacy of the latter. This was done here for the three cases for which individual level data was considered, but done on the whole data set with this particular aim in mind, it would provide an interesting complement.

The points that were reiterated above are but a small section, albeit perhaps the more prominent, of what came out of this Pandora's jar. Each could potentially be a work of equal proportions to the current and would surely deserve such attention. The main point of this work, however – that a pairwise measure of party difference is for many purposes superior to left-right measures – is valuable both despite and because of them. On the one hand, on its own, it has opened up a new possibility for the analysis of party politics and has shown a range of contexts where this is applicable. Comparing parties to each other in pairs can give us better understandings about how people perceive parties and a better measures of party difference than the left-right alternatives that we habitually use. And as such it is perhaps a step in the direction of a more empirical and less assumption driven political

science. On the other hand, one should be suspect if a work would not lay the grounds for more work. Unless we assume the existence of final and ultimate truth, all answers should raise additional, more difficult questions than the ones we began with. A road can either lead to new places or be a dead end.

Appendix A

Measures of Party Politics

The following table categorises all the empirical studies that are referred to in this work according to the measure of party politics that has been used. It contains only those that have used a measure of politics as a means for something and have have not focussed on the measure as an end in itself. It thus excludes all the work that as been looking into for example the dimensionality of political spaces in Europe. The most popular measure across all of this work is the RILE index (Laver and Budge 1992; Budge et al. 2001) of the manifesto data set (Volkens et al. 2015a) and it is indicated when this has been used exclusively (CMP RILE) or where just the manifesto data set has been used (CMP). "Single dimension" means that the author(s) have used empirical data that only contains information on one political or ideological dimension. "Multiple dimensions" means that the authors have considered a space of more than one dimension, even if the dimensions of that space are treated separately (one by one). "Non-continuous" refers to studies, that have not strictly speaking used a continuous spatial paradigm – i.e. have not relied on party locations on a spatial dimension in their analyses. Such studies for example include categorizations of different kinds of parties (e.g. extremist, median, pro-system) and have relied for their measures on other information, like the relative popularity or strength of such parties.

Table A.1: **Types of Political Space Used in Empirical Analyses.** The table shows the classification of the empirical studies referred to in this work according to the type of measure for party politics.

Unidimensional	Aarts and Wessels (2005) CMP RILE, Abou-Chadi and Orlowski (2016) CMP RILE, Abou-Chadi (2016) CMP RILE, Adams et al. (2004) CMP RILE, Adams et al. (2006) CMP RILE, Adams and Somer-Topcu (2009) CMP RILE,Adams, Haupt, and Stoll (2009) CMP RILE, Adams and Somer-Topcu (2009) CMP RILE, Bäck and Dumont (2008), Bawn and Somer-Topcu (2012), Budge (1994), Clark (2014) CMP RILE, Crepaz (1990), Curini and Hino (2012), Dalton (2008), Dalton and McAllister (2014), Dejaeghere and Dassonneville (2015), Dow (2011), Ensley (2012), Ezrow (2008), Ezrow (2011), Ezrow et al. (2011) CMP RILE, Glasgow, Golder, and Golder (2012) CMP RILE, Glasgow and Golder (2013) CMP, Glasgow and Golder (2015) CMP RILE, Gross and Sigelman (1984), Han (2015) CMP RILE, Haupt (2010) CMP RILE, Indridason (2011), Kang (2009) CMP RILE, Klingemann (2005) CMP, Lachat (2008), Lehrer (2012) CMP RILE, Lupu (2015), Martin and Stevenson (2001) CMP RILE, Martin and Stevenson (2010) CMP RILE, Matakos, Troumpounis, and Xefteris (2015) CMP RILE, Mattila and Raunio (2004) CMP, Meyer (2013) CMP RILE, Pontusson and Rueda (2008) CMP RILE, Rehm and Reilly (2010), Roberts and Wibbels (1999), Schumacher, De Vries, and Vis (2013) CMP RILE, Sigelman and Yough (1978), Singer (2016), Somer-Topcu (2009) CMP RILE, Somer-Topcu and Zar (2014) CMP RILE, Steiner and Martin (2012) CMP, Tavits (2005), Taylor and Herman (1971), van der Eijk, Schmitt, and Binder (2005), Warwick (1994), Warwick (1996)
Multidimensional	Alvarez and Nagler (2004), Andrews and Money (2009) CMP, Dalton (2016), de Swaan (1973), Harmel et al. (1995), Janda et al. (1995) CMP, Franklin and Mackie (1984), Meyer and Miller (2015) CMP, Robertson (1976) CMP, Tavits (2007) CMP, Taylor and Laver (1973)
Non-continuous	Glasgow, Golder, and Golder (2011), Isaksson (2005), King et al. (1990), Pelizzo and Babones (2007), Taylor and Herman (1971), Warwick (1994)

Appendix B

Alternative Left-Right Measures

Table B.1: **Compoents for Elff's Indices.**

Economic left-right	
402	Incentives
403	Market regulation
404	Economic planning
405	Free enterprise
412	Controlled economy
413	Nationalisation
414	Economic orthodoxy
Liberalism-authoritarianism, traditionalism-permissiveness	
201	Freedom and human rights
202	Democracy
601	National way of life: positive
603	Traditional morality: positive
604	Traditional morality: negative
605	Law and order

Source: Elff (2013)

Table B.2: **Prosser Indices.** The following shows the content of the general left-right as well as the economic left-right and social liberal-conservative indices proposed by Prosser.

General Left		**General Right**	
105	Military: Negative	109	Internationalism: Negative
106	Peace: Positive	401	Free Enterprise: Positive
107	Internationalism: Positive	407	Protectionism: Negative
108	European Integration: Positive	414	Economic Orthodoxy: Positive
202	Democracy: Positive	505	Welfare State Limitation
301	Decentralisation: Positive	507	Education Limitation
303	Governmental and Administrative Efficiency: Positive	601	National Way of Life: Positive
403	Market Regulation: Positive	603	Traditional Morality: Positive
408	Economic Goals	608	Multiculturalism: Negative
411	Technology and Infrastructure: Positive	702	Labour Groups: Negative
412	Controlled Economy: Positive		
413	Nationalisation: Positive		
416	Anti-Growth Economy: Positive		
501	Environmental Protection: Positive		
502	Culture: Positive		
503	Equality: Positive		
504	Welfare State Expansion		
506	Education Expansion		
602	National Way of Life: Negative		
604	Traditional Morality: Negative		
701	Labour Groups: Positive		
705	Minority Groups: Positive		
706	Non-Economic Demographic Groups: Positive		
Economic Left		**Economic Right**	
403	Market Regulation: Positive	401	Free Enterprise: Positive
411	Technology and Infrastructure: Positive	407	Protectionism: Negative
412	Controlled Economy: Positive	414	Economic Orthodoxy: Positive
413	Nationalisation: Positive	505	Welfare State Limitation
503	Equality: Positive	507	Education Limitation
504	Welfare State Expansion	702	Labour Groups: Negative
506	Education Expansion		
701	Labour Groups: Positive		
Social Liberal		**Social Conservative**	
105	Military: Negative	109	Internationalism: Negative
106	Peace: Positive	302	Centralisation: Positive
107	Internationalism: Positive	305	Political Authority: Positive
201	Freedom and Human Rights: Positive	601	National Way of Life: Positive
202	Democracy: Positive	608	Multiculturalism: Negative
301	Decentralisation: Positive		
416	Anti-Growth Economy: Positive		
501	Environmental Protection: Positive		
502	Culture: Positive		
602	National Way of Life: Negative		
607	Multiculturalism: Positive		
704	Middle Class and Professional Groups: Positive		
705	Minority Groups: Positive		
706	Non-Economic Demographic Groups: Positive		

Source: Prosser (2014)

Table B.3: **The Core Left-Right Components of Jahn's Index**

Left				**Right**	
Socialism		Liberal		Conservative	
413	Nationalism	505	Welfare state limitation	603	Traditional morality
412	Controlled economy	401	Free enterprise	606	Social harmony
404	Economic planning	414	Economic orthodoxy	601	National way of life
403	Market regulation				

Source: Jahn (2010)

Table B.4: **Issue Categories Used for König et al. Index.**

Issue	Pole A		Pole B	
Internationalism	109	Internationalism: negative	107	Internationalism: positive
European integration	110	European integration: negative	108	European integration: positive
National way of life	601	National way of life: positive	602	National way of life: negative
Military	105	Military: negative	104	Military: positive
	106	Peace: positive		
Freedom	201	Freedom and human rights: positive	605	Law and order: positive
	202	Democracy: positive		
Administration	404	Economic planning: positive	303	Gov. and admin. efficiency: positive
	405	Corporatism: positive		
Enterprise	412	Controlled economy: positive	401	Free enterprise: positive
	413	Nationalization: positive		
Market	403	Market regulation: positive	402	Incentives: positive
Protectionism	406	Protectionism: positive	407	Protectionism: negative
Macroeconomics	409	Keynesian demand management: positive	414	Economic orthodoxy: positive
Quality of life	416	Anti-growth economy: positive	410	Productivity: positive
	501	Environmental protection: positive		
Welfare state	503	Social justice: positive	505	Welfare state limitation: positive
	504	Welfare state expansion: positive		
Traditional morality	604	Traditional morality: negative	603	Traditional morality/positive
Multiculturalism	607	Multiculturalism: positive	608	Multiculturalism: negative
Labour groups	701	Labour groups: positive	702	Labour groups: negative
Target groups	705	Underprivileged minority groups: positive	704	Middle class and prof. groups: positive

Source: König, Marbach, and Osnabrügge (2013)

Appendix C

Data

C.1 Manifesto Data Set

The manifesto data used here is slightly different from what is provided in the original data file. The additional sub-categories that were used for CEE counties have been aggregated into their parent categories (see Volkens et al. 2015b) from which they are originally excluded. Additionally, the "peruncod" category, referring to sentences that have no political content according to the coding scheme, has been removed and the values of the other categories as well as the total number of political statements in a manifesto have been recalculated accordingly. This also means that the values of the indices that are directly calculable from the data set (RILE, KFRILE, LRILE, PLR) are slightly different here than they would be if calculated form the original manifesto data, but overall the differences are almost unnoticeable.

C.2 Data on Individual Perceptions of Party Differences

This section gives an overview of the on-line survey data that has been used in the analyses of Chapter 4. All of the three data sets, obtained in SPSS format from the Qualtrix on-line survey platform, were cleaned in the following way:

- All rows where there was missing data for the pairwise estimates were excluded.
- All rows which contained more than 50 missing values were removed (the whole survey contained more questions that were not relevant for this study).
- All rows which indicated a completion time of more than 100 or less than 5 minutes were deleted.

- In a handful instances in the data sets for Germany and Sweden it seemed to be the case that the respondents understood the direction of the question wrong, i.e. the mixed up the endpoints of the scale. Such cases were determined by fitting a mixture model of multinomial distributions (with the `multmixEM` function in R) and were removed.
- Rows, which indicated the same value for all pairwise distances, were removed.

The following tables show the descriptive statistics for the data sets that were used in Chapter 4. The abbreviations in the tables are refer to the parties in the respective systems as follows:

- **Germany:** Christian Democratic Union (including CSU) (CDU), Social Democratic Party (SPD), Alliance 90 / The Greens (G), The Left (L), Free Democratic Party (FDP) and Alternative for Germany (FDP).
- **The Netherlands:** Christian Democratic Appeal (CDA), Democrats 66 (D66), Freedom Party (PVV), Socialist Party (SP), Green Left (GL), Labour Party (PvdA), People's Party for Freedom and Democracy (VVD) and Christian Union (CU).
- **Sweden:** Social Democratic Workers' Party (SOC), Moderate Coalition Party (MO), Sweden Democrats (SWD), Environment Party The Greens (MP), Centre Party (CE), Left Party (VP) and Liberal People's Party (FP).

The question wordings for the assessment of the pairwise difference for the three countries were the following:

- **Germany:** "Wie ähnlich oder unähnlich sind sich die folgenden Parteienpaare im Bezug auf ihre politischen Überzeugungen?"
- **The Netherlands:** "Hoe gelijk of verschillend zijn de volgende partijen in hun politieke overtuigingen?"
- **Sweden:** "Hur lika eller olika är följande par av partier i vad de vill uppnå politiskt?"

Table C.1: **Descriptive Statistics, Germany.** The table shows the descriptive statistics for the Dutch data set. Gender is coded: 1 male, 2 female. "PTV" refers to propensity to vote scores, "LR" refers to left-right position.

Statistic	N	Mean	St. Dev.	Min	Max
Birth year	680	1,973.434	15.617	1,929	1,999
Gender	680	1.162	0.369	1	2
Duration (seconds)	689	972.123	704.214	361	5,250
PW diff. CDU.SPD	689	5.316	1.948	1	11
PW diff. CDU.G	689	7.075	1.939	1	11
PW diff. CDU.L	689	9.582	1.606	1	11
PW diff. CDU.FDP	689	4.753	2.075	1	11
PW diff. CDU.AfD	689	5.203	2.360	1	11
PW diff. SPD.G	689	4.582	1.756	1	11
PW diff. SPD.L	689	5.239	1.926	1	11
PW diff. SPD.FDP	689	7.531	1.801	1	11
PW diff. SPD.AfD	689	8.907	1.651	3	11
PW diff. G.L	689	5.489	2.225	1	11
PW diff. G.FDP	689	7.540	2.093	1	11
PW diff. G.AfD	689	9.446	1.651	2	11
PW diff. L.FDP	689	9.711	1.525	1	11
PW diff. L.AfD	689	8.859	2.332	1	11
PW diff. FDP.AfD	689	6.080	2.424	1	11
PW diff. self.CDU	688	7.673	2.671	1	11
PW diff. self.SPD	688	5.400	2.497	1	11
PW diff. self.G	688	5.382	2.958	1	11
PW diff. self.L	687	6.052	3.330	1	11
PW diff. self.FDP	687	7.795	2.871	1	11
PW diff. self.AfD	688	8.991	3.075	1	11
PTV.CDU	685	3.326	3.257	1	11
PTV SPD	681	5.380	3.466	1	11
PTV G	681	5.928	3.592	1	11
PTV L	684	5.010	3.880	1	11
PTV FDP	686	2.993	3.110	1	11
PTV AfD	685	2.727	3.376	1	11
LR CDU	348	8.037	1.573	1	11
LR SPD	347	4.669	1.471	1	11
LR G	346	4.272	1.590	1	10
LR L	346	2.029	1.066	1	9
LR FDP	346	7.636	1.586	1	11
LR AfD	347	9.793	1.436	3	11
LR self	348	4.483	2.034	1	10

Table C.2: **Descriptive Statistics, the Netherlands.** The table shows the descriptive statistics for the Dutch data set. Gender is coded: 1 male, 2 female. "PTV" refers to propensity to vote scores, "LR" refers to left-right position.

Statistic	N	Mean	St. Dev.	Min	Max
Birth year	253	1,959.779	14.116	1,926	1,990
Gender	254	1.303	0.461	1	2
Duration (seconds)	256	1,089.762	583.882	370	5,212
PW diff. CDA.D66	256	6.500	1.669	1	11
PW diff. PVV.SP	256	7.289	2.482	2	11
PW diff. SP.GL	256	5.488	2.021	1	11
PW diff. PvdA.PVV	256	8.707	1.750	3	11
PW diff. VVD.PvdA	256	7.059	1.742	1	11
PW diff. CDA.CU	256	4.922	1.824	1	11
PW diff. VVD.CDA	256	5.215	1.882	1	11
PW diff. PVV.GL	256	9.465	1.633	3	11
PW diff. D66.GL	256	5.828	1.997	1	11
PW diff. PvdA.CDA	256	6.312	1.695	1	11
PW diff. PvdA.GL	256	5.219	1.845	1	11
PW diff. VVD.PVV	256	5.891	2.312	1	11
PW diff. PvdA.SP	256	5.398	1.982	1	11
PW diff. D66.CU	256	7.082	1.821	1	11
PW diff. PVV.D66	256	8.973	1.783	2	11
PW diff. VVD.SP	256	9.254	1.506	2	11
PW diff. PvdA.CU	256	6.703	1.801	1	11
PW diff. CU.GL	256	6.473	1.950	1	11
PW diff. SP.D66	256	7.910	1.665	2	11
PW diff. CDA.GL	256	7.363	1.654	1	11
PW diff. VVD.CU	256	6.852	1.945	1	11
PW diff. PVV.CU	256	8.500	1.964	1	11
PW diff. VVD.D66	256	5.227	1.931	1	11
PW diff. PVV.CDA	256	7.629	1.905	1	11
PW diff. PvdA.D66	256	5.969	1.749	1	11
PW diff. SP.CDA	256	7.965	1.532	1	11
PW diff. VVD.GL	256	8.344	1.668	3	11
PW diff. SP.CU	256	7.270	1.949	1	11
PW diff. self.VVD	254	7.331	2.617	1	11
PW diff. self.PvdA	256	5.910	2.557	1	11
PW diff. self.PVV	256	9.629	2.489	1	11
PW diff. self.SP	256	6.711	2.780	1	11
PW diff. self.CDA	255	7.455	2.330	1	11
PW diff. self.D66	255	5.424	2.604	1	11
PW diff. self.CU	254	6.799	2.537	1	11
PW diff. self.GL	255	5.200	2.812	1	11
PTV VVD	254	3.394	3.280	1	11
PTV PvdA	255	4.718	3.404	1	11
PTV PVV	255	1.953	2.506	1	11
PTV SP	254	3.732	3.247	1	11
PTV CDA	252	2.972	2.673	1	11
PTV D66	254	5.740	3.513	1	11
PTV CU	252	3.536	2.933	1	11
PTV GL	255	5.890	3.476	1	11
LR VVD	132	9.311	1.349	4	11
LR PvdA	131	4.450	1.530	1	10
LR PVV	130	9.362	2.262	2	11
LR SP	131	2.351	1.709	1	10
LR CDA	132	7.795	1.246	4	11
LR D66	132	6.742	1.737	1	11
LR CU	132	6.189	1.997	1	11
LR GL	132	3.242	1.677	1	9
LR self	132	4.811	2.151	1	11

Table C.3: **Descriptive Statistics, Sweden.** The table shows the descriptive statistics for the Dutch data set. Gender is coded: 1 male, 2 female. "PTV" refers to propensity to vote scores, "LR" refers to left-right position.

Statistic	N	Mean	St. Dev.	Min	Max
Birth year	332	1,964.172	13.685	1,928	1,990
Gender	332	1.286	0.453	1	2
Duration (seconds)	338	1,208.482	757.481	397	5,738
PW diff. SOC.MO	338	6.716	2.232	1	11
PW diff. SOC.SWD	338	8.183	2.462	1	11
PW diff. SOC.MP	338	5.497	2.022	1	11
PW diff. SOC.CE	338	6.766	1.865	1	11
PW diff. SOC.VP	338	4.911	1.970	1	11
PW diff. SOC.FP	338	6.612	1.836	1	11
PW diff. MO.SWD	338	6.272	2.600	1	11
PW diff. MO.MP	338	8.358	2.003	1	11
PW diff. MO.CE	338	4.322	1.828	1	10
PW diff. MO.VP	338	9.834	1.771	1	11
PW diff. MO.FP	338	3.923	1.765	1	10
PW diff. SWD.MP	338	9.473	2.134	1	11
PW diff. SWD.CE	338	7.846	2.392	1	11
PW diff. SWD.VP	338	9.447	2.433	1	11
PW diff. SWD.FP	338	7.763	2.426	2	11
PW diff. MP.CE	338	6.506	2.014	1	11
PW diff. MP.VP	338	4.642	2.088	1	11
PW diff. MP.FP	338	7.592	1.980	1	11
PW diff. CE.VP	338	8.793	1.988	1	11
PW diff. CE.FP	338	4.293	1.889	1	10
PW diff. VP.FP	338	8.982	1.964	1	11
PW diff. PTV.SOC	336	4.765	3.901	1	11
PW diff. PTV.MO	335	4.361	3.916	1	11
PW diff. PTV.SWD	335	3.269	3.786	1	11
PW diff. PTV.MP	335	3.666	3.441	1	11
PW diff. PTV.CE	336	3.887	3.344	1	11
PW diff. PTV.VP	336	3.926	3.850	1	11
PW diff. PTV.FP	333	4.417	3.660	1	11
PW diff. self.SOC	338	5.757	2.792	1	11
PW diff. self.MO	338	6.683	3.398	1	11
PW diff. self.SWD	338	8.222	3.576	1	11
PW diff. self.MP	338	6.778	3.131	1	11
PW diff. self.CE	336	6.705	2.925	1	11
PW diff. self.VP	336	6.824	3.732	1	11
PW diff. self.FP	338	6.278	3.104	1	11
LR SOC	220	4.282	1.731	1	11
LR MO	219	9.384	1.608	1	11
LR SWD	220	9.545	2.046	3	11
LR MP	218	5.083	2.158	1	11
LR CE	219	9.183	1.676	1	11
LR VP	218	2.174	1.553	1	11
LR FP	220	9.268	1.618	1	11
LR self	221	5.416	2.762	1	11

C.3 Data Set for Party System Polarisation

The following table shows the descriptive statistics for the data set that was used in the analysis of party system polarisation. "POL" refers to polarisation in general, "PW" to the pairwise measure and "ISD" to the ideological standard deviation measure. The abbreviations used for the measures of party politics are the following:

- **EELR** Elff's economic left-right scale
- **FKLR** Franzmann and Kaiser's left-right dimension
- **J** Jahn's left-right dimension
- **K** König et al.'s left-right dimension
- **KFRILE** version of RILE proposed by Kim and Fording
- **LRILE** RILE using the logit scale of Lowe et al.
- **PLR** Prosser's left-right dimension
- **RILE** left-right index of the manifesto data set
- **SIM** the index of similarity

Table C.4: **Descriptive Statistics, Data for Party System Polarisation.**

Statistic	N	Mean	St. Dev.	Min	Max
POL SIM PW	148	0.000	1.000	−1.912	2.102
POL RILE PW	148	0.000	1.000	−1.663	3.594
POL KFRILE PW	148	0.000	1.000	−1.973	2.819
POL LRILE PW	148	0.000	1.000	−1.459	4.534
POL PLR PW	148	0.000	1.000	−2.204	4.562
POL EELR PW	148	0.000	1.000	−2.249	2.870
POL FKLR PW	148	0.000	1.000	−2.241	2.986
POL J PW	148	0.000	1.000	−1.842	2.476
POL K PW	148	0.000	1.000	−2.749	3.119
POL RILE ISD	148	0.000	1.000	−1.596	3.570
POL KFRILE ISD	148	0.000	1.000	−1.808	2.489
POL LRILE ISD	148	0.000	1.000	−1.385	3.899
POL PLR ISD	148	0.000	1.000	−1.829	4.403
POL EELR ISD	148	0.000	1.000	−1.935	2.650
POL FKLR ISD	148	0.000	1.000	−1.852	2.355
POL J ISD	148	0.000	1.000	−1.686	2.401
POL K ISD	148	0.000	1.000	−2.508	2.802
Fragmentation	148	3.668	1.239	2.034	7.692
Coalition alternation	148	89.236	10.439	60.430	100.000
Disproportionality	148	4.892	4.764	0.410	25.250
Inequality	148	44.557	5.188	29.970	53.736
Turnout	148	79.859	8.555	59.400	95.100
Level of democracy	148	0.877	0.051	0.740	0.948
Government duration (years)	148	2.532	1.291	0.190	5.066
Volatility (existing parties)	148	8.304	5.085	1.600	37.150
Volatility (new parties)	148	1.372	2.215	0.000	15.850

C.4 Data on Coalitions

The manifesto data set is matched to the elections data set of ParlGov, which in turn can be matched to the governments data set of ParlGov, where each row corresponds to a party in a government formation situation with the corresponding programmatic or ideological data. The rows, for which manifesto data is missing, are discarded, as well as parties which have less than 2% of seats in parliament. Governments, for which no party of the prime minister is indicated, are removed, as well as those which are not coalitions or are caretaker governments. Furthermore, such cases, where the manifesto data indicated that all parties in government are programmatically the same (e.g. all members of the electoral alliance were assigned the same codes), are excluded. Finally, all government formation situations, where there is information about less than 80% of parties in parliament (according to seat shares) are removed. Party weights are calculated, which correspond to their relative seat shares and are used in the calculations for the analyses. The following tables show the descriptive statistics for the data sets that were used in the analysis of coalition formation. "POL" indicates the variables that measure the amount of political divergence in the potential coalition, "PW" refers to the pairwise measure and "ISD" to the measure of ideological standard deviation. The abbreviations used for the measures of party politics are the following:

- **EELR** Elff's economic left-right scale
- **FKLR** Franzmann and Kaiser's left-right dimension
- **J** Jahn's left-right dimension
- **K** König et al.'s left-right dimension
- **KFRILE** version of RILE proposed by Kim and Fording
- **LRILE** RILE using the logit scale of Lowe et al.
- **PLR** Prosser's left-right dimension
- **RILE** left-right index of the manifesto data set
- **SIM** the index of similarity

Table C.5: **Descriptive Statistics, Cabinets and Parties.** The table shows the descriptive statistics for the government formation situations that the analyses are based on. The rows in the data file correspond to parties. The data file also includes the values for all included parties for the 56 issue variables of the manifesto data set.

Statistic	N	Mean	St. Dev.	Min	Max
Year	1,278	1,977.688	18.155	1,946	2,010
Cabinet party	1,278	0.502	0.500	0	1
Prime Minister	1,278	0.178	0.383	0	1
Seat share	1,278	0.172	0.138	0.020	0.633
Vote share	1,256	16.586	12.475	1.690	50.200
RILE	1,278	−2.486	26.185	−82.246	81.817
KFRILE	1,278	−0.069	0.443	−1.000	1.000
LRILE	1,278	−0.166	1.167	−5.109	5.104
PLR	1,278	−2.158	1.385	−5.303	2.025
EELR	1,278	0.616	0.948	−2.132	3.757
FKLR	1,278	−0.117	0.337	−0.937	0.996
J	1,278	1.045	10.127	−42.053	35.099
K	1,278	−0.101	2.241	−8.197	7.213

Table C.6: **Descriptive Statistics, Data for Conditional Logit.** The table shows the desciptive statistics for the data file that contains all the coalition formation situations that are included in the main analyses, i.e. including only those coalitions, which include the party of the prime minister.

Statistic	N	Mean	St. Dev.	Min	Max
POL RILE ISD	12,864	0.000	1.000	−1.625	3.841
POL LRILE ISD	12,864	0.000	1.000	−1.428	4.386
POL J ISD	12,864	0.000	1.000	−1.486	5.041
POL EELR ISD	12,864	0.000	1.000	−1.650	3.585
POL FKLR ISD	12,864	0.000	1.000	−1.799	2.935
POL K ISD	12,864	0.000	1.000	−2.422	4.261
POL KFRILE ISD	12,864	0.000	1.000	−1.704	3.438
POL PLR ISD	12,864	0.000	1.000	−1.583	3.441
POL RILE PW	12,864	0.000	1.000	−1.630	5.613
POL LRILE PW	12,864	0.000	1.000	−1.475	7.434
POL J PW	12,864	0.000	1.000	−1.504	6.799
POL EELR PW	12,864	0.000	1.000	−1.801	6.142
POL FKLR PW	12,864	0.000	1.000	−2.012	5.634
POL K PW	12,864	0.000	1.000	−2.489	11.504
POL KFRILE PW	12,864	0.000	1.000	−1.805	5.271
POL PLR PW	12,864	0.000	1.000	−1.728	5.621
POL SIM PW	12,864	0.000	1.000	−2.587	3.291
Actual coalition	12,864	0.018	0.132	0	1
Seat share	12,864	62.824	17.312	5.397	101.055
Minimal winning	12,864	0.100	0.300	0	1
Incumbent	12,864	0.021	0.143	0	1

C.5 Data on Change

This section shows the data coverage – the parties that were used in the analysis of political change, as well as the descriptive statistics of the data set that was used for the analysis. The abbreviations used for the measures of party politics are the following:

- **EELR** Elff's economic left-right scale
- **FKLR** Franzmann and Kaiser's left-right dimension
- **J** Jahn's left-right dimension
- **K** König et al's left-right dimension
- **KFRILE** version of RILE proposed by Kim and Fording
- **LRILE** RILE using the logit scale of Lowe et al.
- **PLR** Prosser's left-right dimension
- **RILE** left-right index of the manifesto data set
- **SIM** the index of similarity

Table C.7: **Descriptive Statistics.** Analysis of programmatic change.

Statistic	N	Mean	St. Dev.	Min	Max
Years since last election	837	3.348	1.027	0	5
Vote share	837	19.060	14.254	1.000	51.600
Vote change (t, t-1)	837	0.007	0.552	−2.692	9.500
Vote change (t-1, t-2)	837	0.020	0.569	−2.692	9.500
Nicheness	837	−0.004	1.038	−3.680	6.357
Polarisation	837	52.742	13.060	24.177	77.215
Fragmentation	837	4.241	1.548	2.034	9.054
Disproportionality	837	3.308	3.184	0.380	25.250
Governing status	837	0.399	0.490	0	1
Change in inflation	837	−0.523	4.772	−31.223	17.250
Change in GDP growth	837	−0.172	4.560	−57.146	13.074
Change SIM	837	0.000	1.000	−2.477	3.065
Change RILE	837	0.000	1.000	−1.055	5.529
Change LRILE	837	0.000	1.000	−0.912	6.590
Change KFRILE	837	0.000	1.000	−1.081	6.199
Change J	837	0.000	1.000	−1.101	5.738
Change K	837	0.000	1.000	−0.796	5.127
Change FKLR	837	0.000	1.000	−1.218	7.329
Change PLR	837	0.000	1.000	−1.030	5.702
Change EELR	837	0.000	1.000	−1.132	5.449
Change SIM closest	837	0.000	1.000	−2.511	3.044
Change RILE closest	837	0.000	1.000	−1.020	5.704
Change LRILE closest	837	0.000	1.000	−0.942	6.457
Change KFRILE closest	837	0.000	1.000	−1.101	5.146
Change J closest	837	0.000	1.000	−1.078	6.194
Change K closest	837	0.000	1.000	−0.812	4.726
Change FKLR closest	837	0.000	1.000	−1.194	7.485
Change PLR closest	837	0.000	1.000	−1.013	6.199
Change EELR closest	837	0.000	1.000	−1.094	4.355

Table C.8: **Data Coverage.** The table shows the parties and the time periods that are included.

Country	Party	Coverage	N	Country	Party	Coverage	N
Austria	FPO	1956 - 2002	15	Germany	SPD	1957 - 2009	15
Austria	SPO	1953 - 2002	16	Germany	CDU	1957 - 2009	15
Austria	OVP	1953 - 2002	16	Greece	ND	1981 - 2000	8
Belgium	LP-PL	1949 - 1968	7	Greece	PASOK	1981 - 2000	8
Belgium	Ecolo	1987 - 2003	5	Ireland	FF	1951 - 1977	8
Belgium	BSP-PSB	1950 - 1977	9	Ireland	Lab	1950 - 2010	8
Belgium	VU	1961 - 1999	13	Ireland	FG	1951 - 1977	8
Belgium	PRL	1977 - 1999	8	Italy	PRI	1953 - 1992	10
Belgium	CVP	1974 - 2003	10	Italy	PLI	1963 - 1992	8
Belgium	VB	1985 - 2003	6	Italy	MSI	1958 - 1992	9
Belgium	SP	1985 - 1999	5	Italy	PCI	1953 - 1987	9
Belgium	PSC-CVP	1950 - 1965	5	Italy	DC	1953 - 1992	10
Belgium	PVV/VLD	1977 - 2003	9	Netherlands	CDA	1982 - 2003	7
Belgium	PSC-CDH	1974 - 2003	10	Netherlands	ARP	1948 - 1972	8
Belgium	PS	1978 - 2009	6	Netherlands	D66	1972 - 2003	10
Belgium	AGL-Gr	1987 - 2003	5	Netherlands	CHU	1948 - 1972	8
Denmark	VS	1973 - 1984	6	Netherlands	KVP	1952 - 1972	7
Denmark	RV	1947 - 2007	24	Netherlands	PvdA	1952 - 2003	16
Denmark	KF	1947 - 2007	24	Netherlands	VVD	1952 - 2003	16
Denmark	FrP	1977 - 1998	9	Portugal	CDS-PP	1987 - 2005	6
Denmark	DKP	1950 - 1964	6	Portugal	PS	1978 - 2009	6
Denmark	CD	1977 - 1998	9	Portugal	PSD	1987 - 2009	7
Denmark	KrF	1975 - 2005	12	Portugal	CDU	1957 - 2009	5
Denmark	V	1947 - 2010	24	Spain	IU/PCE	1982 - 2008	8
Denmark	RF	1947 - 1964	7	Spain	AP-P	1982 - 2008	8
Denmark	Sd	1947 - 2007	24	Spain	CiU	1982 - 2008	8
Denmark	SF	1966 - 2007	17	Spain	PSOE	1982 - 2008	8
Finland	KESK	1948 - 2003	16	Sweden	KD	1972 - 2010	5
Finland	SP-P	1970 - 2003	10	Sweden	M	1948 - 2010	20
Finland	SSDP	1948 - 2003	16	Sweden	V	1947 - 2010	20
Finland	RKP-SFP	1948 - 2003	16	Sweden	FP	1948 - 2010	20
Finland	KOK	1948 - 2003	16	Sweden	SAP	1948 - 2010	20
Finland	KE/SLK	1948 - 1979	10	Sweden	MP	1991 - 2010	6
Finland	DL/VAS	1951 - 2003	15	Sweden	C	1948 - 2010	20
Finland	KD	1972 - 2010	9	United Kingdom	Lib	1950 - 1979	10
France	PCF	1978 - 2007	8	United Kingdom	Con	1974 - 2010	9
France	PS	1978 - 2009	8	United Kingdom	Lab	1950 - 2010	17
Germany	FDP	1957 - 2009	15				

Appendix D

Additional and Alternative Models

D.1 Perceptions of Political Parties

The following tables show the models for predicting the left-right placement of parties on the basis of the demographic characteristics of respondents as well as their ideological self-placement. The data that is used comes from the 2014 Voter Study of the European Election Study (Schmitt et al. 2015). The variables are coded:

- **Education:** How old were you when you stopped full-time education? Reference category: "15-"
- **Gender:** 0 – female, 1 – male.
- Self and party **position**: from 0 Left to 10 Right

The abbreviations in the tables are refer to the parties in the respective systems as follows:

- **Germany:** Christian Democratic Union (including CSU) (CDU), Social Democratic Party (SPD), Alliance 90 / The Greens (Grune), The Left (Linke), Free Democratic Party (FDP) and Alternative for Germany (AfD), the Pirate Party (Piraten).
- **The Netherlands:** Christian Democratic Appeal (CDA), Democrats 66 (D66), Freedom Party (PVV), Socialist Party (SP), Labour Party (PvdA), People's Party for Freedom and Democracy (VVD).
- **Sweden:** Social Democratic Workers' Party (SOC), Moderate Coalition Party (MO), Sweden Democrats (SWD), Environment Party The Greens (MP), Centre Party (CE), Left Party (VP) and Liberal People's Party (FP), Christian Democrats (KD).

Table D.1: **Predicting Party Positions, Sweden.** The table shows the output of OLS regression, where preceived party positions are predicted by demographic characteristics and ideological self-placement.

	Dependent variable:							
	SOC	MO	MP	FP	CE	SWD	KD	VP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.079	−0.571***	−0.392***	−0.210**	−0.082	−0.435**	0.078	0.136
	(0.106)	(0.109)	(0.095)	(0.102)	(0.101)	(0.180)	(0.118)	(0.084)
Age	0.001	0.013***	0.005	−0.010***	0.002	−0.001	−0.010***	−0.0005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.004)	(0.003)
Education: 16-19	−0.039	0.475*	−0.219	−0.075	−0.287	1.725***	−0.299	−0.357*
	(0.261)	(0.268)	(0.233)	(0.249)	(0.247)	(0.433)	(0.290)	(0.206)
Education: 20+	0.347	0.450*	−0.414*	0.462**	0.289	2.138***	0.633**	−0.554***
	(0.238)	(0.245)	(0.213)	(0.227)	(0.226)	(0.396)	(0.265)	(0.188)
Education: Still studying	0.208	0.554	−0.901***	0.081	0.387	1.460***	0.384	−0.593**
	(0.331)	(0.343)	(0.297)	(0.316)	(0.314)	(0.548)	(0.368)	(0.263)
Education: No full time	0.468	0.599	−2.642**	−0.988	−1.264	2.677	−2.002	0.908
	(1.367)	(1.406)	(1.216)	(1.305)	(1.283)	(2.126)	(1.495)	(1.078)
Self left-right	0.068***	−0.110***	−0.054***	−0.131***	−0.156***	−0.284***	−0.208***	0.013
	(0.020)	(0.020)	(0.018)	(0.019)	(0.019)	(0.033)	(0.022)	(0.016)
Constant	3.777***	9.155***	5.450***	8.746***	7.918***	8.717***	9.341***	2.475***
	(0.333)	(0.342)	(0.297)	(0.318)	(0.316)	(0.554)	(0.369)	(0.263)
Observations	1,098	1,095	1,080	1,084	1,076	943	1,067	1,092
R^2	0.020	0.070	0.048	0.083	0.087	0.119	0.127	0.017
Adjusted R^2	0.014	0.064	0.042	0.077	0.081	0.113	0.121	0.010
Note:								*p<0.1; **p<0.05; ***p<0.01

Table D.2: **Predicting Party Positions, the Netherlands** The table shows the output of OLS regression, where preceived party positions are predicted by demographic characteristics and ideological self-placement.

	Dependent variable:							
	VVD	PvdA	PVV	SP	CDA	D66	CU	GL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.031	−0.043	0.061	−0.279**	−0.059	0.120	0.036	0.213**
	(0.110)	(0.105)	(0.178)	(0.120)	(0.097)	(0.098)	(0.116)	(0.101)
Age	0.014***	−0.010***	−0.011*	0.002	0.019***	0.012***	0.024***	0.018***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)
Education: 16-19	0.826***	−0.068	0.956**	−0.177	0.329	0.634***	0.413	0.242
	(0.257)	(0.245)	(0.430)	(0.282)	(0.223)	(0.239)	(0.269)	(0.234)
Education: 20+	1.103***	−0.090	1.286***	−0.702**	0.484**	0.474**	0.536**	0.202
	(0.256)	(0.244)	(0.429)	(0.281)	(0.223)	(0.238)	(0.267)	(0.234)
Education: Still studying	0.974***	−0.277	0.645	−0.572	0.404	0.513	0.430	0.585*
	(0.352)	(0.332)	(0.575)	(0.382)	(0.312)	(0.317)	(0.373)	(0.320)
Education: No full time	1.675	1.204	−5.838**	2.111	2.655**	1.887	1.145	1.100
	(1.457)	(1.387)	(2.303)	(1.582)	(1.279)	(1.291)	(1.482)	(1.330)
Self left-right	−0.119***	−0.092***	−0.172***	0.130***	−0.028	0.032	0.051*	−0.013
	(0.026)	(0.024)	(0.041)	(0.028)	(0.023)	(0.023)	(0.027)	(0.024)
Constant	7.467***	5.872***	9.157***	3.133***	5.700***	4.869***	4.548***	2.526***
	(0.386)	(0.369)	(0.636)	(0.423)	(0.340)	(0.349)	(0.407)	(0.355)
Observations	1,002	1,000	945	993	991	988	943	1,000
R^2	0.049	0.022	0.048	0.050	0.045	0.029	0.051	0.034
Adjusted R^2	0.043	0.015	0.040	0.043	0.038	0.022	0.044	0.027
Note:								*p<0.1; **p<0.05; ***p<0.01

Table D.3: **Predicting Party Positions, Germany.** The table shows the output of OLS regression, where preceived party positions are predicted by demographic characteristics and ideological self-placement.

	Dependent variable:						
	CDU	SPD	FDP	Grune	Linke	AfD	Piraten
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gender	0.096	−0.031	0.220**	−0.174**	−0.032	0.210	0.259*
	(0.096)	(0.086)	(0.105)	(0.088)	(0.075)	(0.163)	(0.156)
Age	0.015***	0.003	0.015***	0.008***	0.002	0.009*	−0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)	(0.005)
Education: 16-19	0.177	−0.159	−0.095	0.099	0.036	0.474*	−0.089
	(0.139)	(0.127)	(0.154)	(0.129)	(0.108)	(0.243)	(0.235)
Education: 20+	0.617***	−0.102	0.371**	0.227*	−0.138	1.239***	−0.557**
	(0.147)	(0.134)	(0.161)	(0.136)	(0.115)	(0.253)	(0.243)
Education: Still studying	0.182	0.076	0.278	0.694***	0.468***	1.010***	0.166
	(0.233)	(0.211)	(0.253)	(0.214)	(0.180)	(0.382)	(0.368)
Education: No full time	0.066***	0.013	−0.102***	0.007	0.004	−0.043	−0.091**
	(0.024)	(0.022)	(0.027)	(0.022)	(0.019)	(0.040)	(0.038)
Self left-right	5.914***	5.044***	6.247***	4.184***	1.859***	6.551***	5.128***
	(0.269)	(0.243)	(0.292)	(0.248)	(0.208)	(0.455)	(0.429)
Observations	1,386	1,389	1,247	1,312	1,389	1,056	914
R^2	0.044	0.004	0.045	0.014	0.012	0.032	0.021
Adjusted R^2	0.040	−0.001	0.041	0.009	0.008	0.026	0.014
Note:							*p<0.1; **p<0.05; ***p<0.01

D.2 Polarisation

The following tables and figures show the results of the analysis with using the ideological standard deviation measure as a measure of the overall amount of political difference in a set of parties. The measure is the square root of the weighted average squared distances from the weighted centre of gravity among the parties in question.

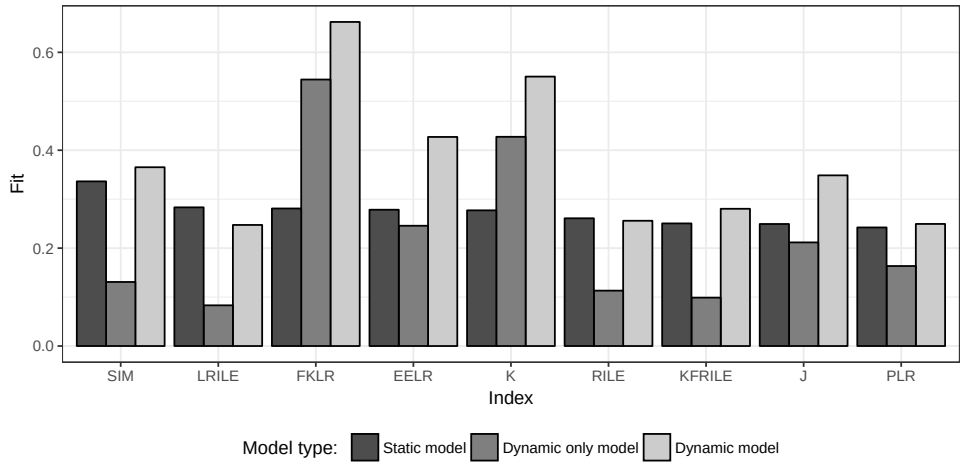


Figure D.1: **Model Fit Comparison Across Types of Models and Measures.** Fit is measured by the R-squared of the models and the latter use the ideological standard deviation measure of polarisation.

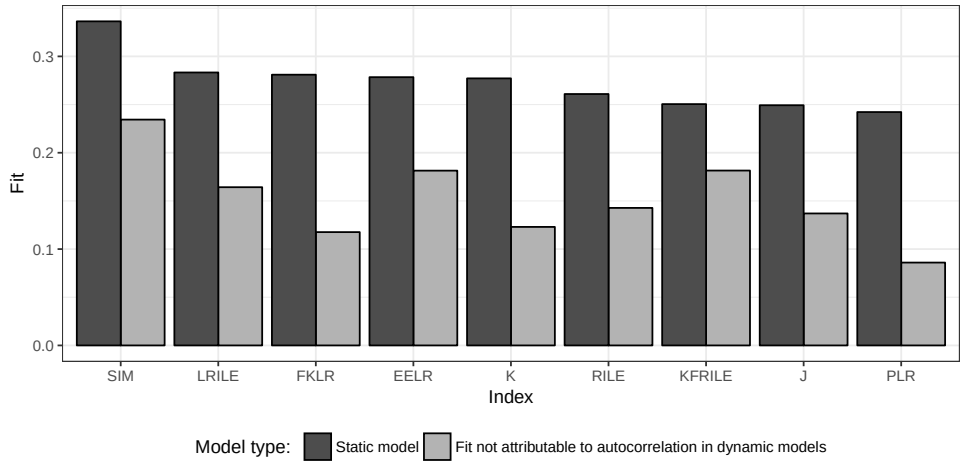


Figure D.2: **Model Fit Comparison Across Types of Models and Measures.** Fit is measured by the R-squared of the models and the latter use the ideological standard deviation measure of polarisation.

Table D.4: **Model Output, Fixed Effects, Ideological Standard Deviation Measure of Polarisation.**

	Dependent variable:								
	SIM	RILE	KFRILE	LRILE	PLR	EELR	FKLR	J	K
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GDP growth	-0.065^{**}	-0.055	-0.057	-0.056	-0.028	-0.031	-0.035	-0.041	-0.041
	(0.024)	(0.032)	(0.033)	(0.030)	(0.027)	(0.027)	(0.030)	(0.027)	(0.028)
Inflation	0.029^{*}	0.027	0.031	0.023	0.049^{*}	0.021	0.049^{*}	0.031	-0.002
	(0.014)	(0.020)	(0.020)	(0.020)	(0.022)	(0.022)	(0.021)	(0.018)	(0.021)
Fragmentation	0.035	0.255^{*}	0.283^{**}	0.264^{**}	0.291^{*}	0.366^{**}	0.414^{***}	0.465^{***}	0.580^{***}
	(0.070)	(0.103)	(0.104)	(0.100)	(0.122)	(0.115)	(0.115)	(0.124)	(0.154)
Coalition habits	-0.028^{*}	0.024	0.028	0.015	0.036^{*}	0.017	0.031	0.008	0.043^{*}
	(0.013)	(0.019)	(0.019)	(0.017)	(0.016)	(0.017)	(0.017)	(0.020)	(0.022)
Disproportionality	-0.024	0.010	0.016	0.023	0.011	0.009	0.028	0.045	-0.010
	(0.024)	(0.032)	(0.033)	(0.033)	(0.032)	(0.026)	(0.027)	(0.028)	(0.040)
Inequality	-0.003	-0.016	-0.028	-0.037^{*}	0.018	-0.031	0.018	-0.011	0.007
	(0.010)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.017)	(0.017)	(0.021)
Turnout	-0.002	0.008	0.016	-0.001	-0.016	0.034	0.010	0.030	0.014
	(0.013)	(0.019)	(0.018)	(0.018)	(0.021)	(0.019)	(0.015)	(0.017)	(0.022)
Democracy	-8.648^{***}	-13.460^{***}	-9.381^{**}	-13.533^{***}	-14.059^{***}	-5.437^{*}	-5.246	-2.077	-2.557
	(1.493)	(3.071)	(2.890)	(2.838)	(2.952)	(2.604)	(3.267)	(3.390)	(4.477)
Volatility continuous	-0.009	-0.004	0.001	-0.010	-0.026	-0.018	-0.023^{*}	0.006	-0.016
	(0.010)	(0.012)	(0.012)	(0.010)	(0.014)	(0.013)	(0.011)	(0.013)	(0.015)
Volatility new	0.047	-0.050	-0.067^{*}	-0.033	-0.017	-0.073^{*}	-0.065^{*}	-0.092^{**}	-0.093^{*}
	(0.028)	(0.033)	(0.033)	(0.031)	(0.037)	(0.033)	(0.031)	(0.033)	(0.038)
Government duration	0.013	0.123	0.163^{*}	0.169^{*}	0.045	0.034	0.070	0.073	0.085
	(0.047)	(0.072)	(0.068)	(0.068)	(0.075)	(0.050)	(0.046)	(0.049)	(0.052)
Observations	148	148	148	148	148	148	148	148	148
R^2	0.336	0.261	0.250	0.283	0.242	0.278	0.281	0.249	0.277
Adjusted R^2	0.213	0.124	0.111	0.150	0.102	0.145	0.148	0.110	0.143
Note:									*p<0.05; **p<0.01; ***p<0.001

Table D.5: **Model Output, Fixed Effects, Dynamic Model, Ideological Standard Deviation Measure of Polarisation.**

	Dependent variable:								
	SIM	RILE	KFRILE	LRILE	PLR	EELR	FKLR	J	K
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged DV	0.164*	0.172	0.212*	0.093	0.238**	0.353***	0.802***	0.351***	0.624***
	(0.071)	(0.089)	(0.083)	(0.100)	(0.081)	(0.088)	(0.062)	(0.073)	(0.078)
GDP growth	−0.053*	−0.032	−0.043	−0.031	−0.019	−0.010	0.012	−0.038	0.023
	(0.024)	(0.029)	(0.028)	(0.026)	(0.027)	(0.023)	(0.018)	(0.026)	(0.024)
Inflation	0.023	0.025	0.025	0.022	0.035	0.024	0.034*	0.030	−0.003
	(0.013)	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.015)	(0.018)	(0.017)
Fragmentation	0.063	0.267**	0.289**	0.264**	0.227	0.379***	0.189**	0.373***	0.385***
	(0.067)	(0.095)	(0.099)	(0.096)	(0.125)	(0.112)	(0.070)	(0.107)	(0.097)
Coalition habits	−0.030*	0.019	0.020	0.013	0.027	0.027	0.029*	0.003	0.028*
	(0.013)	(0.018)	(0.018)	(0.017)	(0.015)	(0.016)	(0.013)	(0.017)	(0.013)
Disproportionality	−0.042	−0.004	−0.001	0.017	−0.006	−0.005	−0.043*	0.014	−0.033
	(0.026)	(0.035)	(0.035)	(0.038)	(0.035)	(0.029)	(0.019)	(0.025)	(0.026)
Inequality	−0.011	−0.014	−0.026	−0.031*	0.008	−0.033*	0.0001	−0.017	−0.025
	(0.010)	(0.016)	(0.015)	(0.016)	(0.015)	(0.014)	(0.011)	(0.013)	(0.016)
Turnout	−0.0003	0.017	0.025	0.005	−0.008	0.036	−0.004	0.015	0.010
	(0.015)	(0.019)	(0.018)	(0.019)	(0.021)	(0.020)	(0.010)	(0.018)	(0.018)
Democracy	−6.180***	−7.542**	−5.113*	−8.954**	−8.328*	−2.427	3.956*	−1.186	0.189
	(1.729)	(2.803)	(2.537)	(3.274)	(3.670)	(3.020)	(1.587)	(2.827)	(2.127)
Volatility continuous	−0.005	0.006	0.017	−0.002	−0.024	−0.013	−0.013	0.001	0.007
	(0.014)	(0.013)	(0.014)	(0.011)	(0.018)	(0.016)	(0.009)	(0.014)	(0.013)
Volatility new	0.038	−0.066*	−0.088**	−0.043	−0.007	−0.060*	−0.027	−0.060	−0.045
	(0.027)	(0.032)	(0.031)	(0.028)	(0.036)	(0.029)	(0.024)	(0.033)	(0.024)
Government duration	0.004	0.051	0.101	0.089	0.064	0.025	0.003	0.061	0.029
	(0.050)	(0.065)	(0.062)	(0.059)	(0.077)	(0.057)	(0.033)	(0.061)	(0.047)
Observations	134	134	134	134	134	134	134	134	134
R^2	0.365	0.256	0.280	0.247	0.249	0.427	0.662	0.349	0.550
Adjusted R^2	0.225	0.092	0.122	0.082	0.084	0.301	0.588	0.205	0.451
Note:									*p<0.05; **p<0.01; ***p<0.001

D.3 Coalition Formation

The following tables and figures show the results of the analyses using the ideological standard deviation measure as a measure of the overall amount of political difference in a set of parties. It is operationalised as the square root of the weighted average squared distances from the weighted centre of gravity among the parties in question.

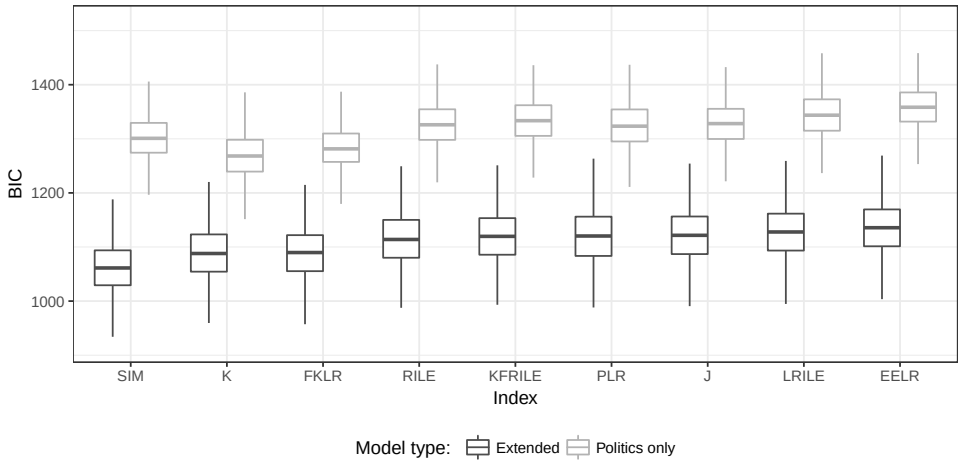


Figure D.3: **Distribution of Model Fit Across Bootstrap Re-samples, BIC.** The distribution of the BIC values.

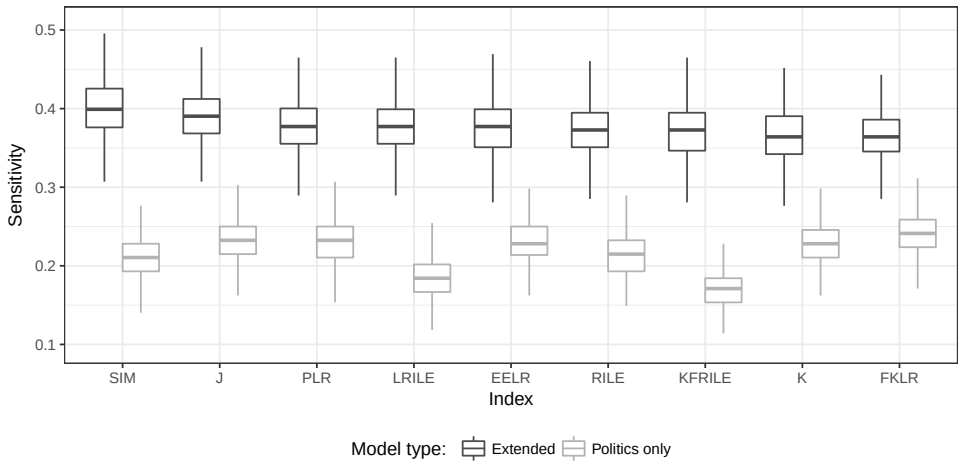


Figure D.4: **Distribution of Model Fit Across Bootstrap Re-samples, sensitivity.** The distribution of the sensitivity values.

Table D.6: **Model Fit Statistics, Ideological Standard Deviation Measure of Difference.** The models cover all possible coalitions that include the party of the prime minister.

	Politics only model				Extended model			
Index	BIC	BIC boot best	Sen.	Sen. boot best	BIC	BIC boot best	sen	Sen. boot best
SIM	1,305	0.14	0.21	0.08	1,088	0.83	0.40	0.54
RILE	1,331	0.00	0.21	0.04	1,142	0.00	0.37	0.03
KFRILE	1,339	0.00	0.17	0.00	1,147	0.00	0.37	0.01
LRILE	1,349	0.00	0.18	0.00	1,155	0.00	0.37	0.05
PLR	1,330	0.00	0.23	0.21	1,147	0.00	0.36	0.09
J	1,333	0.00	0.23	0.16	1,148	0.00	0.39	0.30
FKLR	1,287	0.15	0.24	0.34	1,117	0.06	0.36	0.04
EELR	1,365	0.00	0.23	0.21	1,163	0.00	0.36	0.04
K	1,274	0.71	0.23	0.11	1,116	0.11	0.36	0.05

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