Spatial model of voting:
Citizens with inconsistent, persuadable and endogenous policy preferences

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Summary

Electoral democracies are built on the idea of representation. The electorate selects politicians to represent their interests in the law-making process. Given that citizens hold meaningful preferences about political outcomes, this electoral linkage is supposed to ensure that implemented policies are in line with the public's will. In political science, spatial voting theories model this connection between citizens' opinions about policies and their electoral decisions. But what if ordinary voters are not equipped with policy views that easily permit them to select matching candidates: does this distort the simple model of representative democracy?

I argue that the electoral linkage between voters and candidates is affected if voters do not reflect the assumptions made about their policy preferences in spatial voting theories. Spatial voting theory builds on a rational choice framework in which policy preferences are assumed to be well-defined, fixed and exogenous. For decades, behavioral theorists have questioned the usefulness of this oversimplified depiction in attempting to understand and explain the democratic process. Consequently, theoretical conceptualizations and argumentations have been developed that are built on a wider notion of citizens' policy preferences. In the latter case, opinions are represented as being: inconsistent with underlying political platforms; endogenous to the positions taken by candidates, and 'persuadable' by political arguments. These differing approaches led to quite some debate between the two political schools of thought regarding the empirical adequacy of the contrasting depictions of public opinion. This dissertation brings the two perspectives closer together on theoretical grounds. The origin of the argumentation put forward is the view that the central link between citizens and their representatives can only be established if voters with policy preferences that deviate from the restrictive suppositions of standard models, do not behave differently at the ballot box.

I study how citizens' electoral decisions are influenced when a wider notion of policy preference is assumed. Specifically, I offer an extension to the spatial voting model that allows citizens' policy views to be inconsistent, persuadable and endogenous. I find that voting decisions are affected when this wider definition is employed. First, voters put considerably less weight on policy when they presume that their political opinions

are inconsistent with underlying ideological dimensions. Second, citizens directly change their voting decision if they are exposed to persuasive political arguments. And finally, voters can alter their preferences and decisions in response to individual candidates' position-taking. The major theoretical contribution of this dissertation is the introduction of a modeling approach that allows researchers to analyze these mechanisms, building on the idea that citizens possess policy beliefs regarding which policy platform is in their own best interest. This conceptualization greatly amplifies our ability to assess how the electoral mode of democratic representation is affected, in the case of a general public that lacks rigorous policy preferences.

Empirical evidence presented also emphasizes that the theoretical extension does indeed help to generate a more accurate picture of how voters make up their minds. The results indicate that for survey respondents who show inconsistent policy views, the distance to a candidate on a general liberal-conservative dimension has a smaller effect on voting probabilities. In addition, relying on a survey experiment, I show that political arguments have a direct effect on voting decisions, by persuading respondents to change their policy views. Finally, building on latent class models, I highlight that partisans are considerably more likely to alter their positions in the direction of their party's candidate over the course of the campaign - making their policy views endogenous to the relevant candidate's campaign platform.

I conclude this dissertation by discussing the crucial implications these findings have for democratic theory. If political systems adhere to the goal of political representation, they must provide an environment that enables the public to converge towards the homogeneous picture painted in the usual simple model of representation, in which all citizens gain perfect knowledge regarding which political outcome promises to be most beneficial for them personally, and for society in general.

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CHAPTER 1

Introduction

1.1 Motivation and research question

Modern democracies are built on the idea of representation. In recurring elections, citizens are allowed to choose between different candidates or parties that represent their interests in parliament. Because governments are controlled by these citizens' representatives in parliament, the voters' interests should also be reflected in government behavior. Essentially, elections should lead governments to only implement those policies which mirror the will of the people. For example, if the majority of citizens are in favor of high-income taxation, governments should take initiatives to implement such a policy. Conversely, unpopular policies should not be implemented. Political theories have argued that this electoral link between citizens and their representatives assures "continued responsiveness of the government to the preferences of its citizens, considered as political equals" (Dahl, 1972, p.1), and thereby guarantees electoral representation.

The crucial stage at which democratic representation can go wrong is at the ballot box. If citizens do not elect candidates who match their preference for a particular political outcome, governments are unlikely to be responsive. However, for the dominant perspective in political theory, and therefore the main body of research in this field, this fear has been regarded as irrelevant. This perspective builds on the idea that citizens know exactly what kind of policies they would like to see implemented. If this were really true, finding a matching representative would be child's play. Those opposed to minimum wages, wanting increased taxation for higher incomes and in favor of gay-marriage, would simply vote for candidates or parties with political platforms that aim to implement these same goals, once elected. This assumes that citizens' policy views determine their voting decisions, which in turn guarantees that each person's policy interest will be represented in parliament. In consequence, only parties or candidates that are in line with a certain share of the citizens' preferences regarding policies, have a chance of gaining a majority of the votes and forming a government.

But what if ordinary voters are not equipped with policy views that easily permit them to select matching representatives? Arguably, this simple model of political representation assumes a quite demanding picture of citizens' involvement in politics. Critiques of this perspective have long asserted that such a model of democratic representation is built on sand, as it makes presumptions about citizens' policy views being the origin of political representation that simply do not exist in the real world. Instead there are many ways in which citizens' policy views can fail the requirements for selecting adequate representatives. It might be that citizens hold views that are inconsistent with an underlying ideological dimension of politics, which would make it potentially harder to select candidates based on ideology. Additionally, voters could be in danger of being easily persuaded to adopt an opinion, opening the gate for parties or candidates to impose their own political conviction on the people. It is important to understand in how far concerns like this and their effect on voting behavior are valid. The whole basis for establishing the merits of an electoral system based on democratic representation is at stake. If such variable aspects of citizens' policy views affect the individual's voting decision, then the crucial democratic-link between citizens and their elected representatives could end up being out of order

In this dissertation I study the consequences of a wider notion of citizens' policy views on voting behavior. In political science, spatial theories of voting model the idea that voters elect candidates or parties based on policy. During electoral campaigns nominees communicate their policy positions to the general public. Political programs, speeches and televised advertisements by the nominees, permit citizens to locate them on different policy platforms along a liberal-conservative spectrum. Because policy platforms aggregate policy positions and views in terms of ideology, the electorate will find it easy to use them to find the candidate who is closest to their own policy views. In classic proximity spatial voting, citizens' policy preferences are, then, defined via political platforms, so that candidates with closer platforms are preferred to those further away. Many political scientists have found this simplified depiction of citizens' policy preference to misrepresent important aspects of citizens' viewpoints. Essentially, spatial voting theories presume that citizens' policy preferences are well defined, fixed and exogenous. These assumptions imply that citizens' views are consistently depicted by their ideological platform; that evaluating political arguments does not change their opinions, and political elites do not affect public opinion.

I offer an extension to spatial voting models that allows citizens' policy views to be inconsistent, persuadable and endogenous. Contrary to the position taken by spatial voting with regard to citizens' view points, research by political scientists, in public opinion and political psychology all indicate that citizens possess policy views that are inconsistent with underlying liberal-conservative dimensions, are persuadable by political arguments and therefore can be endogenous to the nominees' decision process. This debate can be summarized as follows:

Policy preferences are inconsistent: Spatial voting theories often make demanding assumptions about the structure of citizens' policy-preferences. For example, citizens are assumed to show preferences across multiple issues that are consistent with underlying ideological orientations (e.g. Hinich and Munger, 1992). That this holds true for all voters' policy views is debatable. Research in the belief-system tradition of Converse (1964) claims that actually only a small share of the general public possess meaningful

attitudes towards political outcomes. Most citizens' policy preferences are inconsistent with underlying political ideology.

Policy preferences are persuadable: Spatial voting takes policy preferences as a natural starting point and postpones the question of where these actually come from and how they change. This depiction of policy preference precludes questions of why some citizens hold more liberal, and others more conservative view points. Preference formation models in political science indicate that preferences can be shaped and changed through the ongoing process of evaluating political arguments and information (e.g. Lodge, McGraw and Stroh, 1989; Zaller, 1992). Political psychologists notice that political arguments can persuade citizens to change their standing opinion (e.g. Druckman, 2004; Cobb and Kuklinski, 1997).

Policy preferences are endogenous: A further assumption of the spatial voting models is that citizens' preferences are exogenous to the position taking of parties. This implies that parties and candidates cannot affect citizens' opinions towards their policies. Empirically, this presupposition is disputable. All too often, research has found the opposite to be true (e.g. Gerber and Jackson, 1993; Bartels, 2000; Milazzo, Adams and Green, 2012). Policy-preferences are endogenous, in that a party's orientations can shape public opinion.

The main conclusion from this dissertation, is that *integrating any of these three aspects into the spatial voting model affects expectations about voters' decisions.* To reach this conclusion, I develop a theoretical model that conceptualizes citizens' policy preferences in terms of policy beliefs about the benefit from different policy platforms. Within this framework, citizens themselves are thought of as being uncertain about how much better the outcome of any specific political platform will be. Theoretically, this allows us to study inconsistent, persuadable, and endogenous policy views, and analyze the theoretical effect these aspects have on voting decisions. In proving empirical support for implications from the theory, this dissertation highlights the importance of a wider notion of citizens' policy views in explaining people's electoral decisions and, thereby, in understanding the key linkage between citizens and their representatives.

Compared to other research work, this dissertation offers an integrative theoretical account. While the structure of voters' opinions has been debated for decades, this dissertation builds on the insight that representation can only be biased if different theoretical assessments of citizens' policy preference also affect voting decisions. Therefore, instead of debating presuppositions about citizens' political preferences on empirical grounds, I theorize what the consequences of variation in policy preference are for voting decisions. Testing implications from this theory can provide evidence that such variations make a difference in explaining voting decisions.

In addition, this approach attempts to alleviate tensions between spatial voting theories and theories of political behavior. I show that the political behaviorist's objection to the spatial theorist's depiction of policy preference can be integrated using an extension of the theory. I also demonstrate to advocates of spatial voting that these concerns actually make a difference in their theory. My theoretical conceptualization allows spatial voting theories to address concerns about their depiction of opinions, while political behaviorists are able to study the consequences of these concerns. Overall, this dissertation broadens the theoretical tool-kit available to study how citizens' policy

views and their voting decisions are related, thereby leading to a better understanding, in general, of electoral representation.

1.2 Main theoretical arguments

The electoral linkage between voters and candidates can be greatly affected if voters do not reflect the assumptions made about their policy preferences in spatial voting theory. Allowing for inconsistent, persuadable and endogenous policy preferences in spatial voting, influences expectations about voters' decisions: a) Voters with inconsistent preference put considerably less weight on policy; b) Citizens change their voting decisions if they receive a persuasive political argument; c) Partisans alter their preferences in response to the chosen candidate's position-taking during electoral campaigns.

The major theoretical contribution of this dissertation is to introduce a model that allows researchers to analyze these mechanisms within the far-reaching theory of spatial voting. Thus, this dissertation amplifies our understanding of how a wider notion of policy preferences influences the quality of of democratic representation. The following section summarizes the central conceptualization of preferences in terms of policy beliefs, and describes the major arguments put forward.

1.2.1 Policy beliefs in spatial voting

For ordinary citizens the political sphere offers plenty of aspects about which a voter may feel uncertain. One such aspect is the question of what policy outcomes will be in their own best interests. Forming reliable opinions about matters of politics can be time-consuming, and some citizens dedicate less time to finding out what their opinions on issues should be, than others. For example, there are different considerations as to why a person can be in favor of, or opposed to, the policy of high-income taxation. When only limited effort is invested, it is inconceivable for any one person to master all aspects concerning an issue, and citizens are always left with a rest uncertainty about which of the solutions offered will actually prove better for them. Another aspect arises, because there are infinitely many policy issues that determine the political outcome. Instead of forming opinions about all potential policy proposals, citizens employ underlying political platforms to structure their policy preference. Policy platforms are related to opinions about potential policy issues. Liberal platforms are more likely to be in favor of high-income taxation, compared to conservative platforms.

Following this line of thought, citizens overall preference can be thought of as resting on *policy beliefs about how much better the outcome of a specific policy platform will be for them, personally-speaking*. These beliefs vary between citizens. Some believe that liberal platforms better represent their interest than conservative platforms do. Beliefs also vary in certainty: Some citizens are more certain than others that a specific policy platform represents their interest. The origin of the argumentation is a conceptualization of political preference in terms of citizens' policy beliefs about how much better a certain policy platform represents their interest. Such a prospect of citizens' preference is well integrated in a more general utility framework. Adaptive utility theory (Cyert and DeGroot, 1987; Calvert, 1985*b*; Cohen and Axelrod, 1984; Houlding, 2008) allows one to analyze situations in which the expected reward from an outcome is generally uncertain

to the Decision Maker and depends on beliefs. Because spatial voting theories are also formulated in terms of a utility-maximizing framework, this makes the adaption of policy beliefs to spatial voting straightforward. The extension of this exercise allows us to relax assumptions about citizen preference and to study their effects on voting decisions.

1.2.2 Inconsistent policy preference

First of all, such an extension permits analysis of specifications in which political preferences are more or less consistent with underlying liberal-conservative platforms. Wider policy beliefs, with more uncertainty about which platform represents a citizen's interest, less strongly constrain policy views. This means that policy views are harder to explain in terms of the underlying platforms. Inconsistency in policy beliefs implies e.g. that a citizen's opinion about gay-marriage, is not necessarily related to her opinion about legalizing the use of marijuana. But what are the consequences when it comes to choosing candidates?

I argue that inconsistent policy preference leads to a decrease in the weight voters place on policy in their voting decisions. For citizens with inconsistent policy beliefs, increasing distance between a citizen's platform and the platform of the candidate has a weaker impact on the probability to vote for that candidate. The reason for this is that information about a candidate's platform is not as informative for voters who are uncertain which platform actually represents their interest, as it is for voters who are certain. I further show that another line of argument is conceivable, that sees no electoral effect resulting from inconsistency. As the uncertainty about a citizen's own platform generally concerns both candidates to an equal degree, it does not affect their voting decision.

1.2.3 Persuadable policy preference

The concern that policy preferences are persuadable can be analyzed within this framework as well. Arguments about policies (which are used to persuade others) entail considerations regarding which political platforms best represent a voter. For example, an argument in favor of gay-marriage implies that a voter is better represented by liberal rather than conservative platforms. Finding such an argument persuasive should alter a voter's policy beliefs towards more liberal platforms. If arguments are able to persuade voters to opt for a different political platform, and the choice of political platform affects voting decisions, then arguments should directly affect voting decisions as well.

I, therefore, argue that one political argument can affect the state in which a voter is otherwise indifferent to two political candidates. While the standard theory claims that citizens are undecided between two candidates who take on platforms slightly to the left and slightly to the right of their views, evaluating one political argument changes this state. Citizens should be likely to favor the candidate in the direction of the argument.

1.2.4 Endogenous policy preference

The theoretical extensions also allow a researcher to analyze endogenous preference during the course of a campaign. Political platforms communicated during an election

not only inform citizens about the position of a candidate, but they also persuade a certain share of citizens to follow the candidate's policy lead. The theoretical specification permits me to derive expectations about this persuasion process. Specifically, I derive expectations about voters' policy distances to two competing candidates at the beginning and the end of the campaign.

I argue that especially citizens who identify with a particular party are likely to decrease their distance to their party's candidate over the campaign. Therefore, policy preferences are endogenous to the candidate's campaign platform. Furthermore, I show under which conditions such persuasion shifts can affect the outcome of an election. In particular, they should affect electoral results if candidates manage to persuade citizens whose initial views are closer to the other candidate's platform.

1.3 Empirical implications of theoretical models

This dissertation provides rigorous tests for empirical implications of the arguments put forward. The empirical evidence emphasizes that the theoretical extension helps generate a more accurate picture of how voters actually make up their minds. First, I find that for survey respondents who show inconsistent policy views, the distance to a candidate on a general liberal-conservative dimension has a smaller effect on voting probabilities. Second, relying on a survey experiment, I point out that political arguments have a direct effect on voting decisions by persuading respondents about their policy views. Finally, building on latent class models, I highlight that partisans are considerably more likely to alter their positions in the direction of the candidate over the course of the campaign - making their policy views endogenous to the candidate's campaign platform.

Throughout the dissertation a wide range of methods is applied to create reliable tests for the theoretical implications. The overreaching empirical approach of this dissertation is best described by the NFS's Political Science program initiative known as the 'Empirical Implications of Theoretical Models' (EITM). The objective of this initiative "is to encourage political scientists to build formal models that are connected to an empirical test" (Granato and Scioli, 2004, p.313). The EITM approach calls for a direct connection between theoretical formalized models and their empirical test. All too often researchers attempting to explain the interplay between voters and candidates, focus on either one of the two: Rigorous theoretical argumentation, or the empirical test of the hypothesis. This prevents the bringing together of acquired theoretical knowledge and empirical evidence, harming the ability to explain democratic representation on both empirical and theoretical grounds. The great benefit of the EITM approach is to bring theoretical models closer to empirical tests, and empirical tests closer to the theoretical models. The research design of this dissertation is based on that presented in the EITM initiative: I offer formalized argumentation and direct testing of the implications concerned.

The next paragraphs outline, how I derive theoretical motivated empirical models, develop measurement instruments for the central conceptualization and employ survey experiments, in order to follow this empirical approach.

1.3.1 Theoretically motivated empirical models

The formalized theoretical argumentation offers concrete guidance about the specifications for empirical models. Whenever possible, I closely follow this guidance and employ empirical models that mimic the theoretical formulas. In all three chapters, I derive the systematic component of the statistical models from the theoretical specifications. This results in none-of-the-shelve estimators that infer about parameters from the theoretical process, rather than linear approximations of the process.

For example, for the argumentation pertaining to how inconsistent policy preferences affect voting decisions, I opt for a probit model, where the effect of policy distance depends on a weight that is affected by inconsistency. This specification amplifies the standard approach in testing a conditional hypothesis in empirical models - interaction effects, in situations where researchers theoretically expect that the weight voters place on specific considerations will vary with covariates. In another situation, I employ a latent class model to gauge the heterogeneity of persuasion processes during campaigns. Because the theoretical argumentation calls for an unobserved process that is hard to measure directly - namely, persuasion - I employ implications of the different processes to classify voters who have been persuaded. This permits me to show that a certain share of respondents follows implications for an endogenous preference model, in which they are persuaded by the candidates' campaign platform, and model the likelihood of such persuasion shifts as a function of the respondents' partisanship. Finally, for the experimental set-up, I show that a ordered logit model for the treatment effect coincide with the theoretical effect that one political argument has on voting decisions.

1.3.2 Survey data and measurement instruments

Most parts of this dissertation rely on survey data from the American National Election Study (ANES). Survey Data have long served electoral research in helping to test ideas about citizens' involvement in politics. In order to test their theoretical arguments, survey researchers need accurate instruments which help measure these theoretical concepts. The same holds true for the subject of this dissertation. The novel conceptualization of citizen policy beliefs requires appropriate measuring techniques. Building on an item response model and the theoretical conceptualization, I derive a simple estimate for the variance in policy beliefs. This measurement can be employed to test implications, building on empirical models that relate preference to voting decisions.

1.3.3 Survey experiments

Often social scientists find themselves in a situation in which standard survey methods do not permit the testing of implications for their theoretical arguments. In such situations, experimental manipulation can allow the researcher to create convincing tests for their theory. Over the last decade, the use of survey experiments permitted researchers to introduce "compelling" concepts that have "had a major impact on political science" (Iyengar, 2010, p.190). The implication that one political argument should affect the state of indifference is impossible to test when relying on standard survey questions. In this case, I rely on a survey experiment in which I ask a share

of respondents to read through a political argument. This way I can compare their subsequent voting decisions to those from a control group who did not read the argument. Based on this, I can make inferences about the effect of political arguments.

1.4 Plan of the dissertation

In **Chapter 2**, I establish the central conceptualization of citizens' preferences in terms of policy beliefs, by discussing the major theoretical division as found in the literature. First, I introduce the standard canton of spatial voting, discussing central assumptions about policy preference. Second, I carve out the similarities of studies that share a different perspective on peoples' opinions about politics. Researchers understand citizens' opinions in terms of beliefs. Beliefs allow for inconsistency, can be persuadable, and endogenous to party platforms. Overall, the chapter shows that a belief-based model is a promising way to integrate concerns raised about spatial voting's depiction of citizens' policy views.

Chapter 3 formalizes the conceptualization of policy beliefs and integrates them in a formalized spatial voting model. In particular, I describe how adaptive utility theory can be used to represent the idea that citizens posses beliefs about political platforms that differ in direction, but also in certainty. The chapter highlights that the standard spatial model is nested within this extension, but allows us to take into account inconsistent, persuadable and endogenous preferences.

Chapters 4 to 6 analyze how the inconsistent, persuadable and endogenous preferences affect voting decisions within the theoretical framework. The chapters also provide empirical tests for the implications. They are written in a way that allows them to be read and understood without going through the introductory chapters.

Chapter 4 asks if policy preference is well defined for all voters? The chapter analyses how inconsistent policy preferences affect spatial voting decisions. Theoretically, allowing voters to have a varying degree of consistency affects voting decisions systematically. Voters with inconsistent preferences place less weight on policy distance, than voters with consistent policy preference. The chapter shows that this theoretical expectation is confirmed when tested. Voters with inconsistent policy preference place considerably less weight on policy distance.

Chapter 5 analyzes whether political arguments impact spatial voting decisions. Building on the model extension, I expect that one political argument can change the state in which a voter is indifferent between two policy options. In a survey experiment I am able to confirm this hypothesis. I confront respondents with an artificial voting decision in which they should be indifferent between two candidates. Respondents confronted with a political argument, who then found the argument persuasive, are less likely to be undecided about whom they should vote for.

Chapter 6 analyzes how far policy preferences are endogenous to the political process. I investigate the consequences of campaigns in which parties not only communicate their position, but also attempt to persuade voters about their platform. Based on this, I argue that a share of voters alter their positions in the direction of one candidate. This greatly affects the likelihood of their decision to vote in favor of that candidate, by whom they have been persuaded. Empirically, I find this pattern confirmed, especially for partisans in the American National Election Study Panel of 2008.

The dissertation concludes with **Chapter 7**, which sets out a discussion of the implications of my findings for the representation-link between voters and their candidates and outline those research questions that still need to be addressed, employing the policy-belief extension of spatial-voting models.

1.5 Key innovations

The dissertation breaks new grounds theoretically as well as empirically. I would like to stress the innovations that are of special interest to a wider spectrum of the political research community.

1.5.1 Theoretical innovations

Representation of preference in terms of policy beliefs

I show how adaptive utility theory can be used to represent citizens' preferences in terms of policy beliefs. Introducing this conceptualization brings together political behaviorist's depiction of policy attitudes with the spatial voting idea of policy platforms. The framework, I offer, underlines that the two contrasting foundations of citizens policy views, can be expressed in the same theoretical framework. Spatial voting's idea of citizens preference is nested within political behaviorist's perspective. Employing this modeling approach, spatial voting theorists can, thereby, test what the consequences of concerns about their restrictive perspective on preference are, and political behaviorist can employ a wide-reaching theoretical framework to study the connection between citizens and their representatives.

Integration of the evaluation of arguments in a general voting theory

This dissertation offers a way to connect preference formation processes and the evaluation of political arguments with spatial voting theory. Research in political psychology and public opinion have acquired extensive knowledge about the process of preference formation. However, these studies have been somewhat disconnected from electoral research. While they study how political attitudes are shaped, manipulated and affected, voting researcher studied how resulting attitudes affect voting decisions. What has been missing to get this connected perspectives closer together, is a conceptualization that permits to integrated the evaluation of arguments in a standard voting model.

Formalization of belief-systems in mass publics, and non-attitude models

In this dissertation, I show that adaptive utility theory offers an option to model varying belief constraints that allows to mimic Converse's original formulation. In his influential chapter "The nature of belief systems in mass publics" Converse (1964) argued that a vast share of the general public lack meaningful opinions about politics that are - in any way - constrained by underlying ideological dimensions. This influential perspective has seldom been adopted to formalized models of politics, because there has been no appropriate way to represent this idea in a utility-terms. Moreover, with some modifications this formalization also provides a model of attitudes as resting on varying considerations, as discussed in Zaller (1992) famous book.

Novel approach integrating partisanship in spatial voting theories

Researcher in the tradition of "The American Voter" (Campbell et al., 1960) highlight the importance of partisanship in voting decisions. Political behaviorist key concern with spatial voting is that these models tell the story the wrong way round. It might be that citizens vote for candidates or parties because they adopted the parties' policy views, not because the party offers policy platforms that match citizen's preferences. In other words, party identifiers align their positions with their party's proposals. Although, researchers offer empirical evidence for this perspective, this dissertation is among the first to offer a theoretical account of this process. While parties campaign for their political platform, a share of citizens adapts these positions as their own.

Discussion of a learning model, how voters form expected utility

I specify a modeling approach how voters learn about the expected utility from a candidate that contrast the standard solution in the literature. Formalized models of politics build on the idea that voting preference can be approximated by specifying utility functions. Certain information that affect these utility functions, are associated with uncertainty. For example: Which platform a candidate will implement once elected? The mechanical way to account for this uncertainty is that voters employ the expectation of the random utility terms to compare political options. I argue that in many instances the uncertainty enters utility specifications through a learning process. Aspects about a candidate, for example her policy platform, gets more informative, the less uncertainty a voter has about the positions. Weakly communicated platforms contain high uncertainty on the voter side and result in narrow ability to learn about candidates. This can make them appear the same in utility terms and thereby can have a direct effect on voting decisions. In addition to the application at hand, this approach should especially speak to researcher that are concerned with the electoral effects of ambiguous position taking.

1.5.2 Empirical innovations

Provide a case how to use the EITM approach to introduce novel theoretical concepts

This dissertation provides rigorous test of empirical implications from novel formalized theoretical models. Although the NFS's Empirical Implications of Theoretical Models (EITM) initiative called for this, all to often empirics and theory a still disconnected. Researchers that put forward novel arguments, either focus on the empirical evidence, or their rigorous formalized implementation. An example might illustrate this: While Enelow and Hinich (1981) proposed a novel conception of uncertainty over candidate's platforms, 5 years later Bartels (1986) offered an empirical test of this. Some might see this as a good example, how theories can inform empirical models, but all to often important theoretical insights get lost if not directly applied. For example, up to date there is no empirical model that estimates non-separable preference over multiple policy dimensions in spatial voting, a theoretical concept that has been developed more than 40 years ago. To avoid such an unsatisfactory history, this dissertation has clearly focused on providing empirical evidence for all the theoretical specifications.

Introduction of latent class models employing theoretical implications to classify and learn about difficult-to-measure phenomena

I discuss latent class models using implications of theoretical processes to learn about phenomena which are difficult to observe. Many political processes are, by nature, of the sort which prove impractical to observe. As a result they often bypass valid and reliable empirical measurement. In such situations, researchers find it difficult to explain the phenomena they are studying. Oftentimes, however, social scientists have expectations about the heterogeneous consequences stemming from these processes. In my case, I classify voters who are likely to be persuaded by a candidate's platform. This model strategy can permit other researchers to explain the process, by modeling class assignments as a function of covariates and thereby facilitating understanding of political processes which are difficult to measure.

Development of an estimate of inconsistency in political attitudes

I propose an estimate for inconsistency, as the degree by which policy views expressed in a survey are constrained by ideological platforms. Since Converse's seminal contribution regarding mass belief systems, inconsistency in political attitudes has become an important empirical concept. Previous proposed measurements lacked the connection between political attitudes and underlying ideological platforms (Barton and Parsons, 1977; Wyckoff, 1980; Jacoby, 1995). The estimator I propose builds on the theoretical model and a linear item response specification.

Design of a survey experiment that combines experimental set-ups in political psychology with set-ups in spatial voting

Survey experiments have helped political scientists to make conclusive findings in many areas of research. Survey experiments are most prominently used by political psychologists. They have addressed the questions: under which conditions and for whom, political arguments proved especially persuasive (Cobb and Kuklinski, 1997; Druckman, 2004; Jerit, 2009; Arceneaux, 2012; Lau, Smith and Fiske, 1991). In recent years, survey experiments have been given particular attention by those studying spatial voting, as they allow one to manipulate aspects of the theory, such as a candidate's policy platform. This has allowed researchers to learn which specific decision rules voters employ (Lacy and Paolino, 2010; Tomz and Van Houweling, 2008; Claassen, 2009), and how ambiguity of a candidate's platform can affect voting decisions (Tomz and Van Houweling, 2009). I use a survey experiment that combines both set-ups to test the effect of political arguments on spatial voting.

Policy beliefs to represent preference in spatial voting

2.1 Introduction

Democratic theory deals with the conditions under which the democratic ideal can be achieved and maintained. "The pure idea of democracy, according to its definition, is the government of the whole people by the whole people, equally represented" (Mill, 1861, p.53). As a form of government, modern democracies attempt to comply with this idea by allowing eligible citizens to elect representative leaders. Many theorists recognize modern democracies as being an especially appropriate 'rule of law' in order to implement what Rousseau once referred to as the "will of the people". In recurring elections, the public is able to express their aggregated preference and, by this means, determine the political outcome. In order to understand pitfalls in the democratic aggregation of the public's will, theories of democracy are in need of a reliable portrayal of the citizens' preferences regarding policy outcomes. *The spatial model of democracy* is among the most influential theories of Democracy in contemporary political science. Building on a set of assumptions about citizens' policy preferences, the theory allows us to analyze the electoral expectations, based on the interaction between citizens and their representatives.

In this chapter, I discuss the spatial model's depiction of citizens' policy preferences more closely. I outline recent developments regarding this theory and reveal that most of them are built on a set of three implicit assumptions about citizens' policy preferences viz that these are: well-defined, fixed, and exogenous. I discuss why the restrictive nature of these assumptions can be seen as a virtue for the explanation of electoral democracy, but only if they do not systematically affect the actual voting decisions. This insight demands a framework in which we can study the consequences of relaxing any of these assumptions.

Furthermore, the chapter offers a conceptualization of citizens' policy preferences in terms of policy beliefs. I elaborate on a wider notion of policy preference based on a discussion of stances in the literature that are in opposition to the spatial voting portrayal of citizens' policy views. These alternative theoretical arguments and research

models present citizens' opinions, attitudes and preferences (in contrast to the spatial model view) as being inconsistent, persuadable and endogenous. Subsequent discussion permits me to highlight that these accounts share a definition of policy beliefs that can in fact be incorporated into spatial voting theories.

2.2 Spatial voting theory

Over the last few decades, the application of spatial models of democracy has turned out to be useful in understanding key aspects about representative democracy. Their application helped to explain how citizens choose parties or candidates based on their political programs. This stimulated thoughts as to how representatives can react to citizens' voting behavior by proposing political programs (or acting in ways) that increase their political support. Overall, the literature points to a close connection between candidates and citizens: because citizens judge parties or candidates by their policy platforms and this, in turn, impacts on the parties' or candidates' electoral success, this perspective expects that political entrepreneurs will seldom propose or implement policies that are too extreme. A political party with an unpopular policy platform, would not receive enough votes in the next election and thereby be punished for their political program.

Since Downs' seminal book, "An economic theory of democracy", spatial models have analyzed the interaction between parties, governments and citizens in terms of citizens' policy preferences, as well as their voting decisions and nominees' position-taking in order to gain a majority in elections (Downs, 1957). One of the key insights from Downs' original model, which was also derived in Hotelling (1929), is the well-known median voter theorem: two parties that compete with each other on a liberal-conservative ideological spectrum tend to converge to the center of the spectrum. Although the empirical validity of this model is debatable, without doubt it served as the building block for subsequent research on representative democracy. Spatial models of party competition have been extended to gain more accurate expectations and an understanding of the democratic linkage between citizens and parties (e.g. Adams, 1999; Grofman, 2004; Laver and Sergenti, 2010; Kollman, Miller and Page, 1992; Wittman, 1983; Groseclose, 2001; Alesina, 1988; Calvert, 1985*a*).

The starting point for the spatial model of democracy is the set of assumptions made about citizens' policy views and how voting decisions are based on these. In the classic proximity voting model, citizens' policy preferences are represented by political platforms along the liberal- conservative ideological spectrum. Some citizens prefer more liberal and others more conservative policy platforms. Voting decisions are affected by candidates' position-taking on the same dimension. Voters choose the candidate who occupies the policy-platform closest to their most preferred platform, such that a liberal citizen would rather vote for a liberal, than for a conservative candidate. Policy proximity has indeed proven to be a key factor in citizens' voting decisions (e.g. Jessee, 2009) and is the building block for spatial models of party competition.

Spatial voting has become a subfield within the literature in which proximity voting has seen plenty of extensions: a) models that allow for a multidimensional policy space (Davis, Hinich and Ordeshook, 1970) and that highlight the different salience

of this policy dimension in voters' calculus (RePass, 1971; Carmines and Stimson, 1980); b) models that clarify the connection between policy preferences and ideological dimensions (Enelow and Hinich, 1994; Hinich and Munger, 1992; Jessee, 2009); c) strategic voting models, in which citizens take into account post-election bargains (Duch, May and Armstrong, 2010; Grofman, 1985; Kedar, 2005); d) extensions that integrate the uncertainty voters have about a party's position (Bartels, 1986; Enelow and Hinich, 1982, 1989), and e) probabilistic models of vote choice that allow non-policy factors (valence-issues) to influence voting decisions (Adams, Merrill and Grofman, 2005; Stokes, 1963). Although the list of extensions is far longer than the one outlined here, many extensions of spatial voting share a set of important aspects, especially as their overarching depiction of policy preferences is quite similar.

2.2.1 Three implicit assumptions about citizens' policy preferences

Spatial voting theories take citizens' preferences as the natural starting point for their analysis and therefore have to suppose certain aspects about them. In consequence, spatial voting theorists make a set of theoretical assumptions that permit them to study how voters employ their policy views to choose between candidates. Major newer work in this area of research relies on the same set of implicit assumptions, namely, that citizens' policy preferences are well- defined, fixed and exogenous (see e.g. Adams, Merrill and Grofman, 2005; Ansolabehere, Rodden and Snyder, 2008; Jessee, 2009; Kedar, 2005; Schofield and Sened, 2006).

Well-defined refers to the assumption made about the structure of political preference. The structure supposes that citizens' platforms capture all important aspects about citizens' policy preferences for concrete issues. A citizen whose ideal-platform is liberal would then be assumed to be in favor of a minimum-wage, high income taxation and abortion rights. This implies that two citizens with the same ideal platform are likely to have the same policy views. This simplification allows researchers to abstract citizens' policy preferences in terms of their platforms. As such, it imposes a homogeneity assumption: all citizens are equally well represented by their position on the liberal-conservative spectrum.

Fixed represents the idea that policy preferences are not shaped within the analytical model. Within theoretical models some aspects always need to be fixed to facilitate explanation. The decision regarding what should be considered fixed and what should be allowed to move, would be tailored to the purpose of the study. Fixed policy preferences allow researchers to focus on how citizens' opinions affect voting decisions. However, as such, this decision precludes our studying other aspects e.g. how changing preference may affect voting decisions. Furthermore, it sidesteps the important question: where does this variation actually come from?

Exogenous means that citizens' preferences are not affected by aspects within the model. Similar to assuming that preferences are fixed, the assumption also allows a researcher to focus her attention on specific questions, the most important being: how variation in citizens' policy preference impacts preference for parties, and not the other way around. That is to say, assuming that political preferences are exogenous concentrates scrutiny on one aspect of the political process: given citizens' policy preference what candidates do they elect? Needless to say this is an oversimplification;

it is entirely conceivable that parties (which are clearly part of the political process) can have a strong impact on citizens' points of view.

Many spatial voting theorists see the above assumptions as the correct position in a simplicity-complexity trade-off. The assumptions are restrictive, but they focus attention on the important aspect of how voters make up their minds. It is important to note that researchers do not make these assumptions because they are necessarily convinced that they hold "true" in a literal sense. The aim is to simplify the complexity in citizens' decision-making in order to gain a better understanding of the political process. Models about voting behavior always face the trade-off between simplicity and complexity. Essentially it would be possible to assume that each voter has her own set of factors that explain why she voted for a specific candidate. This idiosyncratic explanation, however, would undermine the purpose of understanding the aggregated result in electoral democracy. Researchers would find it difficult to explain why a particular party receives 40% of the votes and another party only 5%. Therefore, researchers should restrict their models to aspects about the world that they believe are most important in explaining voting behavior and leave out aspects that are viewed as being less important.

For spatial theorists the most important aspect is how policy platforms affect voting decisions. This simplicity is seen as a virtue. In Jesse's words:

> "Spatial theory represents a profitable approach to the study of voting and politics more generally despite, and in many ways because of, its simplicity"(Jessee, 2012, p.11).

Accepting this epistemological position stresses that it is not so much the question of whether the assumptions are valid, but in how far they capture the central aspects about the electoral process. Following this line of thought, the correct question has to be in how far the assumptions impact on voting decisions in any meaningful way.

2.2.2 Do the assumptions affect voting decisions?

Any depiction of citizens' policy opinions will only bias spatial model's representation of electoral democracy if the expectations about citizens' voting behavior are affected by the assumptions. What should be clear from the above epistemological discussion, is that it is not about the truthfulness of the assumptions made in these models itself, but rather their impact on the complete picture. Most spatial theorists take an instrumentalist perspective on their assumptions about citizens' policy views, as not being right or wrong but either useful or not (Friedman, 1953). Following this dominant conviction in economics, advocates of spatial voting can rightfully reject doubts raised about assumptions by referring to the usefulness of their models in explaining the electoral process. In other words, showing an advocate of spatial voting that any of the assumptions do not hold, by no means distracts from his or her point of view, as long as this perspective is still useful in understanding the electoral linkage between citizens and their representatives. Complementarily, a spatial voting theorist can utilize the scientific principal of parsimony to avoid unnecessarily relaxing these assumptions.

In order to make a valid point as to why a portrayal of democracy should take into account aspects about citizens' policy views that are precluded by the assumption,

researchers would need to show that such aspects actually affect the link between citizens and their representatives: i.e. their voting decisions. The democratic-linkage can only be affected, if relaxing these assumptions a) results in different theoretical expectations about citizens' voting behavior and b) is better suited to explain empirical patterns about voting decisions.

The overarching goal of this dissertation is to develop a framework that allows us to study in how far changing these three assumptions changes expectations about voting behavior. In order to find a conceptual synthesis that allows the relaxation of these assumptions, a good starting point is the theoretical argumentations that propose a wider notion of citizens' policy views.

2.3 A wider notion of citizens' policy preferences

There is a long-standing argument against the oversimplified depiction of citizens' policy views in theories of democratic representation. The aggregation of citizens' opinions, through the electoral selection of representatives, supposes that citizens possess reliable opinions in the first place. The belief that this a reasonable starting point has been criticized throughout the development of modern democratic theory. A quote by Joseph Schumpeter summarizes these theoretical concerns:

> "If we are to argue that the will of the citizens per se is a political factor entitled to respect, it must first exist. That is to say, it must be something more than an indeterminate bundle of vague impulses loosely playing about given slogans and mistaken impressions. Everyone would have to know definitely what he wants to stand for" (Schumpeter, 2013, p.253).

Since the 1950's the perspective on elections as an aggregation mechanism of citizens' policy opinions has been represented by spatial models of democracy. As such, they have been subject to similar critiques in the fields of political behavior, public opinion and political psychology. As I shall outline below, researchers question in how far policy preference can be depicted as being well-defined, fixed or exogenous. Theoretical conceptualizations and argumentations have been developed that are built on a wider notion of citizens' policy preference. Opinions have been represented as being inconsistent, endogenous and persuadable and thereby provide insights which standard assumptions in spatial voting preclude. For many researchers who build their knowledge on these theoretical models, they do not only undermine assumptions made about policy preference, but also the validity of the spatial model as such.

The goal of this section, then, is to examine research which takes a converse approach on the specification of policy opinions in order to find out what the studies have in common. Consequently, the aim in the next subsections will not be to cover every case where the assumptions failed, but rather to bring together how these theories, in general, devise citizens' policy opinions.

2.3.1 Citizens' policy preferences are inconsistent

One aspect that diverges from spatial voting's portrayal of policy preference can be found in research on public opinion. The idea that public policy views can be portrayed

by ideal policy platforms stands in contrast to theories of mass belief systems. The sociological model of belief systems asserts strong heterogeneity in how strongly citizens' views are structured by underlying ideological dimensions. The fundament of this approach is the idea that political attitudes "are organized into coherent structures by political elites for consumption by the public" (Feldman, 1988, p.417). This implies that political platforms along ideological dimensions do not exist per se, but are created by political elites to structure the political process. For example, it is well-known that the political spectrum that ranges from left to right was created by the seating arrangement in the French parliament. What these left-right platforms imply exactly, was then later manifested by elite discussions about policy proposals in parliament. Only after that, did citizens employ the same categories to structure their beliefs and choose matching representatives. An important step in the process was the exposure to these structures. If the general public adopts the same ideology considerations as the political elites, ideology should also constrain their opinions about the policies. If not, citizens' attitudes do not mimic the ideological structures.

This perspective is most famously associated with Phillip Converse's chapter, "The nature of belief systems in mass publics"(Converse, 1964). Based on analysis of survey responses, he argued that a vast proportion of the general public lack meaningful policy attitudes. Voters' attitudes are most often inconsistent and unstable, as the general public does not organize their beliefs in accordance with the underlying ideological dimensions used by political elites. In Converse's own words:

> "Large portions of an electorate do not have meaningful beliefs even on the issues that have formed the basis for intense political controversy among elites for substantial periods of time. Where any single dimension is concerned, very substantial portions of the public simply do not belong on the dimension at all" (Converse, 1964, p.245).

There has been much subsequent research on mass belief systems. Most noteworthy, are researchers who stress the importance of "core values" and "predispositions" in belief systems (Feldman, 1988), and theoretical extensions to the model (Zaller, 1992). However, Converse's empirical results evoked much criticism. The critiques explain his findings as a result of measurement error rather than citizens' incompetence (Achen, 1975; Jackson, 1983; Moskowitz and Jenkins, 2004). Nonetheless, Converse's *non-attitude* conclusion has affected both debate and writing in American politics, ever since its publication.

Survey researchers relied on this early perspective to explain and understand answering behavior in surveys. Zaller, for example, notes that "[. . .] individuals do not typically possess 'true attitudes' on issues [. . .] but a series of partially independent and often inconsistent ones" (Zaller, 1992, p.93). Individuals form attitudes off the "top of the head at the moment of confronting survey questions [. . .]" (Zaller, 1992, p.39). For many researchers this non-attitude is better suited to explain survey question effects (e.g. Schuman and Presser, 1996) and thereby yield a more accurate picture of public opinion.

The idea that citizens lack meaningful policy attitudes is found in many textbooks on political behaviour. For example, Kinder states that:

> "Precious few Americans make sophisticated use of political abstraction. Most are mystified by or at least indifferent to standard ideological concepts, and not many express consistently liberal, conservative, or centrist positions on government policy" (Kinder, 1998, p.768).

The perspective on citizens' limited ability to abstract in ideological terms, is still so influential because it mirrors the theoretical concerns about the simple representative link in political theory. If citizens possess policy attitudes that are inconsistent with the basic dimensions of politics and unstable, how can they potentially elect matching representatives? In this way, recent publications can be understood that attempt to rescue the electoral-linkage, by showing that once we use appropriate ways to measure citizens' issue positions, citizens truly choose leaders that match their preference (Ansolabehere, Rodden and Snyder, 2008; Jessee, 2012). I argue that this will by no means end the debate. What is needed is a theoretical model that allows us to incorporate concerns about citizens' heterogeneity in ideological constraints.

2.3.2 Citizens' policy preferences are persuadable

An additional aspect about citizens' preference that the spatial voting assumptions preclude is that the public first has to form reliable opinions about matters of politics. Riker once argued that it " is unfortunate that the spatial model as usually presented does not allow voters' positions to change and thus precludes persuasion"(Riker, 1990, p.56). This statement describes the state of affairs today, just as it did 25 years ago. For the sake of simplicity, the canon of spatial voting models still assumes that policy preference is fixed, which confines spatial voting to studying how political views affect voting decisions, and prevents political scientists, who are interested in persuasion and the question of how policy views are formed, from employing these models.

For many political scientists, persuasion is the essence of politics. The important part of the political process is *not* how citizens use their policy views to elect candidates, but *why* they hold the views in the first place. "Where people start off politically matters, but what counts is where they wind up after the pushing of shoving of political arguments" (Sniderman et al., 1996, p.55). From this point of view, spatial voting offers a truncated picture of the political process. Put in the words of Mutz et al.:

> "Politics, at its core, is about persuasion. It hinges not just on whether citizens at any one moment in time tend to favor one side of an issue over another, but on the numbers of them that can be brought, when push comes to shove, from one side to the other"(Mutz, Brody and Sniderman, 1996, p.1).

Political psychologists know that political arguments can *persuade* citizens to change their standing opinions. Confronting respondents with political arguments in experimental settings allowed them to find out about the structures of political arguments that are particularly persuasive (Cobb and Kuklinski, 1997). Similarly it was possible to study framing effects (Druckman, 2001, 2004; Nelson, Clawson and Oxley, 1997), how different "interpretations" about proposals affect evaluation (Lau, Smith and Fiske, 1991), as well as the effect of predictive appeals (Jerit, 2009), and cognitive biases

(Arceneaux, 2012). The focus of these studies was to find out under which conditions and for whom, political arguments are particularly persuasive.

Models of preference formation in political science indicate that preference can be shaped and changed through the ongoing process of evaluating political arguments and information. Both memory-based models (Zaller, 1992; Zaller and Feldman, 1992) and on-line models (Lodge, McGraw and Stroh, 1989) point out that the evaluation of any policy depends on the "considerations" an individual has received about this policy[1]. Considerations are defined as "any reason that might induce an individual to decide a political issue one way or the other" (Zaller, 1992, p.40). In these models citizens change their beliefs about a specific policy by receiving and evaluating political arguments that entail different considerations as to why a certain policy proposal is better or worse. Adopting this perspective in spatial voting would mean that voters' change their beliefs regarding what position is best for them, by evaluating political arguments.

The idea that arguments can persuade recipients to alter their preferences, can also be found in more formalized parts of the literature. "Cheap-talk" models underscore the idea that the strategic exchange of privately known facts can persuade other actors(Crawford and Sobel, 1982). These models have been adopted as a means of studying political phenomena, and to explain both political debates and democratic outcomes (see e.g. Austen-Smith, 1990; Lupia, 1998). Newer models within this same literature, rely on the idea that arguments contain considerations that are relevant to citizens when deliberating political outcomes(Dickson, Hafer and Landa, 2008; Hafer and Landa, 2007)[2]. In particular, newer theoretical models which perceive "deliberation as self-discovery" (Hafer and Landa, 2007, p.332) correspond with those earlier studies discussed above. The formalized argumentation put forward by these researchers will become an important building block for the theoretical conceptualization presented in next chapter.

2.3.3 Citizens' policy preferences are endogenous

Citizens form their opinions about matters in politics by following political debates, discussing issues with friends and following the news. In many ways, the resulting opinions are a product of the political process, in which elites, political groups, parties as well as citizens take part. Often, however, spatial voting models assume that policy preferences are exogenous to the political process. This proposition is disputable. Policy preference can often be thought of, as being a result of the political process itself, rather than a 'stand alone' entity. Most important for political representation is the effect party positions can have on citizens. If citizens adopt the positions of their preferred party, rather than choosing a party that matches their policy preference, the simple chain

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[1]The two models differ in the way individuals form their preference based on received considerations. While memory-based accessibility models argue that individuals rely on considerations that are at the "top of the head" in certain situations , on-line processing models contest that individuals seldom can recall the considerations that lead them to prefer one policy over the other, and they process considerations unconsciously using a "running-tally" of positive and negative considerations about an object.

[2]Contrary to other models, the credibility and convincibility of an argument is thereby *not* merely determined endogenous to the situation of the strategic communication process

of command in representation might be reversed. According to Milazzo, Adams and Green:

> "If party elites shape citizens' policy beliefs then public opinion may simply mirror these elites' own viewpoints, and the correspondence between mass and elite opinion tells us little about whether parties provide faithful policy representation"(Milazzo, Adams and Green, 2012).

Political scientists have put considerable effort into understanding the reciprocal relationship between policy orientation and partisanship. Do party- identifiers adopt their partys' platform, or do they change their party identification if their party proposes policies that are too far away from their own? Although the large body of literature that developed throughout the last decade comes to contrary conclusions, under which conditions partisanship affects citizens' positions, most accounts highlight the importance partisanship can play in determining policy views (Bartels, 2000; Carsey and Layman, 2006; Green, Palmquist and Schickler, 2002; Hetherington, 2001; Layman and Carsey, 2002; Milazzo, Adams and Green, 2012; Gerber, Huber and Washington, 2010). The aforementioned literature is directly connected to behavioral models of voting, which stress partisanship as the major determinate of voters' behavior (Campbell et al., 1960). Partisanship as the 'unmoved' mover not only explains voting but also alters policy views. This challenges the exogenous preference assumption made within the spatial model: Voters select parties not because these parties are close in policy terms, but because they identify with these parties, and alter their preference to align it with their party.

   The reciprocal effect of partisanship is addressed by newer research that highlights a persuasion process that can lead individuals with certain predispositions to adopt their party's communicated positions. Central to these studies is the idea that "the very reason for public political debate between parties is to sway" citizens' "preferences in one or the other direction"(Jerit, 2009, p.102). Lenz (2013) shows that party position does not only inform individuals, but also persuades them to adopt the perspective of their party. Carefully disentangling the effect of political campaigns, Huber and Arceneaux (2007) find evidence that citizens are persuaded by the party's position taken during campaigns (see also Gerber et al., 2011). However, it is not entirely clear if the mechanism behind changes in political preference in these cases is persuasion and the careful evaluation of political arguments. A few experimental investigations show that partisans even alter their policy view when only informed about the party's or candidate's position-taking (Sanders et al., 2008). As such, citizens take cues from their parties without being persuaded by their arguments. Nonetheless, there is an increasing interest in how candidates employ the possibility to persuade individuals in designing their electoral campaigns (see e.g. Hillygus and Shields, 2014; Jacobs and Shapiro, 2000), that requires a theoretical foundation of this process[3].

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[3]For spatial model of that incorporates endogenous preference see Jackson (2014)

2.4 Policy beliefs

Studies that account for inconsistency, persuasion, learning processes and endogeneity in policy preference share a common conceptualization that builds on policy beliefs. In many approaches, citizens' opinions are understood in terms of beliefs regarding how much better a certain political outcome will be for them personally. Although this concept has influenced research in political psychology, public opinion and political behavior, it has not been fully synthesized as a wider definition of policy preference.

The following subsections offer a concept of policy beliefs. I pay particular attention to how policy beliefs are able to account for the three aspects about political preference outlined above. Overall, the discussion aims to emphasize how policy beliefs can widen the understanding of preference in spatial voting theory.

2.4.1 Policy beliefs and inconsistency in policy views

Important for the discussion is how the concept of belief constraint can potentially be incorporated in spatial voting models. It is remarkable to note that although both the belief system and the spatial voting perspectives accept that ideological dimensions are the central aspect for the political processes, they have always been seen as incompatible theoretical accounts. Actually, they only diverge in assessing how far ordinary citizens adopt ideological categories to structure their attitudes. While the spatial voting perspective supposes that all citizens know exactly which platform best represents their policy interest, the sociological model of mass beliefs sees differences: The degree to which policy views are constrained by ideological categories differs between citizens.

Both perspectives agree that political elites structure their communication in terms of ideological platforms. In classic spatial models, parties announce their policy platform to the general public. Employing the assumption of well-defined preference, this communication makes it easy for citizens to choose matching parties. In the sociological model citizens differ in their capability to abstract their policy views in terms of these platforms. Essentially, the heterogeneity between citizens can be understood in terms of beliefs about the political platform that best represents their interest. While citizens with well-defined preference are perfectly certain which platform represents their interest, citizens with inconsistent attitudes are less certain.

Instead of defining well-defined preference in terms of citizens' ideal policy platform, citizens' policy preference can be understood in terms of policy beliefs about these platforms. Some parts of the general public are more confident in judging ideological platforms than others. In contrast to spatial preference, policy beliefs can differ not only in direction, but also in consistency. Some citizens are more certain that a specific ideological platform is in their interest. Policy beliefs allow us to incorporate Converse's concerns that a share of the mass public does not hold meaningful political beliefs and thereby to relax the assumption that all citizens posses well-defined preferences.

2.4.2 Policy beliefs, political arguments and persuasion

The focus of preference of formation models and research in political psychology is on how policy positions of voters evolve, and how these can be shaped by persuasive arguments and information about an issue. These studies generally pay less attention

to how this process affects the final voting decision. For political representation, such accounts miss an important aspect, namely : How do changes in political preference affect the democratic linkage between citizens and their representatives? If changes in preference lead to changes in voting decisions there is a direct connection between persuasive effects and their democratic candidates. A model that allows political arguments to affect policy views in terms of spatial preference, would provide a natural way to integrate these connected aspects in a general voting model. The evaluation of political arguments affects policy preference, and policy preference affects voting decisions.

What the political psychologist and models of preference formation share is a definition of beliefs that can be affected by considerations of political arguments. Persuasion, is commonly defined as "the exchange of political arguments designed to influence others by modifying their beliefs" (Simons, 1976, p.26). Persuasion therefore involves the deliberate use of political arguments by one actor to change the beliefs of another actor that a certain policy outcome is better for her. Following this definition, it is impractical to study the effect of political arguments and persuasion if a voter's preferences are assumed to be fixed and independent of beliefs. Understanding policy preference in terms of beliefs about the best outcome, allows a researcher to model the effect of political arguments. Political arguments entail 'consideration' what policy positions are best for the voter. Accepting these considerations allows voters to learn, which positions actually represents their interest.

A conceptualization of opinions that allows for this perspective can be found in Bartels (1993). Bartels studies the persuasive effect of media exposure. In his theory, citizens' opinions are represented by a belief distribution regarding a political issue, such as foreign aid, abortion or taxation. These opinions can be shaped by new information about any of the issues. People's policy beliefs change as a function of political arguments. Newer theoretical studies of deliberation are in accordance with this perspective. Dickson, Hafer and Landa (2008) model opinions as being dependent on considerations. "Individual views on a given policy issue may be influenced by a number of considerations that the individual finds to be relevant"(Dickson, Hafer and Landa, 2008, p.974). The exchange of arguments in deliberative situations activates considerations about policy issues, enabling actors to learn about beliefs concerning their most-preferred outcome.

2.4.3 Policy beliefs, persuasion attempts and endogenous policy preference

Given the evidence about reciprocal effect between party identification and citizens' policy-views, the question arises, how the endogenity of voters' decisions to party position-taking, can be integrated in spatial voting models? The most common way to integrate partisanship in spatial voting models is to assert that partisanship, next to policy considerations, has an additional effect on voting. For spatial voting, this merely implies that partisans differ regarding the point at which they are undecided between two candidates. While independents are indifferent if two candidates' platforms are equidistant to their ideal policy platform, partisans are biased towards their party, such that they still vote for the party although the other party is closer (see e.g. Adams, Merrill and Grofman, 2005). It is clear, that this extension of spatial voting does not sufficiently express the reciprocal effect. Partisanship affects policy views in the first

place; simply treating partisanship as if it has a separate effect on voting does not capture or account for this aspect.

The findings have not been satisfactorily adapted to the theoretical specification of spatial voting. One exception sticks out. In their article "Endogenous Preferences and the Study of Institutions", (Gerber and Jackson, 1993) provide a conceptualization of preference that allows party position-taking to affect citizens' beliefs and thereby their political choice(see also Jackson, 2014). They contest that voters' preferences are endogenous to party position-taking, in that "voters perceive party positions and hear the debate surrounding the adoption of those positions and alter their own political attitudes in response" (Gerber and Jackson, 1993, p.639). Gerber and Jackson build their theoretical model on a notion of voters' preference in terms of beliefs. This covers the ideas developed in the above section, in which citizens are uncertain about their ideal policy platform, because "people do not know how much they will like an outcome if and when it does occur" (Gerber and Jackson, 1993, p.640). Parties can provide guidance and shape beliefs about how political platforms best represent a voter's interests.

I claim that persuasion is one mechanism how citizens' policy beliefs can be shaped by party positions. Parties not only announce their positions, but also attempt to persuade voters to follow their lead. As individuals' preferences rest on beliefs about how much better a certain political platform will be for them, party positions provide cues and can make policy preference endogenous to these positions.

2.5 Summary

In this chapter, I brought together research that contrasts with the spatial voting depiction of preferences. Conceptualizations in the literature share a common ground in understanding preference in terms of beliefs. What I refer to as 'policy beliefs' depicts an individual's uncertainty whether the implementation of a certain policy platform will be more beneficial to that citizen personally. I showed that representing a citizen's policy preference in terms of beliefs allows for an inconsistent, persuadable and endogenous preference.

- *Inconsistent*: Models of mass belief systems presume that the general public adopt ideological dimensions to a varying degree, when structuring their policy opinions. Policy beliefs can incorporate this idea by introducing different variance in beliefs about a citizen's ideal platform. Some people are more certain that a specific policy platform represents their ideal political outcome, when compared to others.

- *Persuadable:* Through the ongoing evaluation of political arguments, citizens can form reliable opinions about political issues. In this view, citizens' policy preferences are persuadable, because the deliberate use of arguments can make them change their standing opinions. Policy beliefs allow us to portray this idea, as evaluating political arguments can alter the belief that a specific platform is actually in a citizen's best interest.

- *Endogenous:* Parties not only aim to inform citizens about their positions, but furthermore, they attempt to shape citizens' opinions in their direction. If a

certain share of citizens has a predisposition to adjust their policy beliefs in line with party cues, these citizens' preferences are endogenous to the party's position-taking.

The next chapter discusses adaptive utility theory as a modeling approach, showing how policy beliefs as a depiction of preference can be integrated into a general spatial voting theory.

CHAPTER 3

An adaptive utility theory for spatial voting

3.1 Introduction

For the overall picture of electoral representation, it is crucial to know whether voting decisions are affected by a wider definition of policy preference. In attempting to comprehend the democratic representation of eligible citizens, theories focus on the connection between these citizens' view-points and the electoral decisions they make. Do voters elect candidates whose platforms coincide with their own view-points? Spatial voting theory addresses this question. Central to it, is the idea that citizens form their opinions in terms of underlying ideological platforms and elect candidates who make corresponding offers. The proceeding chapter revealed that most spatial voting theories build on a narrow depiction of citizens' policy preferences, which precludes the study of aspects that other approaches in the literature deem important for the electoral process.

In this dissertation, I offer a comprehensive extension to spatial voting that allows the study of a wider definition of policy preference. The proceeding chapter stressed that policy beliefs permit us to present exactly such a wider definition. In order to integrate policy beliefs into a spatial voting context, in this chapter I model them in an adaptive utility framework. This perspective 'allows' citizens to be uncertain about their ideal-policy platform. The standard utility specification of a spatial proximity voting model is also embedded in this perspective. If all citizens know exactly what platform constitutes their ideal outcome, the adaptive utility perspective approximates the classic spatial voting model. I discuss how the adaptive utility model can be extended to integrate policy beliefs and thereby citizens' uncertainty about their own ideal platform. Furthermore, this chapter outlines how the adaptive utility model can be used to study preferences that are inconsistent, persuadable and endogenous. This highlights that in this policy belief model, researchers are able to study aspects about policy views that a classic perspective did not permit.

3.2 Spatial voting in terms of adaptive utility

Political scientists who employ a wider definition of political preference build their models on a notion of policy beliefs that diverges from the perspective used in spatial voting. A discussion of different stances in the literature emphasized how these models portray citizens' policy preferences as being built on beliefs: models of preference formation assume that beliefs about policies are shaped through the ongoing process of evaluating political arguments. Theories of sociological belief systems argue that policy views are constrained to a varying degree by underlying ideology. Models of endogenous policy preference build on the premise that voters take cues from parties and align their beliefs with those of their most preferred party. In all of this, beliefs take into account that parts of the general public struggle to exactly pin down what policy platform matches their ideal political outcome and employ available information to learn about it.

Policy preferences in classic spatial voting models stand in sharp contrast to this. Essentially, in these models, beliefs about the benefit from policies are set to a specific outcome: each citizen knows with certainty which policy platform is in her best interest. For many citizens, however, assessing the profitableness of a political outcome in terms of policy platforms is highly abstract and complicated. In addition, this modeling decision does not allow policy preference to change. Supposing that each citizen knows which is his ideal policy platform implies that policy preference does not change, nor is it affected by any other political aspects. To demonstrate a 'simplified decision' by means of a theoretical example: if a person knows that voting for candidate A's platform yields a pay-off of 100, and voting for candidate B's platform only yields 50, the decision is straightforward and nothing in the world will make her change her mind.

Policy beliefs can be integrated into the general utility maximizing framework of spatial voting. Instead of supposing that citizens' preferences are fixed, researchers can assume that citizens are - to a specific degree - uncertain which platform is in their best interest. This uncertainty can be embodied in terms of a belief distribution about the ideal policy platform. The idea that preferences regarding outcomes are uncertain is well integrated in general choice theory. Adaptive utility theory studies situations in which the Decision Maker (DM) is uncertain about how much she benefits from a specific outcome (Cyert and DeGroot, 1987; Calvert, 1985*b*; Cohen and Axelrod, 1984; Houlding, 2008). Houlding and Coolen (2011) give a compressive review of the literature. The authors argue that for many theoretical problems and explanations of observed behavior, the assumption that preferences are generally uncertain is useful.

> "Rather than assuming that the [Decision Maker]'s strength of preference and corresponding utility for every outcome is known, the theory of adaptive utility permits a [Decision Maker]'s to be uncertain and to learn about her preferences"(Houlding and Coolen, 2011, p.3).

When modeling citizens' decisions to find a candidate with a matching policy platform, this is a reasonable proposition, as the benefit from a certain platform is difficult for citizens to assess by themselves. Unlike in a game of roulette, the evaluation of the

policy outcome in many instances hinges on individual beliefs as to how much better this outcome actually will be for society. In the theoretical decision-making example given above, this does not at first sight appear to change a lot: because the person is uncertain which policy platform is in her best interest, the benefit from the two candidates' platforms are uncertain as well. The benefit received from candidate A's platform will vary around 100, and the benefit from candidate B will vary around 50.

The main difference between the two models is that the utility from a candidate's platform is random, because citizens are uncertain about their own ideal platform. This modeling choice additionally permits us to analyze individuals who learn about their ideal platform. Generally, modeling preference in terms of adaptive utility allows real world actors to "learn about her likes and dislikes of new and novel rewards, a situation that classical theory cannot account for as it has no element of utility learning following new information"(Houlding, 2008, p.5). In the case of spatial voting, political arguments and candidate platforms are sources that citizens can potentially employ to update their own policy beliefs. Before elaborating on this idea further, in the following subsection I will first outline how the classic proximity voting model can be incorporated in terms of adaptive utility theory.

3.2.1 The classic proximity voting model in terms of adaptive utility theory

The spatial proximity voting model assesses voting decisions as the interplay between voters' ideal policy platform and candidates' position-taking, along a one dimensional ideological spectrum. Voters choose candidates who campaign on platforms closest to their own views. A formalization of this idea can be obtained by formulating policy platforms X along a liberal conservative spectrum. Suppose that this spectrum is one dimensional, and thereby defined on the real line $X \in \mathbb{R}$. High values indicate more conservative and low values more liberal platforms. A fixed policy platform, in the words of adaptive utility theory, means that the *state of mind* is given for each voter. Where the *state of mind* Θ_i describes a voter's beliefs about the ideal policy platform:

$$\Theta_i = x_i \tag{3.1}$$

Because of this assumption, spatial models can refer to x_i as a citizen's ideal-policy platform, which it supposes all voters recognise with certainty. What voters care about is the policy outcome of a platform. In a representative democracy this might best be understood as the attitude of representatives to either being opposed or in favor of concrete policy proposals, where a candidate who possesses the same platform as a voter will most likely be in favor, or opposed to, the same policy proposals. Thus, spatial proximity of another policy platform to a voter's ideal platform ensures that their interests will agree on ever more policy proposals. Supposing that people vote sincerely, which means that they only want to find a matching representative, without taking post-election bargaining between representatives into account, then they should choose candidates with seemingly close platforms. In other words, the closer the candidate's policy platform is to a voter, the higher his evaluation will be of that candidate.

Citizens' preferences about different political platforms can be modeled using utility functions. For each voter, this utility function maps each platform to a specific utility value. Voters prefer platforms associated with a higher utility. In other words, the utility function allows to compare a voter's evaluation of a platform to any other platform, and thereby generate preferences about all the platforms. The idea of the proximity voting model, then, can be formalized: suppose that each voter $i \in (1, \ldots, N)$ receives utility U given a fixed state of mind $\Theta_i = x_i$ from the closeness of a candidate's platform $C_k \in X$, where $k \in (1, \ldots, K)$[1]. For the closeness of a candidate's platform, I employ the negative quadratic distance of that candidate's platform to a voter[2] $- (C_k - x_i)^2$. This implies that the further away a candidate's platform from a voter is (which will be referred to as 'policy distance of candidate to the voter') the lower the utility evaluation of the candidate. Meaning that closer candidates are preferred to those further away. Overall, the utility function yields different values for varying candidate platforms C_k, given the state of mind $\Theta_i = x_i$.

$$U(C_k \mid \Theta_i = x_i) = -\beta \, (C_k - x_i)^2 \tag{3.2}$$

In the utility function, β depicts the importance of policy distance for the evaluation of platforms. The higher the value of β the stronger the utility evaluation of a candidate is affected by a candidate's platform. If $\beta = 0$ there is no effect of a candidate's platform on utility evaluation. The model, so far, constitutes preferences as outlined by the classic proximity model of vote choice. It is clear that when comparing two candidates, the candidate who occupies a platform closer to the voter's ideal platform, will have a higher utility evaluation and, thus, is preferred by the voter.

3.2.2 Policy beliefs in spatial voting

Sketching voters' policy preferences in terms of adaptive utility allows us to relax the fixed preference assumption made in the classic model. Instead of supposing that each voter's *state of mind* equals her ideal platform, citizens' uncertainty regarding which platform is in their best interest can be expressed in terms of policy beliefs[3]. These beliefs can vary between citizens in two ways. First, citizens can have a different mean belief. For example, some citizens believe that their interest is better represented by liberal than centrist platforms. In this, the mean belief is (to some extent) analogous to the ideal platform of the classic model. Second, citizens differ in their belief variance, that depicts how certain they are that a specific platform matches their interest. The lower the belief variance, the more certain a voter is that a specific platform is in her best interest.

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[1] For the purpose of illustration only, I suppose that a candidate's platform is perfectly observed by each voter.

[2] This functional-form assumption follows common conceptualization in the spatial voting literature (see e.g. Jessee, 2009) and makes many of the analytical problems later on feasible.

[3] Representing uncertainty in terms of beliefs follow common conceptualization in the theoretical political science literature (see e.g. Calvert, 1985*b*; Dickson, Hafer and Landa, 2008) and (as the literature discussion revealed) in empirical parts of the literature (see e.g. Zaller, 1992; Bartels, 1993).
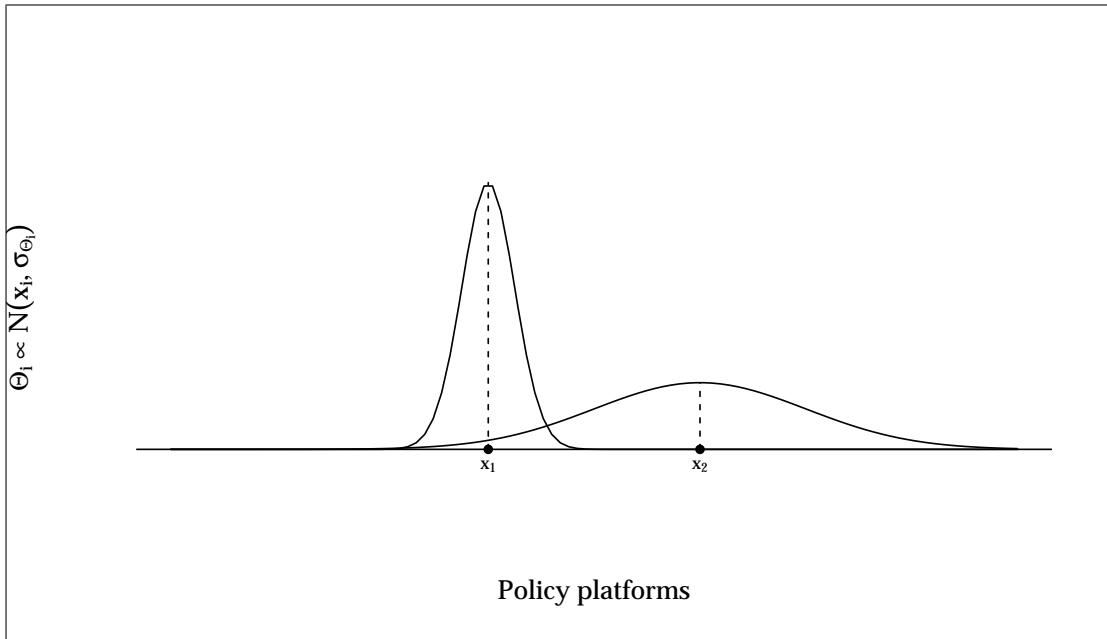
Figure 3.1: Policy beliefs about ideal policy platform

In our formula, the belief distribution about the different policy platforms can be specified in terms of Θ_i. I assume that the distribution is normal with mean x_i and variance $\sigma^2_{\Theta_i}$. This parametric assumption is made for two specific reasons. First of all, a non-parametric representation of each voters' beliefs would make many of the problems that I will address based on the them intractable. Second of all, it makes sense to employ a parametric assumption that entail the classic perspective. The assumption that the beliefs equal a specific state, is nested within the normal belief model: If for all voters the variance term is equal to zero, the beliefs recover the classic perspective. From a modeling point of view, this takes into account the scientific principal of parsimony, as relaxing the assumption of fixed preference can be represented by only one additional parameter.

$$\Theta_i \sim N(x_i, \sigma_{\Theta_i}) \tag{3.3}$$

The belief distribution represents the idea that each voter has a mean belief about her ideal policy platform (therefore I use the same notation as in the classic model x_i), but is uncertain if her most-preferred position might be slightly to the left or slightly to the right of it. The extent of uncertainty depends on the variance in beliefs σ_{Θ_i}. Figure 3.1 exemplifies the policy beliefs of two different voters. The two voters have different mean beliefs. The first voter's mean belief x_1 is to the left of voter two's belief x_2. The voters also differ in their belief variance. While the first voter is quite certain that her platform yields the most beneficial outcome, the second voter has a wider belief variance and therefore is clearly less certain that a specific platform is in her best interest.

The belief distribution can be integrated in the same utility function as the one above 3.2. The beliefs are not fixed to a specific platform, but follow the previously discussed distribution (3.3). This yields a random utility model:

$$U(C_k \mid \Theta_i) = -\beta \left(C_k - \Theta_i\right)^2 \tag{3.4}$$

Where a voter's ideal platform follows the adaptive utility specification. The important difference between the classic utility and the adaptive utility specifications, is that utility from a candidate's platform is random in the adaptive utility specification, because voters are uncertain about their own policy platform. In addition, the classic model is nested within the adaptive utility model: if the belief variance decreases - so that a voter becomes more and more certain that a platform represents her interest - the model equals the standard model. The question remains how this allows for wider notion of policy preferences?

3.3 How this allows for a wider notion of policy preferences

Integrating policy beliefs in the classic spatial voting model allows researchers to model policy preferences that are inconsistent, persuadable and endogenous. In the following subsection, I describe how policy beliefs can be employed to model these aspects. While the subsections are meant to provide an illustrative introduction, the actual mechanisms will be covered in more detail in Chapter 4 to 6, which addresses the electoral effect of these types of preference.

3.3.1 Policy beliefs can be inconsistent

Inconsistency in policy views means that these are less strongly constrained by the ideological dimensions of policy platforms. In the policy beliefs outlined above, citizens differ in their degree of certainty that a specific platform constitutes their ideal policy outcome. This uncertainty can originate from the fact that a citizen's attitudes towards policies are not organized in liberal vs. conservative terms. For example, two persons might derive their policy attitudes about access to public health care, increasing the minimum wage, and gay-marriage, to a varying degree from any one ideological platforms.

In order to see this more clearly, one can set up a model that explains a citizen's attitude towards specific policies as a function of her policy beliefs. Denote p_{ij} as persons i attitude towards a policy j, where positive values indicate support for the policy , negative values indicate opposition to the policy and values around zero are regarded as undecided opinions. The concept of the belief system tradition and that of the spatial voting tradition are similar to one another, as both suppose that policy attitudes can be expressed in terms of ideological policy platforms. Employing a simplified linear Item Response Model (IRT)[4], one can formulate this idea as follows:

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[4]The IRT Model does not include a constant, nor additional measurement error.

$$p_{ij} = b_j \Theta_i \tag{3.5}$$

Where Θ_i are a citizen's policy beliefs, for which we might suppose that increasing positive values indicate more liberal, and decreasing negative values more conservative platforms. In the equation, the policy specific parameter b_j captures how policy beliefs affect attitudes towards the concrete policy. If b_j is positive, individuals with more liberal platforms are more strongly in favour of this policy. Negative values indicate that liberals should be opposed to it.

This simplified model allows us to illustrate how an individual's policy views are understood in spatial voting tradition. As argued, spatial voting's depiction of policy preference supposes that all individuals possess an ideal platform, and thereby fixed policy beliefs $\Theta_i = x_i$. In the simplified model this implies that two respondents with the same ideal platform, should also possess the same policy views. Because, whenever $x_1 = x_2$ it follows that $p_{1j} = p_{2j}$. This illustrates what is meant by the well-defined preference assumption: all policy views of citizens are perfectly determined by their policy platform[5]. This assumption permits spatial voting theorists to model citizens' overall policy preference via their ideal platform.

The direct connection between policy platforms and policy views changes once we allow for policy beliefs with individual variance. Increasing belief variance about the ideal policy platform adds a source of randomness to citizens' policy views. Following a common conceptualization of public opinion, which states that policy views are created from the "top-of-the-head" (Zaller, 1992), implies that for citizens with high belief variance, policy attitudes will be less strongly related to their mean policy platform. Consider an example in which two citizens share the same mean belief $x_1 = x_2$, but the one possesses a clearly higher belief variance $\sigma_{\Theta_1} \ll \sigma_{\Theta_2}$. While the first citizen's attitudes on particular policy issues p_{ij} are closely connected to her mean policy platform, the second citizen's attitudes are less strongly constrained by her mean belief. We can split the policy beliefs Θ_i into mean beliefs x_i and random deviations from this, with a specific belief variance $\theta_i \sim N(0, \sigma_{\Theta_i})$. Such that: $\Theta_i = x_i + \theta_i$. Policy attitudes are then expressed as $p_{ij} = b_j(x_i + \theta_i)$, which illustrates that with increasing belief variance, specific attitudes can strongly diverge from the mean belief. Overall, this can lead to varying inconsistency: the first citizen's policy views (someone with a low belief variance) appear to be consistent with the ideological mean platform, but in the second citizen's case, the patterns can be quite inconsistent with the underlying dimensions. This means that a citizen's mean policy belief, which is analogous to a citizen's ideal platform, does not perfectly reflect all aspects about a citizen's policy preference[6].

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[5]At this point it is important to highlight that an appropriate IRT model would further suppose additional measurement error. Which can still cause the policy views of two individuals to appear different. For illustrative purposes this is set aside, as it would not change the conclusions from this section in any specific way, because the error variance of this should be constant for different individuals.

[6]Additionally, increasing belief variance should lead to more unstable responses over time, which is in line with Converse's original measurement of the concept (Converse, 1964).

Policy beliefs allow citizens' policy views to be inconsistent with underlying policy platforms. Explaining how this type of variation in a citizen's policy preference affects voting decisions, adds an additional source of heterogeneity to vote choice. Citizen policy preferences do not only differ in terms of their ideal-policy platform, but also in how consistently their overall policy views are depicted by these platforms. The consequences of this will be analyzed in Chapter 4.

3.3.2 Policy beliefs can be persuadable

Arguments can affect which platform a voter opts for, because they provide considerations concerning which platform is in this citizen's best interest. If an argument persuades a voter to reconsider his standing opinion on a particular policy issue e.g. from being opposed to an intervention in Syria, to being in favor of it, this should directly have an impact on her policy beliefs. A more hawkish, conservative platform should then better represent a voter's policy preference. In the long-term perspective, evaluating political argument therefore allows citizens to learn which political platform will yield the highest benefit, and to form reliable political preferences. Modeling the effect of political arguments becomes possible in the framework presented, because the adaptive utility formulation relies on policy beliefs, and an argument's consideration can also be specified in terms of beliefs.

This line of argumentation can be manifested by formalizing a process that permits citizen to learn about their ideal platforms, based on the evaluation of political arguments. Suppose that each political argument m_j about a specific policy j contains considerations that try to persuade a voter to either be in favor or opposed to the policy. Citizens receive these arguments, evaluate their contents and decide if they want to accept the view-point promoted by the argument. In the political science literature, such a receive-accept process is often employed to describe citizens' ongoing interaction with political information, and arguments (Zaller, 1992).

For citizens, the information contained in this receive-accept process, is the evaluation of the argument. If an argument is accepted, this contains information about the ideal policy platforms. From a learning perspective, the information originates from the fact that the probability of specific arguments being persuasive, differs between citizens with different policy platforms. A citizen with liberal policy beliefs is more likely to accept an argument in favor of gay-marriage, than a citizen with conservative policy beliefs. If a citizen finds an argument about gay-marriage persuasive, this contains information that should slightly alter her policy beliefs towards more liberal platforms.

In modeling terms, this learning process can be depicted using Bayesian learning. Given that an individual accepts a political argument, which shall be denoted as y_j, she can update her policy beliefs as to which platform is in her best interest.

$$\Theta_i \mid y_j \propto Pr(y_j \mid X) \cdot \Theta_i \tag{3.6}$$

$\Theta_i \mid y_j$ describes the posterior policy beliefs, given the accepted political argument. These beliefs will be proportional to the prior policy beliefs Θ_i and the likelihood of finding an argument persuasive, given varying policy platforms $Pr(y_j \mid X)$. What is of

special interest, then, is the likelihood of finding an argument persuasive, because this will determine in how far the posteriori beliefs change, compared to the prior beliefs.

The probability of accepting a political argument about a liberal policy can be thought of as increasing with more extreme liberal platforms. And decreasing in the case of a conservative policy. Representing this idea formally allows the researcher to employ the above equation (3.6) to study the consequences of accepting an argument about liberal policy. While a function that implements this idea is discussed in more detail in Chapter 5, the basic idea stemming from this concept is straightforward: Accepting an argument about a liberal policy should make a voter slightly more liberal, while accepting an argument about a conservative policy, should make her slightly more conservative.

All in all, policy beliefs naturally allow policy preference to be shaped by political arguments. The receive-accept process outlined above, and the Bayesian learning mechanism permit researchers to study the effect of political arguments on policy preference, and to examine how the continued evaluation of political arguments can affect a citizen's preference. While this approach opens up a multitude of research opportunities, this dissertation will focus on how one particular political argument can affect the voting decisions in Chapter 5.

3.3.3 Policy beliefs can be endogenous

For politicians who aim at generating large support for their political programs, politics is not only about giving the public what it wants, but also about how to alter what the public believes to be best for society in a given situation. This line of thought implies that politicians who communicate their policy platforms to the general public, not only intend to inform citizens about positions, but also want to shape citizens' policy belief in their direction. At the end of the day, persuading a share of citizens to follow their policy lead can tip the scale in their favor. But how does the alteration of citizens' preferences towards a specific party become embodied in a spatial voting theory? One aspect of this process is clear: it involves heterogeneity; while some are persuaded by one political candidate, others are persuaded by another candidate, and yet another group may decide to stick with their prior preference.

Understanding this process as the adaptation of policy beliefs, allows us to study the electoral consequences of a shift towards a candidate's campaign platform. From this perspective, a candidate's communicated platform entails an offer as to which platform is in a citizen's best interest. If a voter accepts such an offer, she should adjust her policy beliefs in the direction of that candidate. Thus, if we compare this voter at two points in time - before the offer, and after the accepted offer – there should be an observable shift of her mean policy beliefs towards the candidate. Just as in the effect of political arguments, this shift can be represented in terms of a Bayesian updating process.

I opt for a specification of this persuasion-process in which a voter's prior policy belief follows the equation discussed above (equation 3.3). Another aspect about this process is that a candidate's offer is likely to contain an element of uncertainty about the platform a voter should actually adopt. Information about a campaign platform is limited, so that citizens are unlikely to be able to pin down exact details about the

platform a candidate is offering[7]. This, essentially, results in uncertainty about the candidate's platform. I model this uncertainty as a normal distribution $\mathbf{C_j} \sim N(C_j, \tau_{C_j})$. Where C_j describes the mean platform of a candidate, and the variance around it τ_{C_j}. The larger this variance, the less clearly a candidate's platform is being communicated. In this set-up, voters are uncertain about their own ideal-platform, but also about the platform the candidate offers to them. If a voter accepts a candidate's offer, she updates her policy beliefs. Employing Bayesian learning, a voter's mean belief x_{it} at a specific point in time can than be expressed as a weighted average between the candidate's platform and the candidate's prior mean belief x_{it-1} .

$$x_{it} = \gamma_{ij}x_{it-1} + (1 - \gamma_{ij})C_j \tag{3.7}$$

The equation illustrates that if the voter finds the candidate's offer attractive, she will align her beliefs with the candidate's offer. In terms of Bayesian learning, the posterior beliefs will thus lie somewhere between the candidate's platform and the voter's prior policy beliefs. This can be understood in terms of a shift towards the candidate if a citizen is persuaded. Where γ_{ij} in the above equation shows the size of the shift. The parameter is bound between 0 and 1, and determined by a voter's belief variance, and the uncertainty about a candidate's offer. This implies two things: a) The clearer a candidate's offer, the stronger the shift. b) The wider a voter's policy beliefs, the stronger a voter's beliefs can be shifted around.

The outlined persuasion-process allows us to express endogenous policy preference. If some citizens are generally more likely to accept offers by a specific party, they will always alter their policy beliefs to align with this party. For example, suppose that citizens who identify with a specific party might be likely to be persuaded. Thus, if a party changes its nuclear power plant policy, party identifiers adopt this new position. Overall, the process would keep these citizens close to their party. Independent of what program their party offers, it would always match their policy beliefs, because they tend to adopt their party's view-point. In other words, they vote for the party not because it offers a matching program, but because they aligned their policy beliefs with those of the party they want to vote for. This would make their preference endogenous to the party offer[8].

To sum up, a similar process that describes how political arguments affect policy preference, can allow policy preference to be endogenous to party position-taking. Parties can potentially persuade a certain share of the voters to follow their policy lead.

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[7]This important aspect of the relation between candidates' position-taking and citizens' preferences, has been set aside in the beginning of the theory section, when debating how citizen's policy beliefs are integrated into a spatial voting model.

[8]One important alternative mechanism, how policy preference could be endogenous in the spatial voting model, is by projection rather than persuasion. Projection effects are given if citizens generally perceive a specific candidate as being closer to themselves than is it actually is the case. Although the primary focus and application of this dissertation is on persuasion, I am convinced that the belief model will be helpful in explaining projection processes as well. In the final chapter of the dissertation, I briefly describe how this model can also be used to model projection effects.

In Chapter 6, this dissertation puts considerable effort into understanding the electoral consequences of such a process over the course of an electoral campaign.

3.4   Summary

This chapter outlined an adaptive utility model of spatial voting. In this model, citizens' policy preferences are depicted by policy beliefs. I showed how this relates to the classic perspective, and argued that in addition to the standard depiction of preference used in spatial voting, this new analysis permits researchers to model inconsistent, persuadable and endogenous preferences. For each of these three, I discussed theoretical specifications which enable us to incorporate them in spatial voting analysis of the electoral process.

- *Policy beliefs can be inconsistent:* Increasing variance in policy beliefs, which illustrate that a voter is more uncertain about his ideal platform, can result in inconsistent policy preference. In an item response model, this results in a situation where respondents mean policy beliefs less strongly constraint their political view points on concrete issues, like high income taxation, or policies regarding illegal immigrants. This can makes their preference appear inconsistent.

- *Policy beliefs can be persuadable:* Political arguments are one source by which citizens can attempt to decrease uncertainty about their ideal platform. Arguments contain considerations why a person should adapt a specific policy platform. I showed that this argument- evaluation process can be modeled in terms of Bayesian updating. Given that a persons accepts a political argument, she should update her policy beliefs. This learning process makes preference persuadable: Actors could deliberately use arguments to alter citizens' policy beliefs.

- *Policy beliefs can be endogenous:* Party position-taking can offer crucial information to its supporters. I demonstrated the expected consequences of citizens adapting a candidate's position as signaled via a campaign: If a voter accepts a candidate's campaigned platform, the voter's mean policy belief will lie somewhere in between her prior beliefs and the candidate's offer. People who identify with a specific party might be prone to always altering their policy beliefs to mirror their party's position. This will make their preference endogenous to party position-taking.

The focus of this dissertation is on how this wider definition of policy preference affects voting decisions. Building on the discussed specifications already outlined, the following chapters will derive theoretical expectations as to how the three aspects can impact citizens' voting decisions. When the implications of the theory has been established, I shall further proceed with the provision of empirical evidence for these implications.

Inconsistent policy preferences and their electoral consequences

4.1 Introduction

Decades of democratic theory build on the premise that citizens possess well-defined preferences about policy outcomes (Downs, 1957; Key, 1966). Parties and candidates announce policy platforms to communicate their positions, and citizens choose from them to elect representatives who match their interests. Policy-based voting is an important mechanism in these models, as it couples governments' actions with citizens' preferences: In order for governments to get reelected, they need to offer policy platforms which are approved by a majority of citizens. Spatial theories of voting and empirical tests thereof promote the idea that policy-distance is indeed an essential factor in citizens' voting decisions (see e.g. Westholm, 1997; RePass, 1971; Jessee, 2009).

A long-standing school within this field of political science has challenged the perspective that citizens' well-defined preferences are especially useful in explaining and understanding democratic representation. The researchers stress that citizens base their political behavior on unstructured beliefs and attitudes rather than well-defined preferences. From Converse's early "non-attitude model" (Converse, 1964), through studies of preference formation (Zaller, 1992; Feldman, 1988), to the impact of ideological thinking (Jacoby, 1991; Lavine and Gschwend, 2007) the bottom-line of this area of research is, that it doubts whether well-defined preference is a sensible assumption for explaining voters' behavior. One general conclusion emerging from all of the above studies, is that citizens differ in the degree of consistency in their policy preferences - some citizens express preferences that are more constrained by underlying political dimensions than those held by others.

Spatial voting theories cannot address the concerns raised by behavioral researchers as they assume that all citizens possess well-defined preferences. Conclusions from behavioral research, on the other hand, are seldom incorporated in a coherent policy-

based voting model [1]. In this chapter, I employ the adaptive utility model as outlined in Chapter 3 of this dissertation to integrate inconsistent policy preference into a general policy-based voting model. The conceptualization of policy beliefs makes allowance for varying consistency in preferences: some voters are more certain than others that a specific policy platform represents their interest.

Based on this, I analyze whether inconsistent policy preferences affect citizens' voting decisions. I discuss two mechanisms for doing this. First, an expected utility model predicts that inconsistency should not affect voting, as it maintains that the evaluation of all candidates' policy platforms is influenced by inconsistency to an equal share. Second, a learning model would stand in contrast to this hypothesis. For citizens with inconsistent policy preferences who attempt to learn about the utility-difference between two candidates, policy platforms would prove less informative. This is because, for citizens, the information contained in the candidates' platforms depends on their own policy beliefs. Therefore, citizens with inconsistent policy preferences will put considerably less weight on policy when learning about utility differences between candidates.

This chapter tests the two contrasting expectations using Data from the American National Election Study (ANES). I find that for respondents with a higher inconsistency in self-placements on the liberal-conservative scale, policy-distance is less important in explaining voting decisions. This finding supports the implications from the learning model, and questions to what degree the assumption that all voters possess the same well-defined preferences is a reasonable starting point for studying representative democracy.

4.1.1 Inconsistent policy preferences and voting

Since Downs's seminal contribution (Downs, 1957) , spatial voting theories have analyzed voting behavior under the premise that citizens' hold well-defined policy preferences about political outcomes. Political outcomes are described by policy platforms that are ordered along a liberal-conservative ideological dimension. Well-defined, then, refers to the idea that all citizens' policy views are perfectly captured by these platforms. Building on this idea, most spatial voting theories make the implicit homogeneity assumption that two voters with the same ideal platform also possess the same policy views (see e.g. Jessee, 2009; Kedar, 2005; Adams, Merrill and Grofman, 2005; Schofield and Sened, 2006; Ansolabehere, Rodden and Snyder, 2008).

The assumption that citizens' preferences are well-defined by ideological platforms stands in contrast to results from studies regarding public opinion and mass belief systems. Here, research highlights the varying degree of consistency in citizens' preferences, and questions in how far all citizens' policy views can be approximated by political platforms. We might express this in a more drastic form by saying that Converse's "Black and White" model divided the general public into citizens with ideologically consistent and constrained policy views, and those without (Converse, 1964). While early work addressed the methodological and epistemological questions concerning this supposition (Stimson, 1975; Sullivan, Piereson and Marcus, 1978), later

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[1]A notable exception is Lavine and Gschwend (2007)

research attempted to deepen our overall understanding of it. Researchers argued that while citizens show little sign of consistency and stability in policy views, it is still possible to identify individual "core values" and "predispositions" that appear to be consistent and stable (Feldman, 1988). Generally-speaking, citizens seem to vary in their reliance on ideological thinking about matters of politics (Jacoby, 1995) and therefore show varying degrees of inconsistency (Jacoby, 1991). More fine-grained theoretical models were developed to explain where this variation came from. Zaller's well-known Receive-Accept-Sample model explains individual variation via varying attention to public debate about politics (Zaller, 1992).

Overall, this school of thought within the literature claims that there is considerable heterogeneity between citizens, as to how far view points are approximated by policy platforms. Although for some citizens, ideal policy platforms are a reliable abstraction of their opinions, for others they are not. Many studies reject these concerns, by attributing such conclusions to falsely specified empirical models that do not sufficiently account for measurement error. While Converse used the lack of correlation between different survey waves and within-surveys as an indication for his "non-attitude" model, subsequent papers, relying on structural equation models (Achen, 1975; Jackson, 1983; Moskowitz and Jenkins, 2004), or other approaches (Ansolabehere et al., 2008), show that latent policy preferences are actually consistent and stable enough to reject the notion of an unsophisticated public with no meaningful preferences about policies. These findings strengthen spatial voting's portrayal of representative democracy, by justifying the well-defined policy preferences' assumption. Nonetheless, the central claim of follow-up public opinion research is not that *all* citizens possess inconsistent preferences but that important heterogeneity between citizens exists. In fact, recent studies in the measurement error tradition, like those by Ansolabehere, Rodden and Snyder (2008), find heterogeneity between citizens' policy preferences.

Moreover, what matters for representative democracy is not that some citizens show signs of potential inconsistency, but how this could affect the election of representatives. This chapter departs from the standard debate about citizens' preference structure, by posing the question of the electoral consequences, rather than debating the assumption itself. This follows leading researchers in the field, who advise that we should take findings that question well-defined preference seriously, when thinking about representative democracy, because without preferences, understanding democracy as the aggregation of its citizens' preferences, reduces to absurdity (Bartels, 2003). Earlier research, as will be discussed in the following paragraphs, had picked up this focus and tried to explain the electoral effects of variation in citizens' preference structures.

Within the spatial voting literature, there is a long-standing political-sophistication supposition. This supposition states that politically sophisticated individuals are more prone to follow a policy-based evaluation of politicians and parties, when compared to less politically sophisticated people (Carmines and Stimson, 1980; Jacoby, 1995; Knight, 1985). The idea is that 'less-sophisticates' rely less on policy-distance, but rather use other factors to evaluate candidates and parties. Put in the words of Lavine and Gschwend: "whereas sophisticates are attuned to the abstract liberal/conservative character of political debate, non-sophisticates respond to political stimuli using simpler more proximal considerations" (Lavine and Gschwend, 2007). Lavine and Gschwend were the first to offer a theoretical framework of how heterogeneity in ideological

thought conditions vote choice. Based on dual-processing theories of information, they argue that capacity for ideological thought increases reliance on policy considerations, and decreases reliance on other factors. Unfortunately, their approach is not directly integrated in a formalized policy voting theory, which potentially prevents Downsian theorists from relying on their perspective in modeling representative democracy. In this chapter I formalize this supposition and integrate this perspective into a comprehensive theory of spatial voting.

Directional theories of spatial voting also tried to integrate doubts about citizens' ideological competence into a general policy-based voting theory. Directional theories of vote choice argued that citizens have a less concrete notion of policy preferences, as outlined by the classic model. The basic claim is that citizens' preferences are actually directional, citizens prefer parties that are on their side of the ideological spectrum (Matthews, 1979) and prefer parties that take on more intense positions (Rabinowitz and Macdonald, 1989). An ongoing debate between supporters of directional theories and supporters of proximity theories yields no clear supportive evidence for either perspective (Lewis and King, 1999). From my standpoint, there is one major reason why directional and classic models have not been synthesized sufficiently. Directional models make the same homogeneity assumption as the classic models do, but formulate them in the 'opposite' direction: All individuals possess a vague directional policy preference. This is opposed to the homogeneity assumption in the classic model, in which all citizens possess the same coherence in policy preference[2]. I take a different perspective on how inconsistent policy preference can be integrated into a spatial voting model. I argue that citizens have a different degree of policy consistency and model this in terms of individual uncertainty: Some are more certain than others that a specific policy-platform represents their policy interest.

All in all, none of the extensions in classic spatial voting gives a sufficient theoretical answer to the question regarding the consequences of heterogeneity in consistency of policy preferences. In the following section, I outline how the extension of this dissertation can be used to represent inconsistent preferences and to formulate expectations about the effect of these on voting decisions.

4.2 Theory

Building on the adaptive utility model of this dissertation, the following section derives expectations about the impact of inconsistent policy preference on voting decisions. I first repeat how exactly the conceptualization of policy beliefs can be employed to represent inconsistency in policy views[3]. I then outline two approaches of how inconsistency can influence expected utility and thereby voting decisions: An expected

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[2]Another aspect about the debate is that preferences, as outlined by Rabinowitz and Macdonald (1989), are defined on different policy dimensions from those in the classic model. While the classic model defines preferences over policy dimensions, where positions are platforms that have consequences regarding policy decisions of the politicians, directional models define dimensions, where positions represent intensity. It is unclear how these two conceptualizations can be tested against each other with the same data-source.

[3]Readers who feel comfortable with the conceptualization from Chapter 3 might decide to skip the next section.

utility model and a learning model. The two approaches result in opposing implications that are discussed in the final part of this section.

4.2.1 Representing inconsistent policy preferences

Inconsistency in policy preferences can be modeled in terms of varying policy beliefs. The conceptualization of policy beliefs in this dissertation is based on the sociological model of belief systems as it is most famously associated with Converse (1964). The sociological model of belief systems states that policy views are organized into a consistent ideological structure by political elites, and that the general public adapts these constraints to a different degree. While citizens differ in their tendency towards liberal or conservative platforms, they also differ on how strongly this constrains their policy attitudes. I assume that policy beliefs are represented by a normal distribution about the ideal political platform[4]. Let policy platforms X be defined on one dimension $X \in \mathbb{R}$ and Θ_i describe a voter's ($i \in (1, \dots, N)$) policy belief. We can write:

$$\Theta_i \sim N(x_i, \sigma^2_{\Theta_i}) \tag{4.1}$$

This expression equals the central specification of policy beliefs from the Chapter 3 (Equation 3.3). It implies that each voter's preference over platforms differs in position x_i and variance $\sigma^2_{\Theta_i}$. The policy beliefs can also be understood in terms of individual uncertainty about their ideal policy platform. This idea is covered in adaptive utility theory (Cyert and DeGroot, 1987; Calvert, 1985b), in which the reward from a certain outcome is uncertain for the decision maker themselves and depends on individual beliefs. Adaptive utility has been argued to be a useful model for spatial voting, as it is reasonable to assume that the rewards from a certain policy platform are never directly observed, but are to some degree always dependent on political beliefs about how much better the implementation of the policy will be for a voter (Gerber and Jackson, 1993). The perspective put forward here notes the close connection between adaptive utility theory and models of belief systems.

Policy beliefs can systematically affect consistency of policy views. For example, a voter might expresses opposing attitudes for two liberal polices; an inconsistency that might be related to a wide belief variance. To illustrate this, I set up a simplified linear item response model for two liberal policies: $p_{ij} = \beta_j \Theta_i + \epsilon_{ij}$, where $j \in (1, 2)$ refer to two policies and $i \in (1, 2)$ to two different citizens. Values of p_{ij} below zero indicate opposition to a policy, and values indicate the favoring of a policy. Suppose that both policies discriminate equally well ($\beta_j = 1$) and that our instrument shows only little normally distributed measurement error ($Var[\epsilon_{ij}] = 1$). Although both voters can have the same liberal position ($x_i = 1$), unequal belief variances ($\sigma^2_{\Theta_1} = 0.1$ and $\sigma^2_{\Theta_2} = 1$) might have the effect that the policy preferences of one voter seem consistent (as the probability that both preference are liberal is quite high $Pr(p_{11} > 0 \cap p_{12} > 0) = 0.99$), while the other voter's preferences seem to be inconsistent (probability one

---

[4]I will rely on one underlying dimension throughout the chapter. The model can easily be extended to multiple underlying dimensions.

conservative other liberal is high $1 - Pr(p_{21} > 0 \cap p_{22} > 0) = 0.33)$. The reason for this is straightforward: in addition to measurement error, voters vary in the extent to which their attitudes are constrained by underlying policy dimensions[5]. This simple example can be generalized to account for inconsistency in surveys. Increasing belief variance adds an additional source of randomness to answering patterns on different policy issues - and causes answering patterns to be inconsistent with political platforms. This line of thought is picked up in the empirical section of this chapter to derive a operationalization of inconsistency that reflects the theoretical conceptualization of policy beliefs.

In contrast to the model I introduce here, standard models of spatial voting rely on the assumption that beliefs over policy platforms only vary in position. The implicitly assumption is that all voters have the types of constraints, which - from a adaptive utility perspective - means they would all be equally certain with respect to which platform represents their interests best. Formally, in these theories, voters beliefs' are fixed to a specific value $\Theta_i = x_i$, where $x_i \in X$ represents the most preferred policy-platform. Obviously, the standard model is nested within this extension: Assuming that all voters possess a belief variance of zero recovers the standard model. My extension to this model allows to relax the fixed preference assumption and study the consequences of varying inconsistency for voting behavior. In the next section I incorporate policy beliefs into the standard spatial vote choice model.

4.2.2 The influence of policy beliefs on voting decisions

Policy beliefs can be included in the spatial model of probabilistic voting (Adams, Merrill and Grofman, 2005), allowing for an analysis of the consequences of varying inconsistency for observed voting behavior. Commonly, a voter's evaluation of a candidate is expressed in terms of expected utility $\mathbb{E}[U_{ik}]$ and additional unobserved factors ϵ_{ik}. In the following sections, I analyze a voter's $i \in (1, \ldots, N)$ decision between two candidates $k \in (1, 2)$. Voter i will vote for candidate 1 if $V_{i1} > V_{i2}$, and respectively for candidate 2 if $V_{i2} > V_{i1}$. V_{ik} will be determined by expected utility and other, randomly distributed, factors.

$$V_{ik} = \mathbb{E}[U_{ik}] + \epsilon_{ik} \tag{4.2}$$

Of theoretical concern, then, is how voter's form their expected utility based on the candidate's communicated platform. In spatial voting, utility is derived from the closeness of a candidate's policy platform to a voter. Thus, each voter i receives utility U_{ik} given her policy beliefs Θ_i from the closeness of a candidate's platform $C_k \in X$.

---

[5]This model only holds if belief constraints affect responses about concrete policy like additional measurement error. Building on models of survey response, I believe that this a reasonable assumptions. Respondents express policy preference based on consideration that are at their "top-of-the-head" (e.g. Zaller, 1992), and for respondents with narrow constraints, underlying dimension are stronger than for those with wider belief distributions.

In order to model the closeness of a candidate's platform, I employ a quadratic loss function from a voter's policy belief towards a candidate[6].

$$U(C_k \mid \Theta_i) = -\beta \left(C_k - \Theta_i\right)^2 \tag{4.3}$$

β depicts the importance of policy distance on a voter's utility evaluation. Please note that utility $U(C_k \mid \Theta_i)$ is a random variable as a voter's preference over the platforms follow the policy beliefs Θ_i, rather than fixed ideal-platforms. Put differently, voters are uncertain about the utility they will receive from a candidate because they are uncertain which platform they most prefer[7].

4.2.3 Expected utility model

The standard way to deal with uncertainty in a spatial voting models is to set up the utility function and form the expectation over the whole utility term, in order to understand how uncertainty enters utility (see e.g. Enelow and Hinich, 1981). Following this expected utility approach, a voter's policy beliefs concern both candidates, and as result are expected to cancel out.

In order to arrive at this result, the expectation of the utility model in 4.2 can be simplified by expressing policy beliefs in terms of a mean belief x_i, and an additional random belief variance, centered around zero $\theta_i \sim N(0, \sigma^2_{\Theta_i})$. Following from this, we can substitute Θ_i by $x_i + \theta_i$, and form an expectation over the whole utility term:

$$
\begin{aligned}
\mathbb{E}\left[U(C_j \mid \Theta_i)\right] &= \mathbb{E}\left[-\beta\left(C_k - \Theta_i\right)^2\right] \\
&= \mathbb{E}\left[-\beta\left(C_k^2 - x_i - \theta_i\right)^2\right] \\
&= \mathbb{E}\left[-\beta\left(C_k^2 - C_k x_i - C_k \theta_i + x_i^2 + 2x_i\theta_i + \theta_i^2\right)\right] \\
&= \mathbb{E}\left[-\beta\left(C_k^2 - C_k x_i + x_i^2 + \theta_i^2\right)\right] \\
&= \mathbb{E}\left[-\beta\left(C_k - x_i\right)^2\right] + \mathbb{E}\left[-\beta\theta_i^2\right]
\end{aligned}
\tag{4.4}
$$

---

[6]This functional form implies that voters are risk-averse in policy-distance (see e.g. Ye, Li and Leiker, 2011), which has the important implication that variance in policy beliefs negatively affects expected utility. Assuming other commonly employed norms (e.g. euclidean or city block norm) would make conclusion from the learning model analytically intractable. The intuition for this model does not change though: the signal is more informative for voters with smaller belief variance, which results in a stronger updating about the expected difference in utility

[7]Since the primary concern of this section is how policy beliefs on the voter side influences voting decisions, I assume that all candidate platforms are perfectly observed. Analyzing the interplay between uncertainty about a candidate's position and variance in policy beliefs is beyond the scope of this chapter.

The belief variance $\sigma^2_{\Theta_i}$ enters the expected utility, because $(C_k - \Theta_i)^2$ is a concave function, which implies that voters are risk-averse (expectation of the squared term is $\mathbb{E}\left[\theta_i^2\right] = \sigma^2_{\Theta_i}$). Thus, the expected utility for a candidate's platform can be written as:

$$\mathbb{E}\left[U(C_k \mid \Theta_i)\right] = -\beta\left(C_k - x_i\right)^2 - \beta\sigma^2_{\Theta_i} \tag{4.5}$$

where the penalizing uncertainty term $-\beta\sigma^2_{\Theta_i}$ is constant over different candidates. Because voting probabilities are formulated in terms of the difference in utility this term is equal for both candidates utility evaluation, (and as result cancels out,) when analyzing the probability to vote for candidate one[8]:

$$
\begin{aligned}
Pr\left[V_{i1} > V_{i2}\right] &= Pr\left[-\beta\left(C_1 - x_i\right)^2 - \beta\sigma^2_{\Theta_i} + \epsilon_{i1} > -\beta\left(C_2 - x_i\right)^2 - \beta\sigma^2_{\Theta_i} + \epsilon_{i2}\right] \tag{4.6} \\
&= Pr\left[-\beta\left(C_1 - x_i\right)^2 + \beta\left(C_2 - x_i\right)^2 > \epsilon_{i2} - \epsilon_{i1}\right] \\
&= Pr\left[-\beta\left[\left(C_1 - x_i\right)^2 - \left(C_2 - x_i\right)^2\right] > \epsilon_{i2} - \epsilon_{i1}\right] \\
&= \Phi\left[-\beta\left[\left(C_1 - x_i\right)^2 - \left(C_2 - x_i\right)^2\right]\right]
\end{aligned}
$$

In accordance with the often-applied probit model in spatial voting, voting probabilities are systematically influenced by the difference in distance of each candidate's platform to a voter's mean policy belief. In this expression, only a voter's mean belief about her ideal policy platform matters x_i. This implies that two citizens who have the same mean belief but different belief variances are expected to have the same voting probabilities. Variance in policy beliefs as the representation of inconsistent policy preference does not influence voting decisions.

The expected utility approach comes with two questionable assumptions. It is neither entirely clear where the homogeneous importance of policy-distance β in this model comes from, nor does the model specify how the information about the candidate enters into the expected utility. I argue that it is more reasonable to analyze the formation of the expected utility in terms of two distinct actors that communicate with each other. The next section describes a learning model that presents this idea more closely.

4.2.4 Learning model

An approach that highlights the interaction between candidates and voters might suppose that candidates send certain information about themselves and voters process

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[8]A few further assumptions about the unobserved factors in V_{ik} are necessary to get to a standard probit representation. As already discussed, if researchers observe that a voter chooses candidate 1 over candidate 2, the expected utility plus unobserved other factors $V_{ij} = \mathbb{E}[U_{ij}] + \epsilon_{ik}$ has to be higher than for the second candidate $V_{i1} > V_{i2}$. Making the assumption that the additional unobserved factors follow a normal distribution with an arbitrary error variance of .5, thus: $\epsilon_{ik} \sim N(0, 0.5)$, allows to derive a probit model with difference in policy distance. The choice of the error variance is arbitrary and made for the purpose of simplicity. Supposing a more general variance σ would effect the importance of policy distance in the probit model, by a deviation of two times σ: $\frac{\beta}{2\sigma}$. This would not change the general implications in any meaningful way.

this to learn what they can expect from the candidates. This learning model focuses on how the communicated policy platforms alter difference in expected utility. The argument based on this is relatively straightforward: For voters with inconsistent policy preferences, information contained in platform signals is less informative, compared to voters with consistent preference. This holds because the information contained in the candidate signal depends on the degree of uncertainty a voter possesses about her ideal platform. Expected utility is less strongly affected by policy distance for voters with a strong policy belief variance who are uncertain about their ideal policy-platform, when compared to those with a low belief variance.

In order to cover this idea more formally, a model might suppose that a priori, a voter possesses certain information about the utility difference between candidate 1 and candidate 2 that is normal distributed around zero with some variance τ[9]. In this modeling approach, prior utility difference is depicted by a distribution $P\left(U_{ij} - U_{ik}\right)$.

$$P\left(U_{ij} - U_{ik}\right) \sim \mathcal{N}\left(0, \tau\right) \tag{4.7}$$

In the next step candidates signal their policy platform C_j, C_k. As the primary focus of this analysis is on inconsistency, we might suppose that these signals are perfectly observed by all voters. The information contained in these signals about the utility difference between the candidates $U_{i1} - U_{i2}$, follows the difference in policy distance as outlined by 4.3. If candidate 1 signals that her policy platform is the same as the voter's mean belief, and candidate 2 signals a more extreme platform, the information for the voter is that candidate 1 will yield considerable higher utility. However, although the candidates' signals are perfect, the information about utility is not, because voters themselves are uncertain about their ideal policy outcome.

The information in candidate signals can more formally be denoted as the likelihood. This function, essentially, depicts how likely the signals are given varying differences in utility between the candidates. I obtain the likelihood of the signals by plugging in voters' policy beliefs (as outlined model by 4.3) in a utility function that is affected by the difference in quadratic loss between two candidates platforms. Again, simplifying

---

[9]I suppose that the prior utility is centered around zero to simplify the posteriori expression.

the expression by dividing policy beliefs in mean belief x_i and random belief variance $\theta_i \sim N(0, \sigma_{\Theta_i}^2)$ results in the following[10]:

$$
\begin{aligned}
P(C_1, C_2 | U_{i1} - U_{i2}) &= -\beta \left[(x_i + \theta_i - C_1)^2 - (x_i + \theta_i - C_2)^2 \right] \\
&\sim N \left(-\beta \left[(C_1 - x_i)^2 - (C_2 - x_i)^2 \right], 4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2 \right)
\end{aligned} \tag{4.8}
$$

The likelihood is normally distributed around the difference in quadratic loss of the candidates signaled positions (C_1 and C_2) to a voter's mean policy belief x_i. Of special concern is the variance term: $4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2$. What can be seen from this expression is that the variance depends on a voter's belief variance. For voters with consistent policy preferences, the variance is smaller, which makes the signals more informative. For voter with a wider belief variance, the information in the signal is weaker.

Voters can use the information contained in the signals to update their prior utility difference, addressing the question of what the utility difference is given the platform signals $P(U_{i1} - U_{i2} | C_1, C_2)$. Supposing that voters form this expression employing Bayesian updating implies that the posterior beliefs are proportional to the prior and the likelihood $P(U_{i1} - U_{i2} | C_1, C_2) \propto P(U_{i1} - U_{i2}) P(C_1, C_2 | U_{i1} - U_{i2})$. The posteriori is then the mixture between two normal distributions. What matters for vote choice (because voters employ expected utility) is the expectation of this posterior. As a mixture, the expectation will lie between the expectation of the prior and the expectation of the likelihood. Because I suppose that the prior is centered around zero, the posterior expectation will lie between zero and expectation of the likelihood. Depending on degree of information in the signals, which is affected by the variance term, this will be closer to zero, or closer to the expectation from the likelihood. The expectation of the posterior can be formulated in the following way[11] :

---

[10] Intermediate steps to get to this expression. I first rearrange terms

$$
\begin{aligned}
P(C_1, C_2 | U_{i1} - U_{i2}) &= -\beta \left[(x_i + \theta_i - C_1)^2 - (x_i + \theta_i - C_2)^2 \right] \\
&= -\beta \left[(C_1^2 - 2C_1 x_i - 2C_1 \theta_i + x_i^2 + 2x_i \theta_i + \theta_i^2) - (C_2^2 - 2C_2 x_i - 2C_2 \theta_i + x_i^2 + 2x_i \theta_i + \theta_i^2) \right] \\
&= -\beta \left[(C_1^2 - C_1 x_i + x_i^2) - (C_2^2 - 2C_2 x_i + x_i^2) - 2C_1 \theta_i + 2x_i \theta_i + \theta_i^2 + 2C_2 \theta_i - 2x_i \theta_i - \theta_i^2 \right] \\
&= -\beta \left[(C_1 - x_i)^2 - (C_2 - x_i)^2 \right] - \beta \left[-2C_1 \theta_i + 2C_2 \theta_i \right] \\
&= -\beta \left[(C_1 - x_i)^2 - (C_2 - x_i)^2 \right] - 2\beta \left[C_2 - C_1 \right] \theta_i
\end{aligned}
$$

Because θ_i is a random variable the whole expression is a random variable as well. The expectation of this expression is equal to the first part $-\beta \left[(C_1 - x_i)^2 - (C_2 - x_i)^2 \right]$, because the expectation of θ_i is zero. The variance of the expression is constructed from the second part which is normal (because θ_i is normal) with standard deviation of $4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2$

[11]

The complete posterior distribution is normal, according to:

$$
P(U_{i1} - U_{i2} | C_1, C_2) \sim N \left(-\beta \frac{\tau}{\tau + 4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2} \left[(x_i - C_1)^2 - (x_i - C_2)^2 \right], \frac{\tau 4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2}{\tau + 4\beta^2 (C_2 - C_1)^2 \sigma_{\Theta_i}^2} \right)
$$
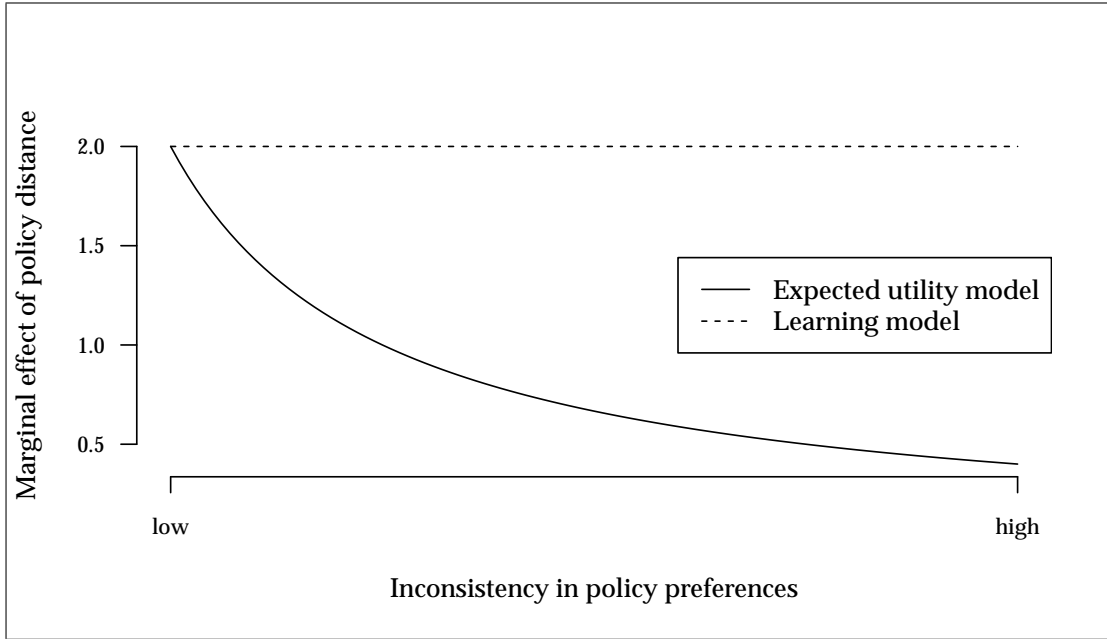
Figure 4.1: Contrasting observable implications of two models how voters form expected utility for an illustrative example

$$\mathbb{E}\left[P\left(U_{i1} - U_{i2}|C_1, C_2\right)\right] = -w_i\beta\left[(x_i - C_1)^2 - (x_i - C_2)^2\right] \tag{4.9}$$

where the weight $w_i = \frac{\tau}{4\beta^2(C_1 - C_2)^2\sigma_{\Theta_i}^2 + \tau}$ depends on a voter's variance in policy beliefs $\sigma_{\Theta_i}^2$ and thereby on the inconsistency in policy preference. If inconsistency increases, the weight on policy distance decreases. This is contrary to the expectation from the expected utility approach, because in addition to the homogeneous effect parameter β, voters put different weights on policy aspects. Following a similar voting model to the one in 4.3.1, this shows that the voting probabilities are less strongly affected when comparing voters with same mean positions but different inconsistencies. Formally, the marginal effect of distance on expected utility $w_i\beta$ decreases with higher levels of inconsistency. For voters with consistent beliefs ($\lim_{\sigma_{\Theta_i}^2 \to 0} w_i\beta = \beta$), the effect is the same as in the expected utility model, but for voters with inconsistent beliefs policy distance less strongly impacts utility. In the most extreme case, policy distance has no effect at all ($\lim_{\sigma_{\Theta_i}^2 \to +\infty} w_i\beta = 0$), because the platform signals are not informative to these voters. This analysis permits to derive observable implications that shall be outlined in the next subsection.

4.2.5 Implications: The effect of inconsistency on voting behavior

The two models of how a candidate's platform affect a voter's evaluation, yield opposing expectations in how far inconsistency affects voting decisions. While the expected utility model allows to derive the hypothesis, that the importance of policy distance is not affected by policy inconsistency, the results from the learning model contrast this:

Policy-distance should be more important for voters with consistent policy preferences, and less important for those with inconsistent preferences. Figure 4.1 illustrates the marginal effect on expected utility differences for the expected utility approach and the learning model[12]. In the learning model, I expect that the marginal effect is decreasing for higher levels of inconsistency.

H 1 *Increasing inconsistency in policy preferences decreases the effect of policy-distance on voting probabilities.*

The effect stays constant in the expected utility approach, which allows to derive a null-hypothesis:

H 2 *Inconsistent policy preferences do not moderate the effect of policy-distance on voting probabilities.*

Both mechanisms are theoretically plausible: Inconsistency in policy preferences might cancel out in the voter's calculus, because it concerns all candidates equally, or policy information about candidates' platforms is more informative for voters with consistent preference, compared to voters with inconsistent preferences. The fact that I am able to derive contrary hypotheses underlines the importance of an empirical test that closely follows the conceptualization of the theory model.

4.3 Empirics

In this section I put the two opposing implications about the effect of inconsistent policy preference on spatial voting decisions to a test, employing data from the 2008 American Presidential Election. I first outline a modeling approach that closely mimics the theoretical formulation of how voters form expected utilities. In order to test if voting is affected by inconsistency, I introduce a novel approach to measuring respondents inconsistency from survey responses and a policy-weighted model to estimate the moderating effect this can have on voting decisions. The results from the empirical analysis indicate support for the learning model - respondents with inconsistent preference put considerable less weight on policy when deciding between two candidates. I further describe how far the results are robust to other model specifications, other measurements and unobserved confounders.

4.3.1 A policy-weighted model for voting decisions

The expectations from the theory section can be tested using an empirical specification similar to the learning model [13]. According to this model, respondents should put

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[12]The illustration depends on speciifc paramters. I set the two candidates to $(-0.25, 0.25)$ and the importance of policy β to 2.

[13]The standard way to test mediation in generalized linear models are interaction effects. I decided to use the outlined weight-model instead, as it closely matches the theoretical expectations. For example, while an interaction model allows the marginal effect of policy distance on utility to change sign with increasing inconsistency, the theoretical specification does not. Policy distance positively affects utility for all voters, but is less strongly so for voters with inconsistent policy preference. Nonetheless, I also run the analysis with interaction effect models. The results are unaffected by this decision.

varying weights on policy-distance when deciding between two candidates. Weight on policy-considerations should decrease with increasing inconsistency. If this hypothesis were to hold, it would yield support for the learning model. Rejecting the hypothesis would indicate support for the expected utility model. The expected utility specification ($\mathbb{E}[U_{i1} - U_{i2}]$) according to is:

$$\mathbb{E}[U_{i1} - U_{i2}] = -w_i\beta\left[(x_i - C_1)^2 - (x_i - C_2)^2\right] \tag{4.10}$$

where x_i is a respondent's mean belief, C_1, C_2 the candidates' platforms, β the importance of policy, and w_i is the individual specific weight respondents assign to policy-distance.

For the empirical specification, the theoretical weight needs to be slightly adjusted. The most important aspect of the theoretical weight (which I derived to be $w_i = \frac{\tau}{4\beta^2(C_j - C_k)^2\sigma_{\Theta_i} + \tau}$) is the effect of inconsistency. In order to address the question of whether the weight is negatively influenced by higher levels of inconsistency, I simplify the denominator expression $4\beta^2(C_j - C_k)^2\sigma_{\Theta_i}$ to only include the linear effect of inconsistency $\delta\sigma_{\Theta_i}$. This is sensible, as the other expressions $4\beta^2(C_j - C_k)^2$ do not depend on individual factors. The denominator expression is further positive (because all parts of the expression are). Thus, I employ a transformation of the linear effect of inconsistency, using the exponential: $exp(\delta\sigma_{\Theta_i})$. Moreover, to identify both β and the effect of inconsistency δ on the weight, a few parameters are set to specified values[14]. All in all, this results in a specification where one can estimate the weight at different levels of inconsistency: $\frac{1}{1+exp(\delta\sigma_{\Theta_i})}$. In this, δ depicts the effect of inconsistency on the weight. If δ is zero, the weight is constant over different levels of inconsistency, with an effect of policy distance of $\frac{1}{2}\beta$. If δ is positive, the effect of policy distance decreases with inconsistency, and if δ is negative, the effect increases. Thus, under the learning model, I would expect a positive effect, and under the expected utility model δ should be zero.

The empirical specification is completed by further adding an intercept, a set of sociodemographic and political controls (all covariates are collapsed in $\mathbf{X_i}\gamma$, where X is $N \times K$ matrix, and γ is a vector of size K and discussed further in the next section). Given that y_i is a binary indicator if a respondent intends to vote for the first candidate $y_i = 1$ or the second candidate $y_i = 0$, the complete specification of the predicted probability $\pi_i = Pr[y_i = 1]$ is given by:

$$Pr\left[y_i = 1\right] = \Phi\left[-\frac{\beta}{1 + exp(\delta\sigma_{\Theta_i})}\left[(x_i - C_j)^2 - (x_i - C_k)^2\right] + \mathbf{X_i}\gamma\right] \tag{4.11}$$

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[14]First of all, τ from the theoretical specification is set equal to 1. Additionally, I do not include a constant term in the parametrization of the weight. Otherwise higher values of β can always be substituted by lower levels of τ and/or the constant term. As such, the effect of policy-distance on utility when only including a constant in the weight-specification is not identified, as higher values can be substituted by higher values of the constant $\frac{1}{1+exp(\delta_0)}\beta$. To see this, suppose the overall effect of policy-distance is 2. Different sets of parameters can yield this overall effect. E.g. $\beta = 4$ and $\delta = log(1)$, $\beta_0 = 8$ and $\delta_0 = log(2)$

I obtain estimates for the model using a Maximum Likelihood estimator (MLE). Because a respondent's voting intention is Bernoulli distributed $y_i \sim Bern(\pi_i)$, the joined log-Likelihood is given by

$$lnL(\beta, \delta, \gamma \mid \sigma_{\Theta_i}, y_i, C_j, C_k, x_i, X_i) = \sum_{i=1}^{N} y_i \pi_i + \sum_{i=1}^{N} (1-y_i)(1-\pi_i) \qquad (4.12)$$

Given the data, I maximize the log-Likelihood function directly, using the Broyden-Fletcher-Goldfarb-Shanno algorithm implemented in **R**'s optim function. Measurements of respondents' inconsistency, candidates policy platforms, respondents policy beliefs, voting intentions and a set of controls are taken from the American National Election Study. The next section describes theses operationalization more closely.

4.3.2 Measurement of inconsistency and policy platforms in the ANES

Presidential candidate choice in the 2008 American election is used to estimate the outlined model. During the panel-period of the American National Election Study (ANES) the 56th United States presidential elections of 2008 took part. The democratic party nominee Barack Obama defeated the republican nominee John McCain. I mostly rely on wave 10 of the panel, as the interviews were conducted the weeks prior to the election in November.

Voters' mean policy beliefs x_i are approximated using a one-dimensional factor model. The ANES includes a battery of policy-questions concerning "Gay marriage", "Taxation", "Health care", "Terrorism" and "Immigration"[15]. Respondents are first asked weather they favor, opposed or neither favor nor oppose a certain preposition - e.g. "Are you favor or oppose illegal immigrants become citizens?" - and afterwards asked about the strength of their expressed attitudes on a three point scale ("A great deal", "Moderately", "A little") . This creates a seven point scale for the different policy proposals. Based on the these answering patterns, I calculate an explanatory factor analysis and extract the factor loadings. The one-dimensional factor-model has reasonable fit (RMSE of 0.09) and the factor loadings correlate highly with self-placements in this wave[16]. Respondents further placed Obama and McCain on the same policy issues. Using the factor loadings from the model, these placements can be employed to project candidates on the same dimension. This allows to calculate perceived as well as average factor scores for both Obama (C_1) and McCain (C_2). While the average score for Obama is at 0.32, the average score for McCain is at -0.91. Based on respondents scores, and scores for Obama and McCain, I construct two measurements of difference in policy-distance $((x_i - C_1)^2 - (x_i - C_2)^2)$. The first employs each respondents negative quadratic distance to Obama's mean platform score minus the distance to McCain's mean platform score. The second useses perceived candidate platforms instead.The policy-weighted model is separately estimated for both measurements of policy-distance.

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[15]Please find the exact wording of the question and descriptions in Appendix A.1

[16]A more detailed description of the results is given in the Appendix A.1
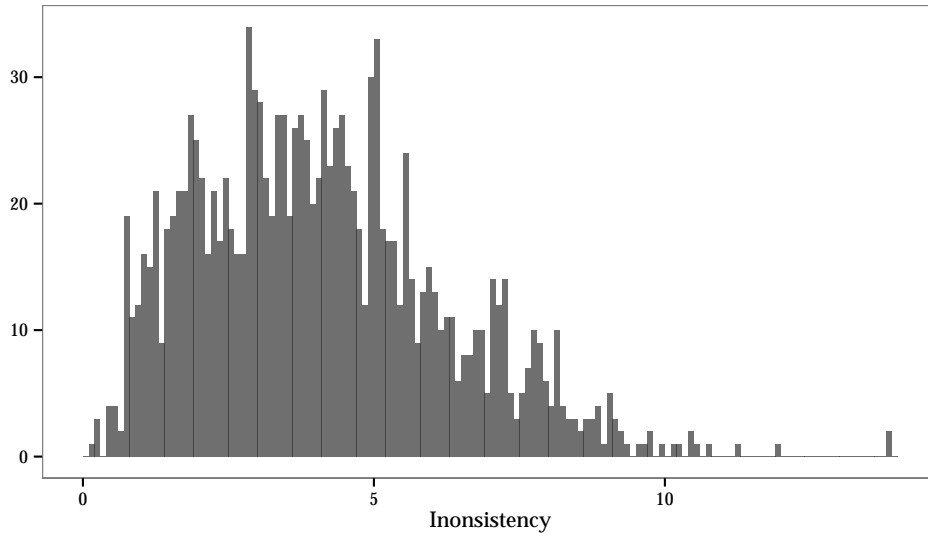
Figure 4.2: Measurement of inconsistency: respondent squared residuals from regressing policy-attitudes on liberal-conservative self-placements

Crucial to the empirical analysis is the measurement of inconsistency σ_{Θ_i}. Different measurements have been proposed[17]. I opt for close connection of the theoretical specification of policy belief variance (which I argued results in formalized depiction of inconsistency) with the emprical measurment. As allready argued, increased inconsistency should result in more randomness when relating answering patterns for concrete policy proposals to underlying platforms. The varying randomness can be approximated by each respondent's average sum of squared errors from separate regressions of a respondent's liberal-conservative self-placement on different policy attitudes. This measurement can be derived more formally by setting up a linear item response model that uses self-placements as a measurement of the latent trait. Following this line of thought, respondents' attitudes towards specific proposals p_{ij} can be expressed as a linear function of their beliefs Θ_i over policy platforms.

$$p_{ij} = a_j + b_j \Theta_i + \epsilon_{ij} \tag{4.13}$$

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[17] Barton and Parsons (1977) use a respondents standard deviation over different issues (see also Wyckoff, 1980). Higher standard deviations are taken as indication of unconstrained, inconsistent policy preferences. Jacoby (1995) relies on a different measurement, employing mokken scaling of answering patterns to measure the degree of ideological thinking about political stimuli (see also Lavine and Gschwend, 2007). Converse and researcher from the measurement-error tradition rely on correlations in answering patterns over different time points, to gauge citizens inconsistency and (especially) instability in policy preferences (Converse, 1964; Achen, 1975; Ansolabehere, Rodden and Snyder, 2008). Most of these measurements lack a direct connection between policy attitudes and underlying political platforms.

where b_j and a_j are issue specific parameters, and ϵ_{ij} is random measurement error, distributed normally with item specific variance of σ_j^2 [18]. The beliefs are normal distributed according to the theoretical specification (see Equation 4.1). Given that respondents answer attitude questions according to standard survey response models (Zaller, 1992; Schuman and Presser, 1996), in which respondents do not build the expectation of their beliefs, but rather sample from the beliefs when answering survey questions, my model specification results in an additional source of randomness in answering patterns [19]. In order to integrate this source of randomness in the model, we can again rewrite the beliefs Θ_i as $x_i + \theta_i$ (, where $\theta_i \sim N(0, \sigma_{\Theta_i})$). This expression can substituted in the above $p_{ij} = a_j + b_j x_i + b_j \theta_i + \epsilon_{ij}$, which shows that answering patterns are expressed as a function of a respondents mean policy belief and two sources of randomness: measurement error (ϵ_{ij}) and pbelief variance (θ_i). From this it follows that answering patterns can be expressed in terms of independent normal distributions with different variance terms:

$$p_{ij} \sim N \left(a_j + b_j x_i, b_j^2 \sigma_{\Theta_i}^2 + \sigma_j^2 \right) \tag{4.14}$$

The aim of this enterprise is to obtain a estimate of $\sigma_{\Theta_i}^2$ - or at least an estimate that orders respondents according to their inconsistency. The later is easier to obtain. I, therefore, substitute $b_j^2 \sigma_{\Theta_i}^2 + \sigma_j^2$ with σ_i^*. Whenever $\sigma_i^* > \sigma_k^*$ it holds that $\sigma_{\Theta_i}^2 > \sigma_{\Theta_k}^2$. Thus, I can estimate σ_i^* instead, to get a representation of $\sigma_{\Theta_i}^2$. Suppose a_j, b_j and x_i are given, a simple estimate of σ_i^* is constructed based on maximum likelihood framework. The log-likelihood function of a respondent's answering patterns over J policy-questions is $lnL \left(\sigma_i^* | y_{ij}, x_i, a_j, b_j \right) = -\sum_{j=1}^{J} \frac{1}{2} - \sum_{j=1}^{J} log(\sigma_i^*) - \sum_{j=1}^{J} \frac{(p_{ij} - a_j - b_j x_i)^2}{2\sigma_i^*}$. The maximum of Likelihood function can be obtained by setting the first derivative to zero. Which yields (similar to the error-variance in linear model) the average sum of squared errors as the maximum likelihood estimate for σ_i^*:

$$\hat{\sigma_i^*}_{MLE} = \frac{1}{J} \sum_{j=1}^{J} (y_{ij} - a_j - b_j x_i)^2 \tag{4.15}$$

This term can be calculated based on estimates of b_j, a_j and a measurement of x_i. As already stressed, for respondents' mean policy belief x_i I employ self-placements on

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[18]This specification closely follows item response models that are often applied to estimate policy platform positions from a set of policy attitudes (see e.g. Jessee, 2012). In item response models the constant a_j are named difficulty parameter, and the slope b_j discrimination parameter. The focus here is not on estimating the latent policy platform of a respondents but use the set-up to motivate the measurement of inconsistency.

[19]Readers might wonder why I apply this assumption when modeling survey responses, but use expected utility when modeling voting decisions. I believe that the two behavior follow different logics, in that voting decisions are more considerate than survey responses. If one would like to work on the premise that survey responses are also given by expected utility, a similar learning argument as in the voting decision can be constructed. This would result in a similar measurement of inconsistency.
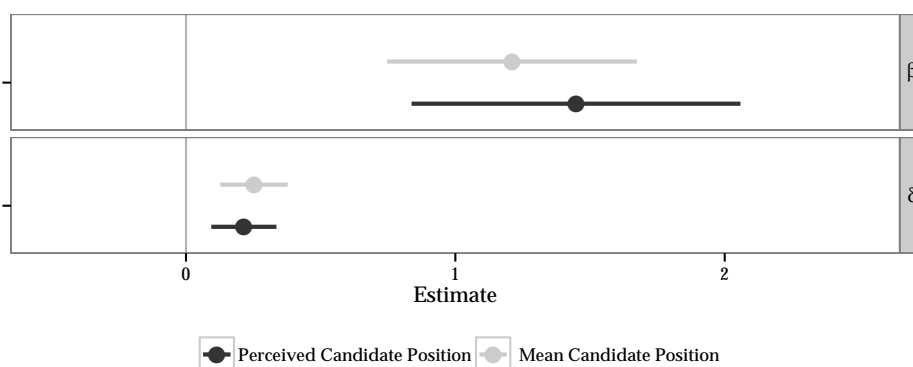
Figure 4.3: Parameter estimates policy-weighted model

liberal-conservative scale [20]. The item parameters are obtained by running simultaneous linear regressions of self-placements on policy attitudes[21]. Based on each respondents residuals from these regressions, I calculate the mean sum of squared errors as the main measurement of inconsistency. The resulting distribution of inconsistency in our sample can found in Figure 4.2. Values vary strongly between respondents, ranging from (0.11), which implies almost perfect prediction on policy issues, to above 9. For these respondents, an average error of 3 scale-points highlights the inconsistent connection between policy-attitudes and ideological placements.

As controls ($\mathbf{X_i}$) I include respondents' party identification, age, gender, race (African-American), education, home ownership and income. All are based on fairly common survey-questions from the ANES[22].

4.3.3 Results: The decreasing importance of policy

The results confirm the expectation derived from the learning model: The marginal effect of policy-distance on utility is smaller for respondents with higher levels of inconsistency. The estimates for the weight model are plotted in Figure 4.3. For policy-distance (β) and inconsistency (δ). Relying once on the negative quadratic distance to the mean candidate platform, and once to the perceived candidate platform. In both cases, the estimate of β is positive, implying that the closer a respondent is to Obama compared to McCain the higher the respondents chances to vote for Obama. The estimate of δ which effects the weight voters put on policy-distance is also positive. Thus, with increasing inconsistency the weight on policy-distance decreases. Both parameter estimates are statistically distinguishable from zero, as the 95 % confidence intervals do not include zero. The other parameter estimates are reported in Appendix A.4. Party identification, as well as, race do have a statistical significant effect on the voting probabilities for Obama.

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[20]I actually use the average over the maximum number of a respondent's self-placements up to panel wave 10, instead of the self placement in wave 10, to decrease measurement error in self-placements.

[21]Results of these auxiliary regressions are reported in the Appendix A.2

[22]For a descriptive statistics please see Appendix A.3.
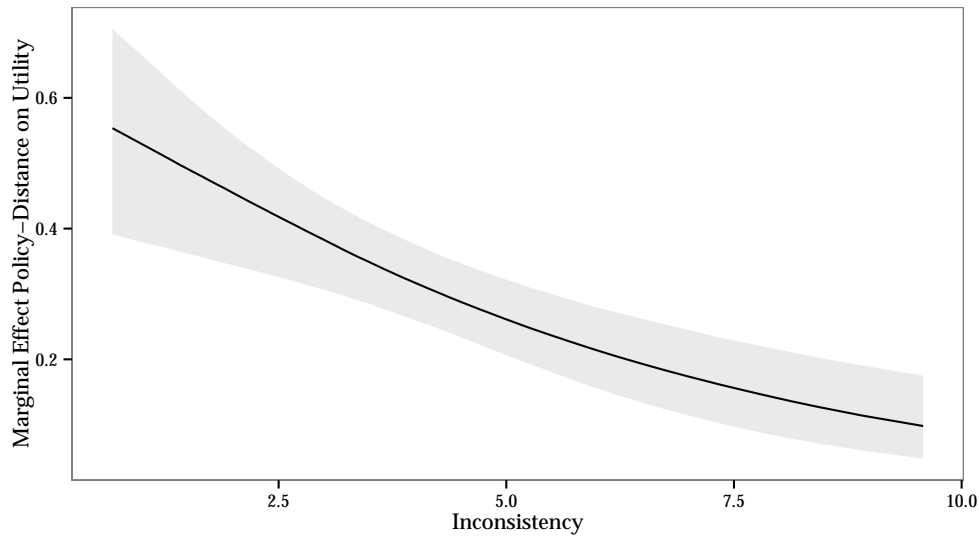
Figure 4.4: Marginal effect of policy-distance on difference in expected utility for varying levels of inconsistency

The parameter estimates imply a decreasing marginal effect of policy-distance with increasing inconsistency. Figure 4.4 shows the marginal effect on expected utility[23]. With increasing inconsistency the marginal effect decreases from around 0.7 to 0.2. As in the theory section, this is calculated by $\frac{1}{1+exp(\delta\sigma^2_{\Theta_i})}\beta$. The resulting empirical pattern is in line with the expectations from the learning model. This gets evident when comparing the empirical to the theoretical expectations depicted in Figure 4.1. Although in this case the theoretical interest is in the marginal effect on expected utility, the direct examination of the parameters from a generalized linear model can be problematic (Berry, DeMeritt and Esarey, 2010). It is well known, that the marginal effect on predicted probability in binary choice models further depends on the predicted probabilities (Ai and Norton, 2003). Still, a likelihood ratio test between the full-model and a restricted model allows to examine in how far the inclusion of mediating aspects increases the likelihood of the data. In our case, the restricted model supposes that the effect of inconsistency δ is zero and compares the likelihood to the full-model specification. For both measurements the likelihood significantly increases (p-value for the model based on perceived distance data 0.018 and mean distance data 0.006).

The decreasing effect of policy distance gets also apparent by comparing the predicted probabilities at different values of policy-distances for a respondent with median inconsistency to a respondent from the 95% quantile of inconsistency. Figure 4.5 shows simulated predicted probabilities for this [24]. While there is a strong effect of policy-distance for a respondent with medium consistency, this effect is a weaker for a

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[23]I obtain confidence interval using simulation (King, Tomz and Wittenberg, 2000). Drawing 1000 values of both β and δ from the multivariate sampling distribution and calculate the expression for all these draws. From that I take the mean as the point estimate and the 0.025 and 0.975 quantiles as the lower and upper bound.

[24]I use simulation techniques as described by (King, Tomz and Wittenberg, 2000)
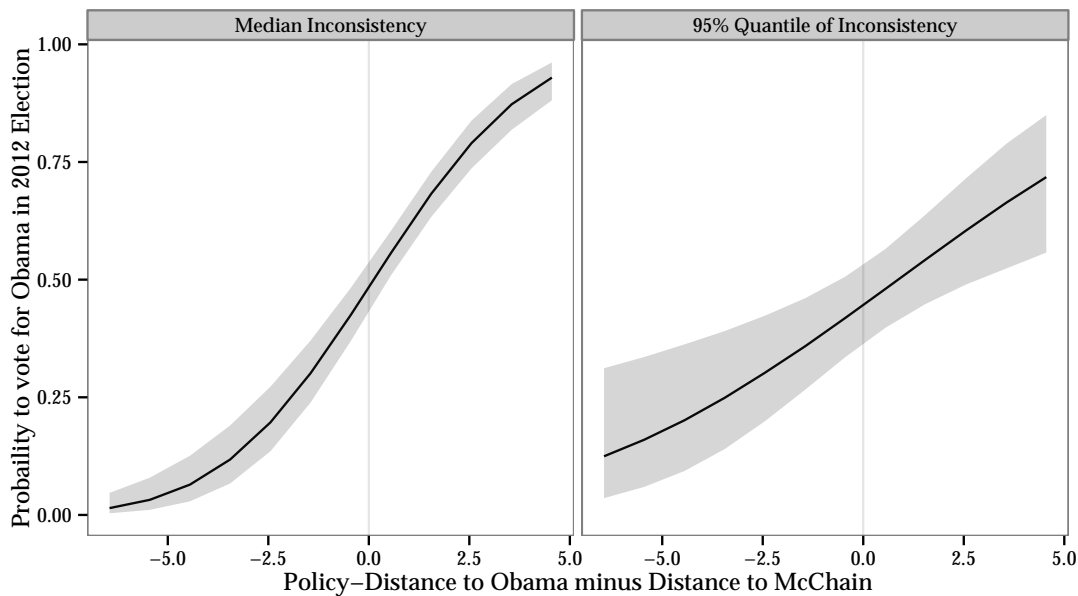
Figure 4.5: Probability to vote for Obama by varying policy-distance, for a respondent with consistent and inconsistent policy preference

respondent with strong inconsistency. It is important to note that the effect of policy-distance at 95% quantile is still present, as the chances to vote for Obama increase from 0.4 with same distance to Obama than McCain to above 0.75 for voters who have the same position than Obama and are most far away from McCain platform. This observation is underlined by the learning argument: Policy-distance is informative to all voters when forming their expected utility. But less informative for voters with higher inconsistency.

4.3.4 Robustness checks

I checked the robustness of the results when using an alternative model specification, a different measurement for policy platforms and inconsistency. Furthermore, I checked robustness for potential unobserved confounders.

First of all, as interaction effect models are the common way to specify mediating effects, I also run the analysis using interaction effects models. The results are basically unchanged: The marginal effect of policy-distance decreases with increasing inconsistency. A detailed description of the results can be found in Appendix A.5.1.

Second of all, I rely on a second measurement of policy-distance, using responses on a seven-point liberal-conservative scale. From this I calculate the quadratic distance of a respondents self-placement to perceived candidate platform on the same scale, as well as the distance to the average placement of the two candidates. For the decreased weight specification, as well as, an interaction effect model, I find similar results for the distance to the average candidates platforms: Inconsistency moderates the effect of policy-distance. For the perceived platforms, I find no statistically significant effect. This does not directly allow to conclude that policy-distance in this case is not moderated, but hints in direction that employing mean platforms reveals a different pattern. One

apparent reason for the result when using perceived platforms is perception biases. Respondents who I classify to posses inconsistent policy preferences, still place the candidate they intend to vote for closer to their self-placement. Perception bias is a well-known problem when using self-placements and perceived positions in the specification of policy-based voting rules (Grynaviski, 2006). The results are reported in Appendix A.5.2.

Thirdly, I run the analysis using a different measurement of inconsistency. An alternative implication of the policy belief model (in combination with randomness of survey response) is that respondents with wider policy beliefs (more inconsistent) have a higher variation in self-placements over different panel waves. Therefore, as a second measurement of inconsistency, I employ the standard deviation of self-placements in different panel waves. Appendix A.5.3 reports the results from interaction effect models. For all combinations of the different policy-distance measurements, the interaction effects are negative, indicating decreasing marginal effects. However, only for the self-placements the interaction effects are statistically significant.

Finally, it might be that the results are due to unobserved confounders. To minimize this possibility, I re-run the analysis on five three-quarter subsets of the sample, combing the estimates of inconsistency using methods from multiple imputation (King, 2002). The results do not change over the different subset (see Appendix A.5.4)

Taken everything together the evidence presented in this analysis supports the expectation from the learning perspective. Voters with inconsistent policy preference, put less weight on policy-distance.

4.4 Summary

Citizens with inconsistent policy preference rely less on a candidate's policy platforms, than citizens with well-defined policy preference. This chapter offers a theoretical explanation for this hypothesis. The way that citizens form expected utility from political programs depends on each citizen's own policy beliefs regarding what political outcomes they would actually like to see. Because these beliefs not only vary direction (some think that a liberal platform is better than a conservative one), but also differ in certainty about the ideal policy platform. Candidates' communicated platforms are informative to a different degree to citizens. In seeking a representative match, citizens place different emphasis on policy considerations.

While many previous empirical studies tested a related political sophistication hypothesis about spatial voting decisions (Jessee, 2010; Lavine and Gschwend, 2007; Wyckoff, 1980; Knight, 1985), in which less informed or aware voters rely less on policy-distance, this chapter is the first one to put these suppositions on a solid theoretical basis. I am able to show that these kinds of argument cannot be directly derived from standard expected utility models regarding voting choice. The argumentation highlights two things. First, the ongoing interaction between candidates and voters and how voters learn what they can expect from different candidates, is the key to understanding heterogeneity in a voter's decision calculus. Second, standard measurements of information are only an indirect approximation of the factors that condition voting decisions. Although political information might matter for the structure of preference, more important are the aspects about policy beliefs themselves.

All in all, this chapter provides empirical evidence for the importance of a broader conceptualization of policy preference. Building a theoretical argumentation on policy beliefs led to a hypothesis that a standard depiction of policy preference would not have been able to devise. This theoretical perspective is better suited in explaining patterns as to how voters' choose representatives based on their policy views. The next chapter will build on the vital role of this perspective, by examining how it can be used to explain the effect of arguments on voting decisions.

Do arguments matter? The effect of political arguments on voting decisions

5.1 Introduction

Theories of representative democracy reserve different roles for political arguments. Deliberative and discourse theories praise the exchange of arguments as the building block of a democratic society (Ackerman and Fishkin, 2004; Chambers, 2003; Habermas, 1994; Cohen, 1997). They are seen as the essential mean by which citizens are able to find out which policies are best for them and the society. Liberal conceptions are in general more skeptical about the importance of political arguments. They rather highlight the voting act as the crucial mechanism of assuring representation in democracy (Key, 1966; Dahl, 1972). From this perspective political arguments are dispensable for understanding the political process: The starting point are citizens' policy preferences and their election of representatives based thereon.

A similar dichotomy of viewpoints has developed over the past 60 years of empirical and theoretical research on the topic. Spatial voting theories neglect aspects of preference formation and analyze in what way citizens' policy views affect voting decisions (Downs, 1957; Davis, Hinich and Ordeshook, 1970; Enelow and Hinich, 1984). The question of how opinions are formed and what role political arguments play in this formation process are treated as exogenous. By contrast, research in political psychology and public opinion is interested in the effect of political arguments on preference formation (Lazarsfeld, Berelson and Gaudet, 1948; Zaller, 1992; Taber and Lodge, 2006; Lodge, McGraw and Stroh, 1989). In many of these models, citizens evaluate political arguments and learn which policy platforms they actually prefer[1]. However, these models generally pay less attention to vote choice. This shows that the two perspectives

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[1] E.g. what is the effect of elite discussions about policy issues on public opinion (Bartels, 1993; Zaller, 1996; Nelson, Clawson and Oxley, 1997)? Or which political arguments are persuasive and which are not (Cobb and Kuklinski, 1997; Druckman, 2004; Jerit, 2009; Arceneaux, 2012)?

focus on different but connected aspects: While one side studies the effect of exogenous political preferences on vote choice, the other examines how political preferences are formed by means of political arguments.

Integrating these two perspectives can enhance our understanding of electoral democracy in manifold ways. While spatial models have a competitive advantage in generating hypotheses about how citizens' policy preferences affect voting decisions (see e.g Kedar, 2005) and how candidates position themselves to gain citzins' votes (see e.g. Adams, Merrill and Grofman, 2005), theories of preference formation prevail in explaining where political preferences originate from (Zaller, 1996; Nelson, Clawson and Oxley, 1997), how they change (Mutz, Brody and Sniderman, 1996; Bartels, 1993) and are framed, shaped and persuaded (Druckman, 2004; Jerit, 2009; Arceneaux, 2012). The missing link between the two perspectives is a theoretical framework that allows political arguments to shape policy beliefs and thereby affect voting decisions.

The theoretical model of this dissertation offers an extension to the spatial voting theory that allows to study the effect of political arguments on voting decisions. In this chapter, I show that this is important for the studying of electoral behavior as one argument can directly influence a voter's decision. Putting expectations from this theory to a test using an experimental study, I am able to show that arguments about a policy proposal (e.g. whether gay marriage should be legalized) changes the state in which a voter is otherwise indifferent. While in the classic model a voter is indifferent between two equidistant policy platforms, in the model I present, this state changes after evaluating an argument. Voters learn: If a voter finds an argument about a specific policy proposal persuasive, she will prefer the platform that is more likely to be in favor of this policy. Therefore, the outlined model forges the link between findings in political psychology and the spatial analysis of the electoral process.

5.1.1 Political arguments and fixed preferences

Researchers in the spatial voting tradition are mainly interested in the question how voting decisions are affected by political preferences. Therefore, they take citizens' policy preferences as given and leave aside questions where they actually come from (e.g. Jessee, 2010; Adams, Merrill and Grofman, 2005). Why some citizens tend towards more liberal, and others towards more conservative platforms is for this theory a different matter. This perpective is described by the simplifying assumption in the spatial voting models that citizen's ideal policy platforms are fixed and exogenous (Sanders et al., 2008). This proposition prevents studying preference formation processes, as it precludes one influential way to think about democracy as the ongoing exchange of political arguments: Only through the evaluation of arguments citizens can form distinct opinions about matters of politics and make informed voting decisions. Before spatial voting can cover this perspective, preferences as outlined by the theory have to be persuadable by political arguments.

Policy beliefs, as outlined in this dissertation, allow for persuadable preferences and can be integrated in spatial voting models. From a psychological perspective, a policy platform can be understood as a multi-attribute object (Fishbein, 1963). In the context of policy voting, the attributes are specific policies that a platform is in favor of. Persuasion is about changing an individual's preference for these attributes, which in the context of spatial voting are the policies. As Nelson and Oxley put it: "to change the individual's

beliefs or cognitions about the attribute of the object constitutes traditional persuasion" (Nelson and Oxley, 1999, p.225). Changing the preference for such attitudes will further shift the evaluation of the multi-attribute objects. Adapting this to spatial voting means that persuading an individual to change her preference in support of gay marriage, should also positively affect her evaluation of liberal platforms.

The consequences of the ongoing evaluation of political arguments can be found in preference formation models from political science (Zaller, 1992; Lodge, McGraw and Stroh, 1989). The key thought of these models is that the evaluation of any policy depends on stimuli, information or considerations an individual has received about the policy. Political arguments entail considerations that should induce a person to prefer one side of the issue over the other and change her policy beliefs. The idea that opinions and preferences can be represented by beliefs can also be found in Bartels (1993) study of the persuasive effect of media exposure. He represents citizens opinions using a belief distribution over a policy issue. These opinions can be influenced by new information about the policy. Furthermore, studies of deliberation integrate the idea of persuasive considerations (Dickson, Hafer and Landa, 2008; Hafer and Landa, 2007). In these models, actors themselves are uncertain which outcome is most beneficial for them personally, and strategically choose to share their considerations with others.

Summarizing the points made above it can be stated that allowing considerations to influence policy beliefs generates a useful model to study effects of political arguments on voting decisions. Relevant considerations can influence citizens' beliefs why a certain policy position should be preferred. Voters might find these reasons appealing and change their evaluation of policy platforms. The question remains as to how this exactly influences voting decisions, and how the policy belief model allows to derive hypothesis about this. They are addressed in the next section.

5.2   Theory

In the theory section, I argue that one political argument changes the state of indifference in spatial voting theory. The effect political arguments can have on policy beliefs makes political preference persuadable and highlights the importance of argument evaluation in study the of electoral behavior. I first give an intuitive example why one political argument can affect a voter's decision calculus. Afterwards, I employ the adaptive utility specification of this dissertation to show under which conditions voters are indifferent[2]. Finally, I outline how political arguments affect this state. The theory section, then, concludes with a discussion of the derived hypothesis.

5.2.1   Which policy platform represents my policy interest best?

Imagine a young voter who wants to decide which candidate to vote for in the upcoming elections. She wants to select a representative that will favor policy proposals that she likes, and opposes those she doesn't. However, it is hard for her to foresee how much she will like an implemented policy. Should taxes be raised on high incomes? On the one hand, it seems to be fair that the privileged should give more back to society, on the

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[2]This part will contain some unavoidable repetition from the theory chapter

Figure 5.1: How political arguments influence voting behavior

other they also worked hard for it. She bases her preferences on these considerations. While on the issue of high income taxes the two contrary considerations make her undecided, for another proposal her attitude seems to be clearer: Should taxes be cut for middle income classes? "Of course, they should. These people are the backbone of our society, my father works so hard and gets so little back."

The policy platform a candidate takes on contains information about policies representatives are likely to implement when in office. A representative from a center-left platform will likely be in favor of tax-cuts for middle income wages, and increase in taxes for high incomes. In contrast, a representative from a middle right platform might oppose the idea of tax increases for high incomes. The young voter from this example, has a good sense which platform the two candidates, which are up for election, take on. One candidate is middle left and the other middle right. But what policy platform best represents her policy interest? Since she has mixed considerations about the issue that discriminates between the two platforms (high-income tax), she is uncertain which policy platform will better represent her interests. On policy grounds, this makes her indifferent between the two camps.

As her preference towards a tax increase are essentially based on considerations, the two candidates can try to persuade her using political arguments. The middle-right candidate can try to provide her with another relevant consideration about why she should be in favor of taxation for high incomes. For example[3]: "I'm not going to raise taxes on anyone because when the economy's growing slow like this, when we're in recession you shouldn't raise taxes on anyone". Suppose that she finds this consideration appealing, she accepts it to represent her perspective on this issue. This is likely to change her attitude towards this policy, but also influence her evaluation of the different policy platforms. Basically, this accepted consideration makes it more likely that a rightist platform represents her policy interest. When deciding, she would not be indifferent between the two camps anymore. Based on the one accepted political argument, she rather prefers the center-right candidate.

This simplified example illustrates how one argument about a policy can influence the indifference between two candidates. Figure 5.1 shows this systematically. The consideration entailed in one political argument has a indirect influence on a voting decision. A voter's evaluation of a consideration entailed in this argument can shape the voter's policy preference. This changes the state in which a voter feels indifferent between two policy options and thereby her voting decision. Like in the example, while the voter is indifferent between the two candidates based on the uncertainty whether she should be in favor or opposed to high income taxation, one argument can influences this uncertainty and thereby her position. In turn this also influences her evaluation of the different policy positions, making her prefer the candidate that is more likely to

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[3]Mitt Romney - Citation from the first presidential debate of the 2012 American Presidential Elections

be in favor of the policy. The next section describes a formalized model of this line of argumentation.

5.2.2 Spatial voting and indifference

In the classic proximity voting model, preferences about policy platforms are fixed, meaning that each voter i is supposed to know which policy platform yields the highest benefit for the voter personally. Let policy platforms X be defined on the real line $X \in \mathbb{R}^1$. Following the theoretical discussion of this dissertation, a fixed policy platform, in the words of adaptive utility theory, means that the textitstate of mind, is given $\Theta_i = x$ (Houlding and Coolen, 2011). A voter knows that platform x_i represents him on policy grounds. Voters care about the policy outcome of a platform, which in a representative system might best be understood as the attitude of representatives to either be opposed or in favor of concrete policy proposals[4]. In spatial voting the attitudes towards these policies are abstracted in terms of policy platforms. A voter i receives utility U given a fixed state of mind $\Theta_i = x$ from the closeness of a candidate's platform $C_k \in X$. I focus on a situation where voters can choose between two candidates $k \in 1, 2$[5].

$$\mathbb{E}\left[U\left(C_k \mid \Theta_i = x_i\right)\right] = -\beta \left(C_j - x_i\right)^2 \tag{5.1}$$

I use quadratic loss to model the closeness of a candidate's platform to the voter. Additionally, β indicates the importance of utility on the evaluation of a candidate's platform. Another point to note, is that in the case of this model the expected utility $\mathbb{E}\left[U\left(C_k \mid \Theta_i = x_i\right)\right]$ equals the standard utility $U\left(C_k \mid \Theta_i = x_i\right)$, because there are no aspects a voter is uncertain about.

The assumption that preferences over policy outcomes are fixed needs to be relaxed in order to study the effect of political arguments. The adaptive utility model allows for a individual specific policy belief over the different policy platforms $\Theta_i : X \to [0, 1]$. The beliefs are subjective, so what differs between voters is how certain they are that a specific policy platform represents their interests. In accordance with theory chapter, I assume that the prior belief distribution is normal with mean x_i and variance $\sigma^2_{\Theta_i}$.

$$\Theta_i \sim N\left(x_i, \sigma^2_{\Theta_i}\right) \tag{5.2}$$

This symmetric policy belief represents the idea that each voter has a mean belief position, but is uncertain if her ideal platform might be slightly to the left or slightly to the right of it. In face of this uncertainty, voters can form the expected utility from a platform. The functional form (quadratic loss) imposes the assumption that voter's

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[4]I assume that individuals vote sincere, which means that they do not take post-election bargain into account, when electing candidates. Additionally, the model is decision theoretic: voters do not consider how other voters might behave.

[5]I employ candidate's platforms for illustrative purposes. The choosen description, however, connects fairly well with the later experimental set-up.

are risk-averse, such that the belief variance negatively affects utility evaluation. Thus, in this case, the expected utility differs from the utility expression, because voters are uncertain about their ideal-platform.

$$\mathbb{E}\left[U\left(C_k \mid \Theta_i\right)\right] = -\beta\left(C_j - x_i\right)^2 - \beta\sigma^2_{\Theta_i} \tag{5.3}$$

Analytically not a lot changes moving from equation 5.1 to equation 5.3, expect for additional effect of the belief variance. Apart from that, the expected utility from the policy belief model equals the classic utility if the mean belief equals the fixed state of mind and variance in policy beliefs tends towards zero. More important, in both cases a voter is indifferent between two platforms C_1 and C_2 if a voter's fixed position x_i is the midpoint between both candidates, or in the belief based model, if the mean belief is equal to the midpoint between both candidates[6].

$$\mathbb{E}\left[U(C_1 \mid \Theta_i = x_i)\right] = \mathbb{E}\left[U(C_2 \mid \Theta_i = x_i)\right] \quad \text{if} \quad x_i = \frac{C_1 - C_2}{2} \tag{5.4}$$
$$\mathbb{E}\left[U(C_1 \mid \Theta_i)\right] = \mathbb{E}\left[U(C_2 \mid \Theta_i)\right] \quad \text{if} \quad x_i = \frac{C_1 - C_2}{2}$$

There is one fundamental difference between the two models: While Model 5.3 allows to analyze the effect of political arguments, Model 5.1 does not. As conceptualized, an argument can influence policy beliefs which platform is better for a voter. In the classic model there are no beliefs. In a way, relaxing the fixed preference assumption can be seen as the necessary modeling decision that enables us to study the effect of political arguments in spatial voting at all.

5.2.3 Political arguments to update policy beliefs

The next step is to study how political arguments can persuade voters and the effect this can have on indifference between two policy platforms. I model an argument-evaluation process based on Bayesian learning. An argument m_j contains one relevant consideration that tries to persuade a voter to be in favor or opposed to the policy j. The way voters process arguments in this model is in line with receive-accept models of preference formation (Zaller, 1992). A voter receives an argument and evaluates its consideration, either accepts or rejects it to represents his or her view point. If a voter accepts an argument that is in favor of policy j, this should also persuade her to be in favor of this policy; rejecting it persuades her to be opposed. The information contained in this process is the evaluation of the argument. The process of how political

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[6]Excluding the trivial case, in which the two candidate's platform are the same $C_1 \neq C_2$, we can see how to obtain the indifference state by setting the two expected utilities equal $\mathbb{E}\left[U(C_1 \mid \Theta)\right] = \mathbb{E}\left[U(C_2 \mid \Theta)\right]$. Which first results in $-\beta\left(C_1 - x_i\right)^2 - \beta\sigma^2_{\Theta_i} = -\beta\left(C_2 - x_i\right)^2 - \beta\sigma^2_{\Theta_i}$ where β and $\beta\sigma^2_{\Theta_i}$ cancel out. Extending the equation allows to simply further as x_i^2 are the same on both sides: $-C_1^2 + 2C_1x_i = -C_2^2 + 2C_2x_i$. Next rearranging terms, $x_i = \frac{-C_1^2 + C_2^2}{2(C_1 - C_2)}$ yields the midpoint as a solution. $x_i = \frac{C_1 + C_2}{2}$. It is obvious that the same holds for the classic model.

arguments work, can is conceptualized from a subjective Bayesian perspective. What matters for updating the beliefs is the individual evaluation of the political argument. The evaluation of the political argument can be summarized in a variable y_j

$$y_j = \begin{cases} 1 & \text{if accept consideration of } m_j \\ 0 & \text{if reject consideration of } m_j \end{cases} \tag{5.5}$$

Given the evaluation of the argument, voters update their policy beliefs: What policy platform best represents a voter's policy interest given that she accepted/rejected the argument about the policy j. This conditional belief can be expressed in terms of Bayes Theorem.

$$\Theta_i \mid y_j = \frac{Pr(y_j \mid X) \cdot \Theta_i}{Pr(y_j)} \tag{5.6}$$

Where $\Theta_i \mid y_j$ is the posterior belief about the ideal policy platform, given the evaluation of the argument y_j. The posteriori beliefs will influence which candidate a voter prefers after the argument evaluation. $Pr(y_j \mid X)$ is the probability to accept an argument about policy p_j given different platform positions. This part represents the likelihood of accepting an argument. Θ_i is the prior policy belief, which are defined by the distribution over policy platforms in 5.2. $Pr(y_j)$ is the general probability to accept a message[7].

Of special interest for the argumentation, is the likelihood to accept an argument. A simple model that allows to connect the evaluation of the argument to a voter's position can be expressed in terms the characteristic of the policy: Are leftist voters more likely to accept the consideration of the argument compared to rightist voters, or the other way around? This can be modeled by mapping positions to the probability of accepting an argument. How strongly the policy platforms influences the Likelihood can be captured by a discrimination parameter a_j:

$$Pr(y_j \mid X) = f(a_j X) \tag{5.7}$$

Where $f(\cdot)$ is function that maps $f() : \mathbb{R} \to [0, 1]$. For the purpose of the argumentation, I assume that the function $f(\cdot)$ follows the cdf of the normal $\Phi(\cdot)$. In essence, this constructs an item response model for accepting considerations about policy p_j. The top panel in Figure 5.2 shows the likelihood for a policy with $a_j = 2$: It gets more likely to accept a message given positions with a higher value. In the example from above, it is more likely to accept a message opposed to high income taxation the further right and conservative a recipient is.

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[7]This can be expressed as $Pr(y_j) = \int \Theta_i Pr(y_j \mid X) dX$
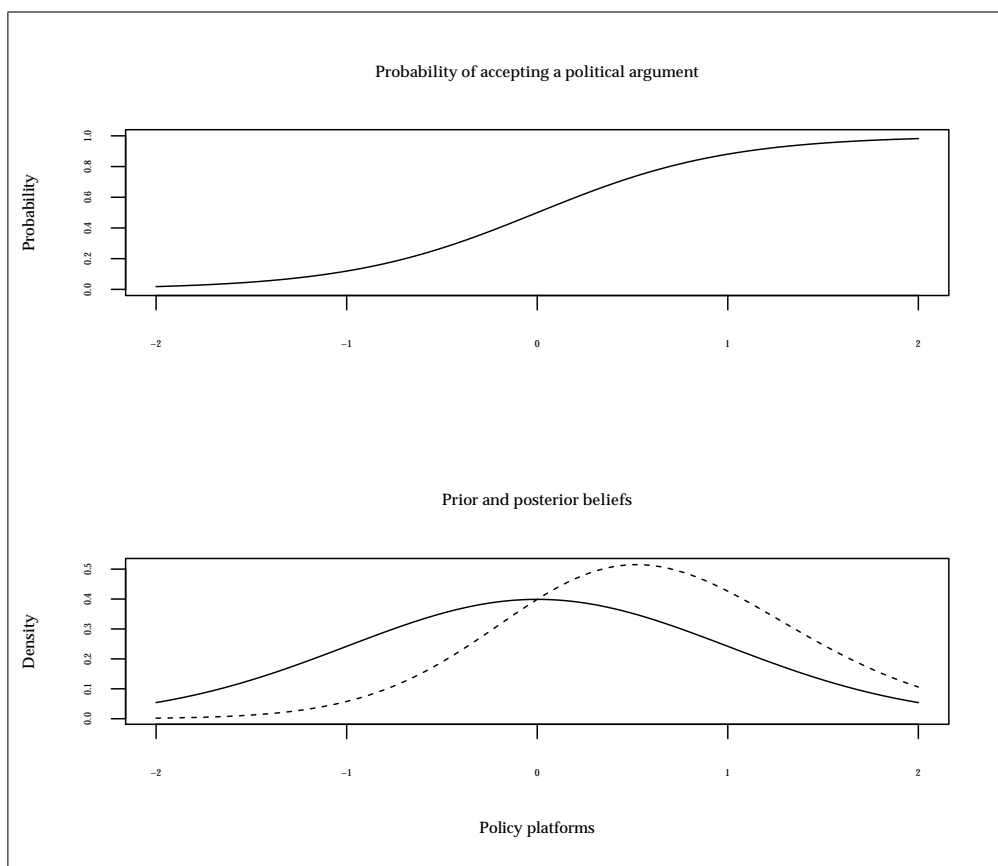
Figure 5.2: Effect of accepting a political argument on policy beliefs

Based on this likelihood voters can update their beliefs. Given the assumptions about the priors, the likelihood of accepting an argument and the fact that a recipient found an argument persuasive, the posterior beliefs are proportional to the product of the two. Because the likelihood is given by a cdf of the normal and the prior policy beliefs are described by pdf of the normal. The product of the two, then, follows a skewed normal distribution.

$$\Theta_i \mid y_j \quad \propto \quad Pr(y_j \mid X) \cdot \Theta_i \tag{5.8}$$

$$\Theta_i \mid y_j \quad \propto \quad \phi(a_j X) \cdot \Phi(x_i, \sigma_{\Theta_i}^2) \tag{5.9}$$

The lower panel of Figure 5.2 shows the prior and posterior distribution, where the dashed distribution is the posterior $\Theta_i \mid y_j$ and the straight line depicts the prior distribution Θ_i. In the example, the prior is normal with mean at 0 and standard deviation of 0.5. The resulting posterior is to the right of the prior distribution. This makes intuitive sense: accepting an argument that right platforms are more likely to accept, changes a voter's policy belief in this direction.

Based on the posterior skewed normal, interesting implications about the effect of arguments can be derived. First of all, if accepting an argument about policy p_j does not discrimante between policy platforms $\beta_k = 0$ (so that every policy platform is

equally likely to accept arguments about this issue) the posterior is proportional to the the prior beliefs. Second, the expected value of the posterior beliefs are moved to lower values if $a_j < 0$ and to higher values if $a_j > 0$. So that a reciepient's beliefs are shaped towards the right, if he accepts an argument, that platforms to the right are more likely to accept compared to platforms to the left. The strength of this effect depends on a_j. The stronger a policy argument discriminates between platforms, the stronger the effect. All of this can be seen from the expectation of the skewed normal distribution, which is given by:

$$\mathbb{E}\left[\Theta_i \mid y_j\right] = x_i + \xi_i \tag{5.10}$$

where

$$\xi_i = \sigma^2_{\Theta_i} \frac{a_j}{\sqrt{1 + a_j^2}} \sqrt{\frac{2}{\pi}} \tag{5.11}$$

In this the prior mean belief is shaped by ξ_i. The shift is positive if a_j is positive and negative if a_j is negative. Thus, a_j affects the shift of the posterior mean policy belief. The strength of the shift depends on a voter's prior variance in policy beliefs $\sigma^2_{\Theta_i}$ and the effectiveness of the political argument a_j. Recipients who are certain about their ideal platform will only be shaped marginally.

Most important is the general effect on voting decisions. The expected utility based on the posterior beliefs can be written out in the following way.

$$\mathbb{E}[U(C_k \mid \Theta_i \mid y_j)] = -\beta(C_k - x_i + \xi_i)^2 - \beta\sigma^2_{\Theta_i} \tag{5.12}$$

This model allows to derive hypothesis about the direct effect of political arguments. Please note that the above holds for recipients that find the political argument persuasive and accept the consideration. For recipients who reject an argument the shift goes in the opposite direction, as the likelihood of rejecting a argument is the inverse of accepting a argument.

5.2.4 Implications: How one political argument changes the state of indifference

In classic spatial model, voters are indifferent between two candidates that take on policy platforms in equidistant to their ideal-platform. This also holds for the outlined policy belief model. However, in this model, one political argument about a policy, that the voter finds either persuasive or not, can change this state. Depending on the evaluation, the voter will either prefer the candidate to the left or the one to the right. The hypotheses below summarize this argument.

H 1 *One political argument about a policy, changes the indifference state of a voter.*

In order to show this, we can imagine two candidates that are in equidistant to the voter prior mean belief x_i. Equation 5.4 shows that this makes voters indifferent. After updating beliefs through evaluation of one political argument, the expected utility is described by Equation 5.12. For which it holds that expected utilities from the two candidates are not equal anymore: $\mathbb{E}[U(C_1 \mid \Theta_i \mid y_j)] \neq \mathbb{E}[U(C_2 \mid \Theta_i \mid y_j)]$[8]. This is because the prior mean belief is shifted by the evaluation of the argument.

This first implication of the theory holds if accepting the argument discriminates between policy platforms. A voter will not be indifferent between the two candidates who are in equidistant to her prior mean belief, after evaluating a political argument. The candidate in the argument's direction will be preferred by the voter. The same holds the other way around: Candidates opposed to the argument's direction will be preferred by the voter if she rejects the argument. This idea can be summarized in two hypotheses.

H 2 *Given that a voter accepts an argument, a voter will prefer the candidate that is more likely to be in favor of the argument.*

H 3 *Given that a voter rejected an argument, a voter will prefer the candidate that is more likely to oppose the argument.*

In total, I expect that political arguments to directly affect voting decisions. This argumentation underlines the power that political arguments can have on electoral behavior, by showing that already one political argument affects voting decisions. The ongoing evaluation of political arguments can even have even graver effects. Consider a situation in which a voter's source of arguments are biased towards a specific platform and the sender manages to make these arguments persuasive. In the long-run small shifts will accumulate to large shifts and alter a voter's position towards the platform of the source. In order to underline this argumentation, the three hypothesis for the effect of one political argument are put to a test in the next section. I employ one experimental study to analyze voters' indifference between two candidates and how the evaluation of political arguments influences decision between the two.

5.3 Empirics

The implications from the theoretical model, how political arguments affect spatial voting decisions, are tested using an experimental study. In the experiment a portion of participants is asked to read through political arguments regarding policy issues. Thereafter, all respondents are confronted with a voting decisions for which the spatial voting model would expect them to be indifferent between two political candidates. Comparing the treatment groups with the control group allows to estimate the effect one political argument has on this indifference state. The following section describes the recruitment of participants and experimental set-up. Afterward, I show that

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[8]In order to see this, one can analyze under which conditions the expected utility terms are equal given that $x_i = \frac{C_1 - C_2}{2}$. Substituting this in the equation gives $-(C_1 - \frac{C_1 - C_2}{2} - \xi)^2 - \beta\sigma^2_{\Theta_i} = -(C_2 - \frac{C_1 - C_2}{2} - \xi)^2 - \beta\sigma^2_{\Theta_i}$ only holds if, the two candidates have the same position, or ξ is equal to zero.

the experiment supports implications from the theory above: Reading the political argument caused respondents to favor the candidate in the arguments direction. I further discuss that the underlying mechanism of this treatment effect is persuasion.

5.3.1 Experimental study: political arguments and spatial voting

Participants

During the last weeks of October 2014, 165 participants took part in a 8-minute online survey. I recruited participants from *Amazon Mechanical Turk (MTurk)* online panel[9]. MTurk has been used by many recent studies in political science (see e.g. Arceneaux, 2012). Studies who evaluated the recruitment platform come to positive conclusions (see e.g. Berinsky, Huber and Lenz, 2012; Crump, McDonnell and Gureckis, 2013). The experiment took on average approximately four and half minutes to complete[10]. Subjects were granted with $0.6 in vouchers for amazon.com. The sample can be described as being fairly representative of the wider voting population. The average age in the sample is 37.9 with standard deviation of 11.35. About the same share of female and male participants took part: 70 female, and 80 male. Most respondents are white (120 respondents). A majority has a BA level degree (61 respondents), or went to college without a degree (61 respondents). Party affiliation is slightly biased towards the Democrats. While 48 respondents in the sample identify strongly or weakly with the democratic party, only 19 see themselves as strong or weak Republicans.

Description of experimental design

The experiment is designed around three highly debated cultural policy issues. The first issue is the question whether marijuana should be legalized as a medical option. The second, if gay marriage should be legalized. The third, in how far illegal immigrants should be granted a pathway to citizenship. All of these issues received notable media coverage in the United States during the year 2014, and especially shortly before the interview time[11]. As such, the three issues should be sufficiently salient to the respondents, which makes these issues a conservative test case, when analyzing the persuasiveness of political arguments. Due to the large media coverage many respondents potentially already made up their mind and were familiar with the political argument brought forward. On the plus side why arguments about these issues should still matter, one can state that as a result of public debate they should discriminate sharply between liberal and conservative platforms.

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[9]Actually 181 participants took the survey. 16 of these observations had to be dropped beforehand because the survey was answered from the same IP address twice.

[10]After the set of questions for this experiment, the survey included question designed for an additional experiment, also related to spatial voting decisions. As the question for the second experiment were asked after the ones described here, the results for mthe here described experiment should not be contaminated by the second experiment.

[11]Before the interviews the Supreme Court rejected cases against gay marriage, which caused quite some public debate. After the interview period, on 21th of November President Obama offered amnesty to illegal immigrants, information about this decisions was leaked during October and caused quite some stir up among Republicans. The legalization of Marijuana has been an ongoing debate, as illegal immigrants five states decided to decriminalize the use of marijuana.

Within the survey, all respondents were first asked about their attitude towards the three issues. The first question regarding the marijuana issue reads : "We would like to know your opinion about three highly debated policy issues. One issue is whether marijuana should be legalized as a medical option. What is your opinion on this issue: Are you in favor or opposed to the medical use of marijuana?". Respondents could indicate their opinion on five point scale, ranging from "Strongly opposed" to "Strongly in favor". The other issues have similar question wordings and the same attitude scale[12]. 52 % of the respondents indicate that they would favor marijuana as medical option, only 7 % answer that they are strongly opposed. On the issue of legalizing gay marriage 23 % are opposed or strongly opposed, and 68 % are in favor or strongly in favor. The most controversial issue in the survey is the question regarding illegal immigrants. An equal share of respondents are opposed or in favor of this issue (43 % are opposed and 40 % are in favor).

After expressing their policy attitudes, the survey asked participants about their position on a liberal-conservative scale. I adapt the same wording as in the American National Election Study, but stretch the scale from 7 to 11 points. Low values indicate that respondents place themselves as being "extremely liberal" (-5), high values show that a respondent is "extremely conservative" (+5). Participants are spread over the whole range, with a mean of -0.1 and standard deviation of 2.93. Respondent's ideological self-placements discriminate sharply between their attitudes. Among the 25% most conservative (with a self-placement higher than +2) 40% are strongly opposed to granting illegal immigrants a pathway to citizenship. Only 7% express the same attitude among the 25% most liberal respondents (with a self-placement lower than -3). Similar patterns hold for the other issues.

For the experiment, respondents were randomly assigned to four groups: The first group is asked to read an a counter argument about the legalization of gay marriage; the second group receives an argument opposed to the issue that marijuana should be legalized as a medical option; the third group reads an argument opposed to the proposal that illegal immigrants should be granted a pathway to citizenship , and a control group is not asked to read an argument. 46 people are part of the control group; 36 in the first group, 43 in the second group, and 40 in the third group. All arguments are are taken from the website procon.org, a website that collects debates about controversial and important issues in United States. Following the theoretical expectation that every argument, as long as it entails a consideration that promotes one side of an issues, should be suitable to test the hypothesis, I picked three arguments that come from different actors - a citizen, a politician and an organization. The arguments are all in opposition to the issue, as prior research showed that counter-arguments can have stronger effects in survey experiments (Cobb and Kuklinski, 1997). Furthermore, they are all targeted in the same direction: All arguments are conservative, as they oppose a liberal policy. Thus, they should work in the same way which allows to combine them in the later analysis.

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[12]The full version of the questionnaire can be found in the Appendix B.1.

The argument that is opposed to gay marriage was brought forward by Maggie Gallagher, President of the National Organization for Marriage wrote on PBS.org "Issue Clash" [13]:

> "Marriage has its own dignity and purpose and its own mission: bringing together male and female so that children can know and be known by, love and be loved by, their own mother and father. Same-sex marriage is unjust because it is founded on an untruth. Same-sex unions are not marriage. Only a fairly small minority of same-sex couples actually enter marriages where they are available. What gay marriage will do and is doing is disconnect marriage as an idea from its natural roots, and increasingly stigmatize the people (and institutions) who adhere strongly to our traditional views of marriage. Same-sex marriage is profoundly unjust because it misuses the law to require something that is not true: these unions, however great they are in other ways, are not marriages and nobody should be required by law to treat them as marriages."

The argument opposed to medical marijuana is a quotation from a Mark Souder, a Member of the US House of Representatives who expressed the following opinion[14]:

> "The US Food and Drug Administration (FDA), the agency charged with protecting the health of Americans, has never found smoking marijuana to be a safe and effective drug. In April 2006, following my request, the FDA released an interagency advisory confirming that smoked marijuana is not medicine because: (1) marijuana has a high potential for abuse; (2) it has no currently accepted medical use in treatment in the United States; and (3) it has a lack of accepted safety for use under medical supervision. The advisory also stated: ...there is currently sound evidence that smoked marijuana is harmful."

The Heritage foundation expresses opposition to granting illegal immigrants citizenship, in the following statement[15]:

> "Do not grant amnesty to illegal aliens. Regardless of the penalties imposed, any program that grants individuals who are unlawfully present the legal permission to remain here rewards illegal behavior and is unfair to those who obey the law and go through the regulatory and administrative requirements to enter the country legally. Those who enter the United States illegally should not be rewarded with permanent legal status or other such benefits, and they should be penalized in any road to citizenship. Those who enter and remain in the country illegally are violating the law, and

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[13] procon.org: Should Gay Marriage Be Legal? Last accessed: 25 November 2014. Neither the authors name, nor any other information about the source is revealed to the participants.

[14] procon.org: Should Marijuana Be a Medical Option? Last accessed: 25 November 2014

[15] procon.org: What Are the Solutions to Illegal Immigration in America? Last accessed: 25 November 2014
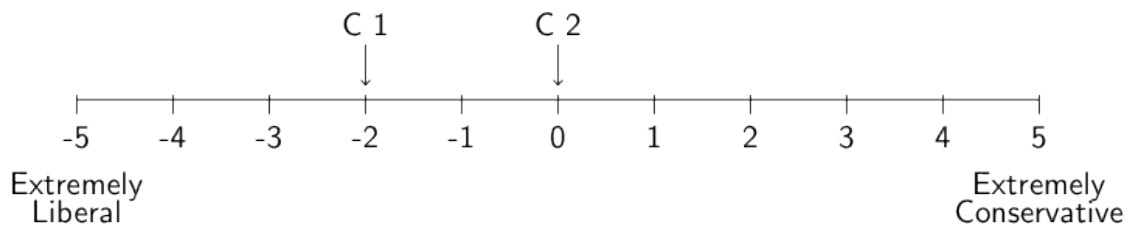
Figure 5.3: Voting decisions between two candidates with positions on ideological scale for a respondent with self-placement at -1

> condoning or encouraging such violations increases the likelihood of further illegal conduct."

After reading the argument, participants in the the three treatment groups were asked to evaluate the content of the quote. First, the respondents indicate, whether in their opinion "the arguments of the quote [are] in favor or opposed to the issue". This question is included in the online survey to encourage participants to considerably understand the content of the argument[16]. Subsequently, respondents can formulate their opinion regarding the persuasiveness of the argument, using a 5-point-scale that ranges from not "persuasive at all"(1), over "neither persuasive nor not persuasive"(3), to "very persuasive"(5). The illegal immigration argument is perceived to be the most persuasive one, with a mean of 3.67, followed by the argument about medical marijuana (mean 2.71). The argument about gay-marriage has the lowest persuasiveness (mean 2.19).

Directly after the argument evaluation, all respondents were confronted with a voting decision between two candidates that occupied different ideological platforms[17]. The position of the candidates were presented using an arrow that points at specific position on the same 11 point scale they used to indicate their self-placement (See 5.3). All reference to real world candidates is removed, referring to Candidate 1 (C1) and Candidate 2 (C2). The idea to communicate candidates position in this way is common in the spatial voting literature (see e.g. Tomz and Van Houweling, 2008; Lacy and Paolino, 2010; Claassen, 2009). The candidates' platforms were selected conditional on the respondents' self-placement. Candidate 1 is placed one scale point to the left of the respondent, and Candidate 2 one position to the right. Accordingly in all scenarios, Candidate 1 is more liberal and Candidate 2 more conservative than the respondent. Figure 5.3 shows the graph that is shown to a respondent with self-placement at -1.

The voting decision is the key variable of interest for the later analysis. According to the proximity voting model the choice situation should induce respondents to be indifferent between the two candidates, as both are in equidistant to a respondent's self-placement. Directly after exposure to the candidates, respondents were asked about their preference: "Based on their political ideology, do you prefer one of the two

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[16]A pre-test indicated that a small portion of participants simply clicked forward. In this survey, 12 participants considered the quotes to contain pro arguments.

[17]Because the experimental treatment is only sensible for respondents that do not position themselves at the extremes of the ideological spectrum, 28 respondents with self-placements at -5 or +5 had to be excluded from the experimental manipulation.

candidates, or are you undecided between the two?". The options allowed respondents to indicate if they are undecided between the two candidates, or prefer candidate 1 or candidate 2. In order to test, if the mechanism that affects this decision is persuasion the questionnaire, further ask respondents if the argument changed their "previously stated opinion in any specific direction". 14% indicate that the argument did either changed their opinion to be "more in favor" or "more opposed". The survey ends with a set of background questions about the respondent's age, education, gender and party identification.

5.3.2   Results from experimental study

The results from the experiment provides support for the implications of the theory. I find that the political argument affects the state of indifference. Respondents who read the conservative argument shift their preference towards the more conservative candidate. The next paragraphs describe these findings more closely.

Treatment effect

Respondents in the control group are indifferent when presented with the voting decision. The indifference state can be seen by comparing the voting decisions between the treatment and control group. Figure 5.4 shows the percentage of respondents who prefer the more conservative candidate (C1), the more liberal candidate (C2), or are undecided between the two. In the control group a majority of respondents answer that they are undecided between the two candidates (49%). The proportion in this group that prefers candidate 1 or candidate 2 are about the same size (C1: 27%; C2: 24%). The distribution in the control group is symmetric around being undecided in the choice situation. Some respondents tend to choose the more liberal candidate, some express that they prefer the more conservative candidate. From this, it appears that only random factors make some respondents decide to vote for either the liberal or conservative candidate.

The aggregated pattern differs for the treatment groups. The right panel of figure 5.4 shows that a larger proportion of respondents in the three treatment groups prefer the more conservative candidate (40%), compared to the more liberal candidate (19%). Although compared to the control group there is no strong difference between the share of voters that are undecided (42%), the asymmetric pattern reveals that on average respondents shifted their preference as a result of reading the argument. The figure further shows the error bars for the percentages. In order to take the sampling uncertainty into account, I formulate a statistical model for the treatment effect.

The effect can be analyzed more thoroughly, relying on an ordered logit model. The experimental situation calls for an ordered logit model for three related reasons. First of all, the options are ordered along the ideological spectrum. For all participants candidate one is the more liberal choice, candidate two the more conservative and being undecided somewhere in between. Second, the decision for the undecided cases is affected by the utility-difference between voting for candidate one or candidate two. Only if the difference in utility is zero a respondents should be undecided. This permits me to interpret the utility-difference as a latent continuum that influences the voting decision. Finally, the experiment is arranged in a way that only aspects concerning the
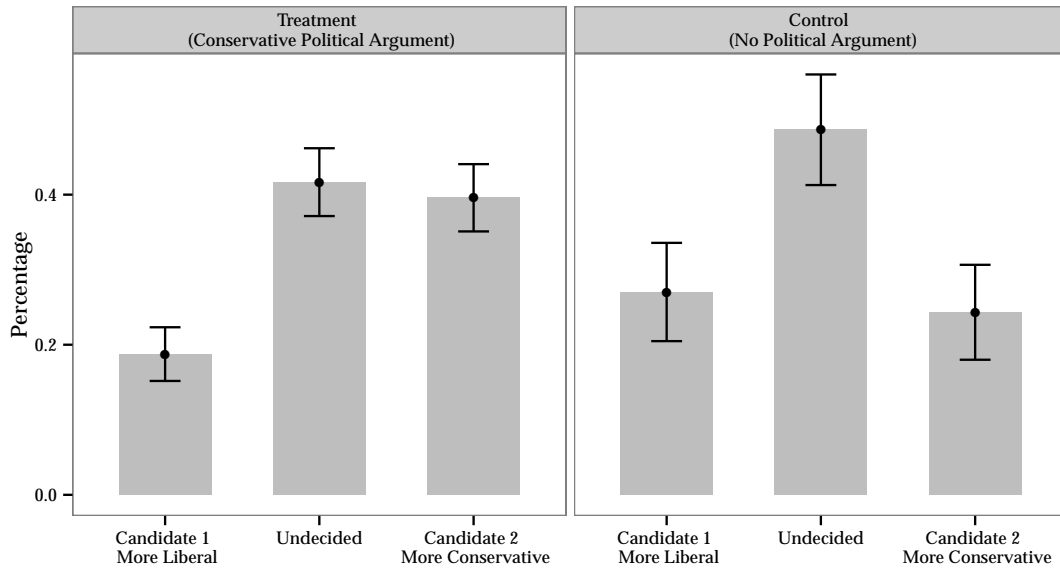
Figure 5.4: Percentage voting decision by treatment and control group

	Model 1	Model 2	Model 3	Model 4
Treatment Group	0.60*			
	(0.36)			
Treatment Gay-Marriage		0.07	0.05	0.03
		(0.46)	(0.46)	(0.46)
Treatment Legalize Marijuana		0.92**	0.90*	0.89**
		(0.45)	(0.46)	(0.45)
Treatment Illegal Immigrants		0.80*	0.94**	0.77*
		(0.46)	(0.47)	(0.46)
Attitude Gay-Marriage			−0.25	
			(0.17)	
Attitude Strength Legalize Marijuana			0.24	
			(0.16)	
Attitude Strength Illegal Immigrants			0.04	
			(0.13)	
Liberal-Conservative				−0.09
				(0.07)
Log Likelihood	-139.26	-137.39	-135.85	-136.53
Num. obs.	133	133	133	133

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Table 5.1: Results from ordered logit models (1)

policy platforms should affect voting decisions. In addition, the treatment should have a linear effect on the utility difference, because the distance to both candidates is fixed

and arguments shift the mean beliefs. The ordered logit model can also be derived more formally. For a discussion of the model's derivation please see Appendix B.2.

The results from the ordered logit models are presented in Table 5.1. Model 1 includes a dummy variable that combines all treatment groups, Model 2 estimates the treatment effect of the three arguments separately. Model 3 and Model 4 control for prior attitudes on polices and liberal conservative platforms. What can be seen from the effect of the combined treatment is that the treatment has a positive effect on the latent continuum of the ordered logit model. As discussed, the latent continuum can be understood as the difference in expected utility. It follows that for the treatment groups the expected utility for the more conservative candidate is systematically higher. In the experimental set-up this can directly be traced back to the evaluation of the political argument, leading to the conclusion that the argument directly affects the voting decision. Interestingly, this effect does not depend on a voter's evaluation of the argument. Respondents in the treatment group are more likely to prefer the more conservative candidate. In how far this confirms the first hypothesis further depends on the estimates of the thresholds. Because these are centered around zero (-0.91, 1.05) and the model specification does not include a constant, the control group is most likely to indicate that they are undecided. Model 2 further shows that the treatment effect is even stronger for the argument about legalization of marijuana and illegal immigrants. The effect of the gay-marriage argument, on the other hand, is not distinguishable from zero. The other two models confirm this pattern. In Model 3, I controll for the prior attitudes. The treatment effects are unaffected and the effect of the prior attitudes are rather weak. In Model 4, I check the results including the effect of self-placements. It might be that more conservative respondents always vote for the more conservative candidates. This supposition is not confirmed and the effect of the political arguments not affected [18].

The estimated treatment effect of the arguments (from Model 2) is shown in Figure 5.5. I calculate predicted probabilities to choose candidate 1, candidate 2, or being undecided. I do so for the three argument groups and compare their predicted probabilities in the control group. The first difference between each treatment group and the control group show in how far the argument influenced the voting decision. What can be seen from the figure is that both the contra argument about marijuana legalization as well as the contra argument about illegal immigration made respondents less likely to be undecided and more likely to prefer candidate 2 - the more conservative candidate. For example, the probability to be undecided decreases by -0.14 percentage points for the marijuana-argument group. The figure further shows 90% confidence intervals, which both cases allow to reject the Null-hypothesis that these voting patterns are due to sampling error. Overall, in these cases the hypothesis are clearly confirmed: both arguments affect the state of indifference. The same does not hold for the argument

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[18]I further check if liberal respondents are more likely to vote for the more liberal candidate - a hypothesis that a directional model (Rabinowitz and Macdonald, 1989), or a strategic spatial voting model (Kedar, 2005) would allow to derive. Interestingly, I rather find the opposite to hold: Liberal respondents (self-placement on liberal-conservative scale below -1) are actually more likely to vote for the more centrist candidate. The same holds the other way around: Conservative participants (self-placement above +1) are more likely to vote for the more liberal candidate. The treatment effects do not change.
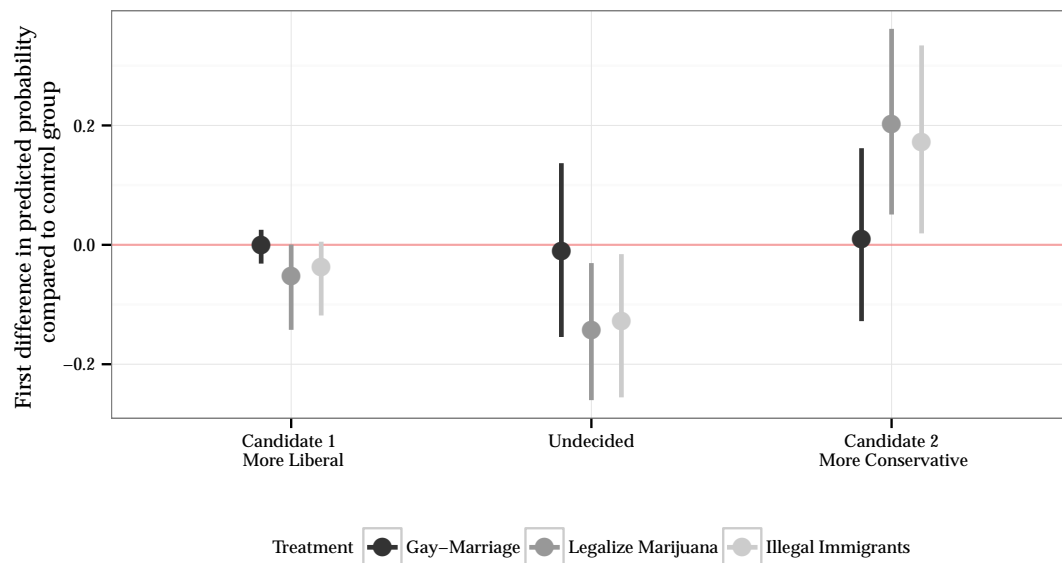
Figure 5.5: First difference in voting probability compared to control group for different treatment groups

about gay-marriage. One reason might be that for this policy the largest share of respondents has strong attitudes. For the 41 % of respondents that are strongly in favor or opposed, the argument potentially contained no new information about their policy preference. Another explanation might be that the evaluation differed among respondents, such that some accepted the argument and others rejected it. On average the treatment effect on the expected utility difference between the two could cancel out. The next section takes a closer look at this line of reasoning.

All in all, the results support the supposition that political arguments can change voting behavior. Two of the three arguments change participants' voting decisions substantially. In bot instances, responders are less likely to be undecided, and are more likely to vote for the more conservative candidate. In this respect, the two arguments are truly persuasive: The conservative position promoted in the arguments lead participants to vote for a more conservative candidate. The direction of the treatment effect does not seem to depend on the evaluation of the argument. Nonetheless, to assure that the underlying mechanism is truly persuasion, the next paragraphs investigates how the evaluation of the argument and attitude change affect the voting decisions.

Is the underlying mechanism persuasion?

The results further support persuassion as the underlying mechanim of the treatment effect. Especially those that found the argument persuasive are likely to vote for the more conservative candidate. Additionally, respondents who reconsidered their attitude to be more liberal after reading the argument are more likely to prefer the liberal candidate. This subsection further attempts to rule out other explanations for the observed treatment effect.

There a two alternative explanations why in the presented experimental set-up the treatment could have an effect on the voting decision. First of all, respondents in the

	Model 1	Model 2	Model 3
Attitude Change More Liberal	−0.58		−2.24*
	(0.95)		(1.25)
Attitude Change More Conservative	0.34		0.41
	(0.81)		(0.82)
Prior Attitude	0.04	0.19	0.03
	(0.13)	(0.19)	(0.14)
Argument Evaluation Positive		0.47	
		(0.63)	
Argument Evaluation Negative		1.18*	
		(0.63)	
Log Likelihood	-100.04	-98.46	-82.91
Num. obs.	96	96	80

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Table 5.2: Results from ordered logit models (2)

treatment group could learn about the candidates' position. The experimental design attempts to rule out this possibility by paying close attention to assuring that there are no cross-reference in the text of the argument and the final voting decision. However, it is still possible that some respondents understood the argument content as one of the candidate's position. Second of all, the arguments could have primed the perception of the participants what the ideological platforms are about. I hope to minimize this possibility by letting all respondents indicate their attitude towards all three policies. Nonetheless, the additional time the treatment groups spends to read through the argument could still prime this group with this policy, when thinking about ideological platforms. In order to rule out these alternative explanations, I attempt to test the underlying persuasion mechanism more carefully.

The second hypothesis derived from the model, is that the argument evaluation should influence the voting decisions in a specific direction. Finding support for this would underline the persuasion-process. In order to test this hypothesis, I analyze in how far attitude changes affect the voting decision in the treatment groups. In addition, I test whether the evaluation of the persuasiveness of the arguemnts has a similar effect. I calculate three ordered logit models for respondents in any of the treatment groups. The results are reported in Table 5.1.

Model 1 includes a dummy variable indicating if respondents changed their attitude as a result of the argument towards a more liberal, or more conservative position. The effects should go in opposite directions: Voters who change their attitude to be more conservative should be more likely to vote for the conservative candidate. Although the estimates reveal this pattern, the uncertainty around the estimates are quite large, such that it is statistically impossible to distinguish the effect from zero. One reason might be that respondents did not truly read through the argument. To check for this possibility I excluded 16 observations, the 10% that took the lowest amount of time to read the

argument or did not rightfully indicated that the argument is opposed to the policy[19]. The results are reported in Model 3. In this, the effect of liberal attitude change has a substantial effect on the voting decision. Respondents who altered their attitude as a result of the argument are more likely to vote for the more liberal candidate (with an predicted probability of 0.66 percent compared to 0.22 percent).

Model 2 estimates the effect a respondent's evaluation of the argument's persuasiveness has on the voting decision. I include a dummy variable indicating whether a respondent evaluates the argument positively or negatively. For the positive evaluation the model estimates a substantial effect on the voting decision. Respondents who positively evaluated the conservative argument shift their preference in direction of the conservative candidate. However, for the negative evaluation of the arguments, there is no substantial effect on the voting decisions.

In all three models, I further control for the respondents' prior attitudes on the respective policies. If the alternative priming explanation holds - the prior argument should have a direct effect on the voting decision. Respondents who are primed with e.g. illegal immigration and think about illegal immigration when voting for the candidate should vote for the more conservative candidate if their attitude towards illegal immigration is negative and vise versa. In all models the prior attitude does not have a substantial effect. Overall, I find support for the argument that the treatment effect observed in the experiment are due to persuasion and further mimize the possibility that the effects origin from priming.

5.4   Summary

In this chapter, I showed that political arguments can influence voting behavior. One political argument is able to influence the state in which a individual feels indifferent between two policy options. I derived these expectations from the policy belief model outlined in this dissertation. The model allows arguments to directly influence the policy beliefs of voters, and as a result the way they decide when facing a choice between two political candidates. Based on evidence from an experimental study, this chapter offered support for the idea that political arguments can directly influence voting decisions.

Political arguments are the instrument of persuasion. Political actors attempt to change other actors' beliefs by convincing them of the right or wrong effects of certain policies. Persuasion attempts and the use of political arguments are omnipresent in politics: speeches in parliament, televised debates or deliberations among citizens. Most of them are intended to affect other actors behavior. The most important political act in representative democracy is voting: Citizens electing representatives, representatives voting on proposals, and so forth. Explaining if and how political arguments are able to influence voting behavior can improve our understanding of politics as such.

I built a bridge between formalized models of spatial voting and studies on persuasion. While arguments are central to the latter, voting is central to others. Combining both allows to integrate findings from studies on persuasion into a well-studied model of

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[19]The cut-point for excluding respondent is 20 seconds. In a pre-test among Mannheim doctoral students noone took less than 20 seconds to read the arguments.

voting and democratic representation. What remains undisclosed in this chapter are the conditions under which this persuasion attempts by political actors are successful. So far, the model analyzes the persuasiveness of political arguments as something subjective: The effect of political arguments depends on the voters' evaluation. However, studies of persuasion, framing effects, and processing of political arguments have generated more fruitful knowledge under which conditions arguments are especially powerful to influence attitudes. Integrating these findings will be one of the further steps when developing a model of democratic representation that is able to analyze persuasion effects.

In the following chapter I study how political candidates can promote their policy platforms in political campaigns. The underlying mechanism is taken from this chapter. The fact that citizens' preferences are persuadable opens the possibility for candidates to not only inform citizens about their positions but also to persuade them to follow their policy lead.

Campaigns with endogenous policy preferences: a spatial model with persuasion

6.1 Introduction

According to one view of democracy, the key function of electoral campaigns is to inform citizens about the different candidates' policy platforms. Following this idea, the spatial model of politics describes campaigns as a process in which candidates communicate their policy platform and citizens elect those who best match their preferences. The common premise of these models is that citizens' preferences are exogenous to the electoral process (e.g. Adams, Merrill and Grofman, 2005), so they assume that citizens' preferences are formed prior to the candidates' campaign strategies and are not shaped by them. Such a theoretical perspective stands in contrast to newer research that highlights a candidate-persuasion process by which candidates can effectively alter citizens' voting intentions (e.g. Hillygus and Shields, 2014; Huber and Arceneaux, 2007; Gerber et al., 2011; Lenz, 2013; Jacobs and Shapiro, 2000).

One mechanism that can lead citizens to change their voting intention during campaigns, is actually rooted in the spatial model of electoral politics, but has been mostly ignored by spatial theorists. Models of spatial voting imply that changes in citizens' policy preferences directly influence voting decisions. Thus, candidates could attempt to persuade citizens about their campaign platform, so that citizens alter their position in the direction of the candidate. Changes in policy preference in the direction of the candidate increase the probability that the persuaded citizens will vote for the candidate. As intriguing as this perspective might sound, it has not yet been given sufficient attention by spatial models of campaigns. Spatial models generally build on the premise that citizens' policy preferences are exogenous, which implies that candidates' attempts to persuade voters do not affect citizens' policy orientations. This exogenous preference assumption precludes us from studying the electoral consequences of the persuasive effect of electoral campaigns.

In this chapter, I outline how the policy belief model of this dissertation can be used to study preferences that are endogenous to a candidate's campaign platform. I offer a model that is tailored to a campaign situation in which two candidates not only announce their policy platforms during the campaign, but further attempt to persuade voters about their individual positions. During the campaign, a certain share of the voters is persuaded and will change their preference in the direction of one candidate. Depending on the percentage of citizens who follow this process, the electoral consequences may be important. In general, persuaded citizens decrease their distance to a particular candidate's policy platform over the course of the campaign, making it more likely that they will cast their vote for this candidate. If more citizens who may have been previously undecided between the two candidates platforms, now follow one candidate's policy lead, this can systematically affect the outcome of the election.

The theoretical model increases our ability to make inference about the importance of a persuasion-process in a particular electoral campaign. Researchers find it challenging to identify persuasion effects during electoral campaigns, based on survey data, as the process involves strong heterogeneity and the observable implications are often unclear. The new theoretical model reveals observable implications, which can be employed to categorize different types of citizens. Relying on latent class analysis, this approach permits me to estimate the share of voters who alter their policy preference in the direction of one of the two candidates.

Furthermore, the empirical model allows us to test a hypothesis about the group of voters who are likely to be persuaded during the campaign. For the 2008 electoral campaigns, I find that partisans are especially likely to adjust their policy preference in accordance with their party's candidate. In addition, an expectation derived from the theoretical model is supported: respondents who reveal less consistent policy preference in survey responses, show a greater reduction in policy-distance to their candidate. Although this highlights the importance of the individual campaign-persuasion-process, in the case of the 2008 presidential elections the aggregated effect seems to have been marginal. For the group of voters, for whom the decrease in distance to a candidate's platform means an increase in electoral support, the share of respondents in a McCain and Obama persuasion-class is balanced. In other words, the candidates persuaded voters about their policy-orientation, but they persuaded the wrong ones. Namely, those who were likely to vote for them anyway. Which leads me, at the end of the chapter, to discuss how these findings can be informative for future candidates' campaign strategies.

6.1.1 Exogenous policy preferences and electoral campaigns

Since Downs's original model, spatial models of the electoral process rely on the assumption that citizens evaluate candidates on the basis of their exogenous policy-preference (Downs, 1957). This means that candidates cannot affect a voter's policy preference. They have to follow the distribution of voters' preferences in a given election, when choosing their policy-platform and informing the general public about it, during their campaign. What platform they choose does not actually affect voters' policy positions.

The spatial-model perspective on electoral campaigns is in line with long-standing evidence that campaigns show "minimal effects" on the outcome. Empirical studies find that the electoral campaign has hardly any influence on the predictions for the electoral outcome (Finkel, 1993; Gelman and King, 1993). The focus on the aggregated effect has been challenged in subsequent research (Bartels, 2006; Iyengar and Simon, 2000; Hillygus and Jackman, 2003) as it might be that "highly effective campaign efforts on both sides may cancel each other out" (Bartels, 2006, p.79). Newer research finds that campaigns are actually able to persuade voters (Huber and Arceneaux, 2007; Gerber, Green and Larimer, 2008; Lenz, 2013; Greene, 2011; Brader, 2005), and speculates that one reason for changes in voting intentions might be a change in policy preference during the course of the campaign (Huber and Arceneaux, 2007, p.962).

Researchers often questioned the strong assumption of exogenous policy preferences. Empirical studies concerned with the reciprocal relationship between policy orientation and partisanship find that partisanship, under specific conditions, alters policy attitudes (Bartels, 2000; Carsey and Layman, 2006; Milazzo, Adams and Green, 2012). These findings (although informative for theoretical conceptualization) have not been adapted to fit into a spatial model in any meaningful way (for an exception see Gerber and Jackson, 1993; Jackson, 2014). Other empirical studies test if there are significant changes in citizens' policy attitudes and often find that citizens alter their preference in an endogenous way. For example Matsubayashi (2012) recently tested the exogenous preference assumptions using a quasi-experimental design, and found that incumbents' positions affect voters' opinions. These new findings complement many older studies on endogenous preferences (see e.g. Dunleavy and Ward, 1981; Jacobs and Shapiro, 2000).

Research explicitly concerned with the formation of policy attitudes allows that campaigns do not only inform, but can also affect citizens' opinions. Models of preference formation build on the idea that citizens form their policy-preference by evaluating political arguments (Lodge, McGraw and Stroh, 1989; Zaller, 1992). Studies show that this process is affected by the sender of the argument: citizens tend to accept arguments according to their predisposition and reject those counter to it (Taber and Lodge, 2006). If policy preferences are not strictly exogenous, and citizens form preference on the basis of received arguments, candidates can attempt to persuade voters during the campaign. Persuasion has been studied extensively in political psychology literature (Mutz, Brody and Sniderman, 1996; Cobb and Kuklinski, 1997; Druckman, 2004; Arceneaux, 2012; Jerit, 2009).

Brody and Page once argued that persuasion is one potential reason why researchers identify such a strong correlation between policy-closeness and vote choice (Brody and Page, 1972). Rather than forming voting decisions on the basis of their exogenous attitudes, citizens might be persuaded to accept a candidate's policy attitudes and then to vote for that candidate (see also Markus and Converse, 1979; Page and Jones, 1979). This line of argument clearly questions the simple chain of command in common spatial models: it might be that candidates can influence a share of the electorate's preferences. In order to gain a better understanding of the electoral consequences, the next section outlines a model of electoral campaigns in which candidates not only communicate their position, but also attempt to persuade voters about it.

6.2 Theory

In the theory section of this chapter, I outline a campaign-persuasion model as the basis on which I argue that partisans in particular should be likely to alter their policy beliefs over the course of a campaign. Contrary to classic spatial voting models of campaigns, in which politicians simply announce their positions, the model presented here allows candidates to also promote their political platforms. Citizens with a certain predisposi- tion are likely to be responsive to these offers and alter their policy beliefs in the direction of the candidate. Successful persuasion attempts can make citizens' preferences en- dogenous to a candidate's campaigned policy platform. First I describe how voters' policy beliefs and candidates' campaigned platforms can result in persuasion shifts. I show the electoral consequences of this process regarding policy-distance and voting probabilities. The theoretical section ends with a discussion of observable implications, concentrating on determinants that make citizens more likely to be persuaded by a candidate's platform.

6.2.1 Policy beliefs, candidates' platforms and persuasion attempts

The foundation of electoral campaigns is persuasion. Campaign advertisements, campaign speeches and public debate aim at persuading voters about political orientations. To theorize about persuasive effects of political campaigns, a simplified depiction of this process requires at least two points in time: Before the campaign, and at the end of the campaign. Prior to an electoral campaign, voters possess policy beliefs about their ideal policy platform. During the campaign, candidates inform and promote their policy positions, making an offer to the general public to adapt their own policy platform. This offer can be seen as a persuasion attempt: Candidates attempt to persuade voters about their campaigned positions. Persuasion alters a voter's prior policy beliefs in the direction of the candidate, resulting in a systematic change when comparing preferences at the beginning of the campaign with preferences at the end of the campaign. In the following, I study the consequences of this process in a situation with two candidates k (1,2), who position themselves on a one-dimensional policy space $X \in \mathbb{R}^{\mathbb{1}}$, and N voters ($i \in (1, \ldots, N)$). The two points in time are denoted with $t \in (0,1)$.

Policy beliefs and candidates' platforms

Voters' prior campaign preferences are represented by policy beliefs about the ideal policy platform, which shall be denoted as Θ_{i0}. Employing the same specification as in the proceeding chapters, I asuume that these policy beliefs are normally distributed with a mean belief x_{i0}, and belief variance of $\sigma_{\Theta_{i0}}$. The policy beliefs imply that voters differ in position (in terms of their mean belief about their ideal policy platform), but further face varying uncertainty about their ideal-platform (captured by belief variance $\sigma^2_{\Theta_{i0}}$).

$$\Theta_{i0} \sim \mathbb{N} \left(x_{i0}, \sigma^2_{\Theta_{i0}} \right) \tag{6.1}$$

I further propose that the candidates' communicated platforms are perceived by all voters in a similar way[1]. One aspect about candidates' platforms is of importance for the discussion. Most often, a candidate's campaigned policy platform is ambiguous; voters can not perfectly pin down what platform a candidate actually occupies. This can either be the case because candidates have restricted ability to get their positions across, or because they blur their positions for strategic reasons. From the perspective of the voter, this results in uncertainty about the platform a candidate is promoting (Enelow and Hinich, 1981; Bartels, 1986). To incorporate this in the model, candidates' platforms $\mathbf{C_k}$ can be modeled by a normal distribution[2], which is centered around a mean platform C_k with a candidate-specific variance τ_{C_k}. The variance term τ_{C_k} represents a candidate's platform ambiguity. The lower the variance, the clearer a candidate's promoted position, the higher the variance, the more ambiguous the platform position.

$$\mathbf{C_k} \sim \mathbb{N}\left(C_k, \tau_{C_k}\right) \tag{6.2}$$

The top panel of Figure 6.1 illustrates the situation prior to the campaign, using one voter and two candidates. The voter's policy beliefs about her ideal policy platform are mainly located between the two candidates. Of interest is how this prior campaign situation changes as a result of the attempt by the two candidates to persuade her.

Persuasion attempts and their consequences

During the campaign, candidates attempt to persuade voters to adapt their campaigned platform. The effect of such persuasion attempts are fundamentally heterogeneous: Some voters find a candidate's platform offers appealing, others do not. I model this process as a deliberate decision. Each voter decides if she finds any of the two candidates' platform-offers persuasive and updates her beliefs accordingly, or decides to stick to her prior policy beliefs ignoring the candidates' platform offers. Denote K_i as the result of this decision: Let $K_i = 0$ if a voter decides to stick to her prior belief, $K_i = 1$ if a voter is persuaded by the first candidate's platform , and $K_i = 2$ if persuaded by the second candidate.

If voters find either candidate's platform persuasive, they alter their prior preference in direction of the candidate. I assume that this adoption of a candidate's platform can be understood in terms of Bayesian learning. Voters update their policy beliefs given the accepted candidate offer[3]. Suppose that the voter from the example finds the

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[1]This precludes projection as another process how policy preferences can be endogenous to candidates platforms: Some voters perceive a candidate to be closer than the candidate actually is (Brody and Page, 1972; Visser, 1994). Although the primary focus of the chapter is on persuasion, there will be more to say about projection in the empirical section, especially when it comes to differentiating between the two empirically.

[2]Because candidates only communicate one platform over the course of the time, this platform does not depend on time.

[3]In this I treat the reasons for the persuasion decision as exogenous. This essentially adapts a subjective Bayesian learning perspective. While this has been criticized by Taber, Cann and Kucsova (2009), at this stage of the argument I find this perspective appealing, as it permits me to formulate a simple learning process. Later on, I will discuss who is likely to be persuaded during campaigns and adapt his policy beliefs in line with the candidates' platforms
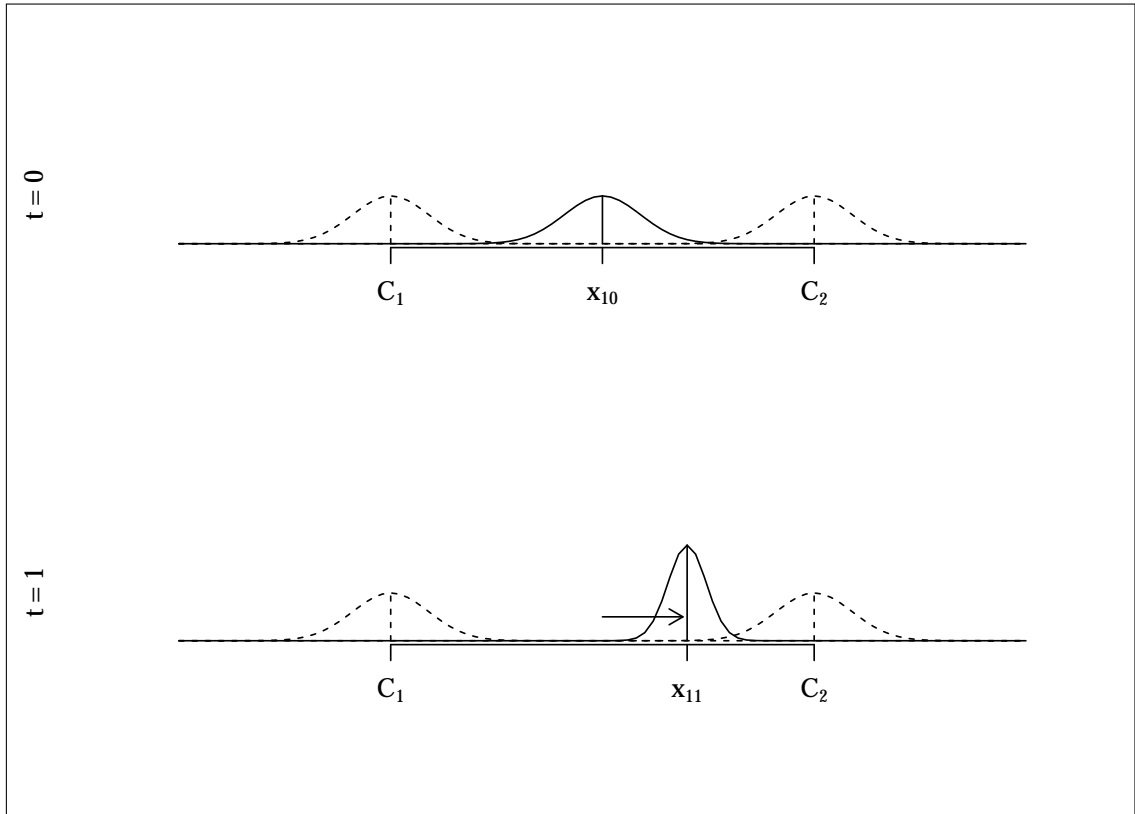
Figure 6.1: Policy beliefs, candidates' platforms and consequences of persuasion attempts

second candidate's position persuasive and updates her beliefs accordingly. Because the voter's prior and the candidate's position both follow a normal distribution, her posterior beliefs Θ_{i1} are a mixture between the two normal distributions. The lower panel of Figure 6.1 shows the posterior beliefs, which are shifted in the direction of the second candidate.

Of special concern is the persuasion-shift in terms of a voter's average policy belief. Given that the voter updates her prior beliefs in accordance with a specific candidate's offer, the conditional expectation of the posterior is given by:

$$E\left[\Theta_{i1} \mid K_i\right] = x_{i1} = \begin{cases} x_{i0} & \text{if} \quad K_i = 0 \\ \gamma_{i1}x_{i0} + (1 - \gamma_{i1})C_1 & \text{if} \quad K_i = 1 \\ \gamma_{i2}x_{i0} + (1 - \gamma_{i2})C_2 & \text{if} \quad K_i = 2 \end{cases} \tag{6.3}$$

where the weight $\gamma_{ik} = \frac{\tau_{C_k}}{\tau_{C_k} + \sigma^2_{\Theta_{i0}}}$ is derived from the posterior beliefs and depends on each voter's variance in prior policy belief $\sigma^2_{\Theta_{i0}}$ and a candidate's ambiguity τ_{C_k}[4].

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[4]For persuaded voters the variance of the policy beliefs can decrease as a result of this learning process and make them more confident with respect to which platform represents their interest. This can also be seen in the lower panel of figure 6.1. The posterior policy beliefs have lower variance compared to the

Two expectations about the size of the shift can be derived from this term. First, if a candidate's platform is not ambiguous (where $\tau_{C_k} = 0$) and a voter accepts the candidate's offer $K_i = k$, the resulting voter's mean belief is equal to the candidate's offer. The more ambiguous a candidate's platform, the less the expectation is updated in the direction of the candidate's mean platform. Second, for voters with larger belief variance the persuasion shifts should be larger as well. Most interestingly, voters with no belief variance (who are perfectly certain about their ideal platform $\sigma_{\Theta_{i0}^2} = 0$) being persuaded does not alter their beliefs at all. This last implication underlines one of the major points in this dissertation: Standard spatial models, which essentially make this assumption, do not allow us to study the effect of campaign persuasion.

The expectations from this persuasion shift are essential. Persuaded voters should shift their prior campaign policy beliefs in the direction of the candidate's promoted platform. Conditional on persuasion, the posterior beliefs should lie between the prior beliefs and the candidate's platform. Moreover, the size of the persuasion shift depends on a voter's variance in policy beliefs $\sigma_{\Theta_{i0}^2}$ and the ambiguity of a candidate platform offer. But what are the electoral consequences of such a persuasion shift? In the next subsection, I discuss them in terms of policy-distance as well as voting probabilities.

6.2.2 The electoral consequences of persuasion in campaigns

If a sufficient number of voters shift their preference as a result of candidates' campaigns, this can affect the outcome of an election. The electoral consequences can be understood in terms of decreasing policy distance, which directly affect probabilities to vote for a candidate. As a result of this process, candidates can gain a notable share of votes by promoting their platform in electoral campaigns.

Decreasing policy-distance

As a result of the outlined persuasion-process, a voter's distance to any one of the candidates can be affected. A voter who is not persuaded during the campaign has the same policy distance prior to the campaign, those who are persuaded by one of the candidates have a smaller policy distance to one of the candidates after the campaign. For a voter with prior preferences between the two candidates, being persuaded by one of the candidates decreases policy distance to this candidate, and increases the distance to the other candidate. For persuaded voters who possessed more extreme prior preferences, (than one of the candidates) the policy distance can decrease towards both candidates.

I now analyze how distance to the two candidates should evolve for voters who are persuaded, and those who are not. Policy-distance can be calculated as the quadratic loss of a voter's mean belief x_{it} to a candidate's mean platform C_k. Voters' policy distance to candidate k at the end of the campaign is given by $-(x_{i1} - C_k)^2$. To understand the evolution over the campaign period, I formulate this end-of-campaign distance as a function of the prior campaign distance. The functional relationship

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prior. The potential decrease in variance directly follows from the Bayesian learning mechanism, based on normal distributions, where the posterior variance is given by: $Var[\Theta_{i1}] = \frac{1}{\frac{1}{\sigma_{\Theta_{i0}^2}} + \frac{1}{\tau_{C_k}}}$.

between the distance to the first candidate, conditional on the persuasion process K_i, is given by[5]:.

$$-(x_{i1} - C_1)^2 = \begin{cases} -(x_{i0} - C_1)^2 & \text{if } K_i = 0 \\ -\gamma_{i1}^2 (x_{i0} - C_1)^2 & \text{if } K_i = 1 \\ -\gamma_{i2}^2 (x_{i0} - C_2)^2 + 2\gamma_{i2}(C_1 - C_2)(x_{i0} - C_2) - (C_1 - C_2)^2 & \text{if } K_i = 2 \end{cases}$$
(6.4)

The equation shows the three cases of how policy distance to the first candidate can evolve over the course of the campaign. First, for an individual who is not persuaded ($K_i = 0$), the distance to candidate one actually stays the same. In this case, the campaign has no effect on the policy distance. Second, if a voter is persuaded by the first candidate ($K_i = 1$), distance decreases to this candidate. The decrease in distance depends on the strength of the persuasion-shift in the direction of the candidate. If γ_{i1} is 0 (which from equation 6.3 implies that a voter's posterior mean belief equals the candidate's position) independent of the prior distance, the distance at the end of the campaign will be zero. If shifts are minor $\gamma_{i1} > 0$ the distance will shrink by γ_{i1}^2. Third, if a voter is persuaded by the second candidate's platform $K_i = 2$, distance to the first candidate is also affected. The term is slightly more complicated, but essentially the resulting distance depends on a voter's prior position. If a voter is more extreme than the second candidate, distance can decrease to both candidates, if a voter's prior belief lie in between the two candidates, distance decreases to the second candidate and increases to the first candidate. The inverse pattern holds for the distance to the second candidate. For both candidates, systematic changes in policy-distance influence the voting decision. In the following I illustrate this effect more closely.

Decreasing voting probabilities

A key insight of spatial voting models exposes the electoral consequences of the persuasion-process. A change in police distance directly affects voting behavior. Because persuaded voters alter their position in direction of one of the candidates, depending on their prior position, they should be more or less likely to vote for one of the candidates due to the persuasion process.

A spatial vote choice model illustrates these electoral effects. Suppose that voters make voting decisions solely based on policy distance. Employing a logit specification to model the probability that a voter casts her vote to candidate two $Pr(y_{i0} = 2)$ prior to the campaign (where y_{i0} shall be defined as the intended vote choice before the campaign, and y_{i1} at the end of the campaign). The probability is affected by the difference in distance[6] to the two candidates: $Pr(y_{i0} = 2) = \frac{1}{1 + exp(\beta[-(x_{i0} - C_2)^2 + (x_{i0} - C_1)^2])}$. The difference of this prior voting probability, compared to the end of the campaign probability $Pr(y_{i1} = 2) - Pr(y_{i0} = 2)$, reveals the electoral consequences. The first

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[5]The full theoretical model development is presented in Appendix C.1

[6]Difference in distance naturally results from a utility-maximizing framework, in which voters compare the expected utility for the two candidates. This was more formally derived in the previous chapters, see e.g. Equation 4.6
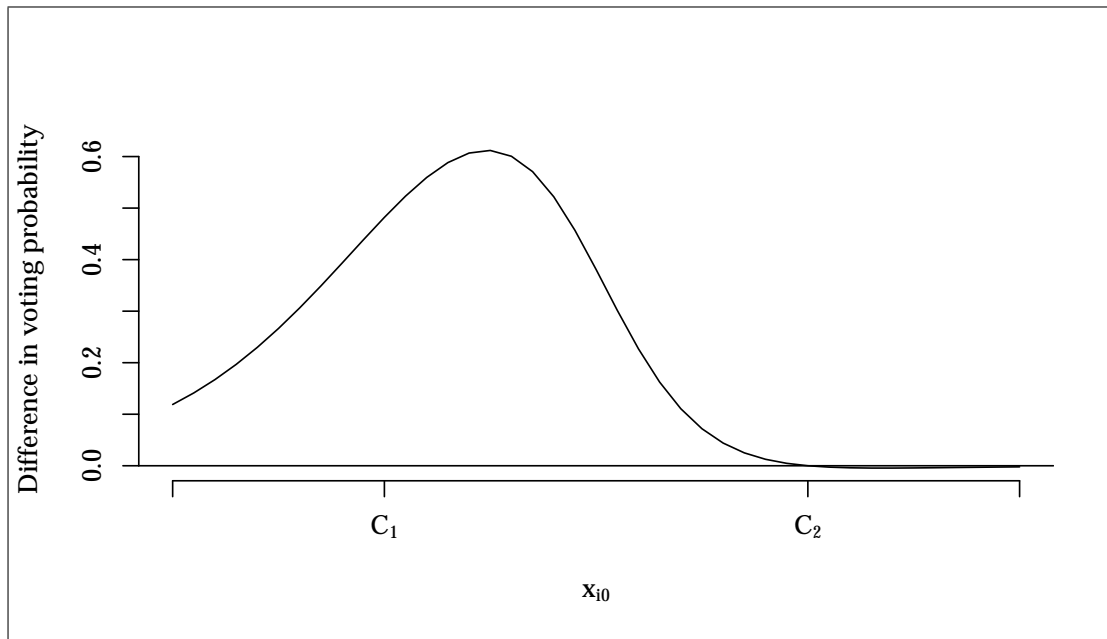
Figure 6.2: Difference in voting probabilities for candidate one, before the campaign minus at the end of the campaign. For a voter persuaded by candidate two.

difference shows whether a voter is more or less likely to vote for the candidate as a result of the persuasion process[7].

For illustration, we can analyze how a voter, who is attracted by the second candidate platform ($K_k = 2$), changes her predicted probability over the campaign. Figure 6.2 shows the difference in predicted probability for voters with different prior mean beliefs x_{i0}. In the scenario, the two candidates take on the same positions as in Figure 6.1. I further assume the same persuasion shift of $\gamma_{i2} = 0.5$ as in the illustration. The first aspect to note, is that the highest increase is found among voters that have prior mean policy beliefs, between the mid-point of the two candidates and candidate one. To understand this correctly, if candidate two manages to persuade voters with prior beliefs closer to candidate one, their probability to vote for candidate two will increase over the course of the campaign. In our example, the increase can be around 0.6 percentage points. Of further interest is the decrease in first difference in predicted probability for voters with prior beliefs more extreme than candidate two. Due to the persuasion process these voters become less extreme. Based on the quadratic loss-function, the decrease to candidate one is stronger, compared to candidate two. This increases their probability to vote for candidate one, although they are persuaded by candidate two. In our case, the decrease is of such small margins that it can be disregarded.

Overall, from Illustration 6.2 it should be apparent that for the candidates there is much to gain through the outlined persuasion process. If a candidate manages to persuade voters close to the other candidate's platform, he can heavily increase his

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[7]This set-up can be used to derive general conditions under which the difference voting probabilities is especially important. I decided to stick to an illustrative example, as the key insights from such an exercise will be fairly similar.

expected vote share from among this group. On the other hand, there is essentially nothing to lose. If they persuade voters more extreme than their platform, this slightly increases the chances that these citizens will vote for the other candidate, however losses in predicted probability are minor. Of course, the illustration depends on a set of parameters[8], but the key insight can formulated without them. Only if a candidate manages to persuade voters that are closer to the other candidate's platform are large margins to be gained. This is a most important point as it leads to the question: which voters are likely to be persuaded by the candidates. I address this question in the next subsection outlining hypotheses about the persuasion process.

6.2.3 Implications: Who can be persuaded? And how strongly?

Which voters are persuadable? And how strongly do they decrease their distance to a candidate over the course of a campaign? Two sources of determinants are important to explain the outlined persuasion process. On the one hand, individual predispositions, such as the general tendency towards a political party, potentially play a significant role. On the other hand, the structure of citizens' policy beliefs is an important factor for the persuasion process. Essentially, the determinants should be incorporated differently within the outlined model framework. While predispositions affect the likelihood that a voter is persuaded by one of the candidates (the probability being of class K_i), variance in policy beliefs impacts the shift size over the cause of the campaign (γ_{ik}).

Individual predispositions have been found to affect many aspects of political behavior, but are especially known to impact information processing. Since the "American Voter" (Campbell et al., 1960), theories of political behavior have reserved a central role for partisanship.. Partisanship as the "unmoved mover" is theorized to anchor political perceptions, the evaluation of arguments, and platforms. Recently, Greene (2011) showed that partisanship strongly influences campaign effects. Lenz (2013) argues that partisans are not only informed by their party's communication but also adjust their policy-orientation to match their party. Building on a field experiment, Gerber, Huber and Washington (2010) underline the active force partisanship plays in anchoring perceptions of the political world and shaping attitudes. Following this behavioral tradition, I argue that voters who identify with a specific party alter their distance during the campaign as they are more likely to be persuaded by their party's candidate[9].

H 1 *Voters who identify with a political party are more likely to be persuaded by their party's candidate.*

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[8]Such as the importance of policy-distance in voting decisions (which implicitly has been set to 1 in our example). Moreover, the persuasion shift is of importance to determine the margins of changes in predicted probability. Additionally, the distance between the candidates' platforms affects the expectation.

[9]Of course, there are further predispositions that can affect an individual's likelihood of being persuaded by a specific candidate. One could, for example argue that prior policy beliefs affect the process. Liberal voters are more likely to alter their policy beliefs towards the liberal candidate compared to a conservative candidate. The sociological background might affect the probability of being persuaded as well: Sharing a common background with a candidate influences the probability. Although these are important aspects, the focus of this chapter is on candidate's party identification.

The strength of the persuasion shifts will depend on each voter's structure of political preferences. As discussed above, the theory expected persuaded citizens with larger variance in policy beliefs, to show stronger shifts. This argumentation directly follows from Equation 6.3, in which γ_{ik} depends on a voter's variance in beliefs. Voters who are uncertain about their ideal-platform can be shifted more strongly, compared to those that are certain[10]. This argumentation can be summarized in the following hypothesis:

H 2 *For persuaded voters, larger variance in policy belief has a positive effect on the persuasion-shift.*

Empirical tests of the outlined process and the two hypotheses involve a strong focus on heterogeneity in observed outcomes. The process calls for campaign-panel data, in which at least two waves of measurements for policy attitudes help to identify changes of policy-distance and the strength of these changes. The methodological challenge to identify the different patterns is addressed in the following sections.

6.3 Empirics

In the following analysis, I generate estimates for the campaign-persuasion model outlined in the theory section. I use data from the American National Election Panel Study that covers the 2008 presidential election. The dataset contains measurements of respondents' attitudes about policy issues at the end of the campaign and before the presidential campaign started. On the basis of this data, implications derived from the theory allow me to estimate the share of voters who shift their preference in the direction of Obama's or McCain's campaigned platform. Building on a latent class model, I show that the probability of a persuasion-shift depends on a respondent's party identification: Democrats were more likely to adopt Obama's platform. Republicans were more likely to change their policy beliefs in McCain's direction. Moreover, the size of the shift depends on a respondent's structure in policy beliefs. The model shows that citizens with wider policy belief variance have substantially larger shifts.

6.3.1 Data from the U.S. presidential election 2008

The U.S. presidential election of 2008 constitutes an ideal case to obtain estimates for the campaign-persuasion model and test the outlined hypotheses. After George W. Bush's second term, both the Democratic, as well as the Republican Party went through a process to find their presidential nominee. While McCain secured the Republican nomination by March, it took until the beginning of June 2008 for Barack Obama to win the nomination of the Democratic party. The fact that at the beginning of the year the nomination was uncertain excludes the possibility that partisans already gathered around their candidate's platform, as one might could expect from a situation in which the president is up for re-election and simply re-announces her positions. Hence, the

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[10]The persuasion-shift is further affected by the ambiguity of a candidate's campaigned platform. The clearer a candidate's platform is formulated, the stronger persuaded voters alter their beliefs in the candidate's direction. Because I will not be able to test this implication with the data used in this chapter, I will not follow this argumentation further.

data gets us close to the theoretical situation depicted prior to the campaign, in which both candidates' platforms are unknown and are announced once the campaign started. The election itself took place on the fourth of November 2008.

An additional aspect that makes the US presidential election of 2008 a valuable case is the availability of panel data for the campaign period. The 2008-2009 Panel Study of the American National Election Study covers the entire campaign period and the first year of the Obama presidency, starting in January 2008 until September 2009. Measurements of policy preference from at least two points in time during the electoral campaign, are necessary to obtain estimates for the campaign-persuasion model. The panel-survey contains appropriate measurements, as it includes the same set of eight policy issues question in the January wave and the wave prior to the campaign in October 2008[11]. The issue questions are concerned with "Gay marriage", "Taxation", "Health care", "Terrorism"and "Immigration"[12]. Respondents expressed their attitude towards these issues on a seven-point scale, ranging from "strongly opposed" to "strongly in favor". For the purpose of the analysis, it makes sense to only include respondents that answered at least one attitude question in both waves. Only a portion of the respondents was sampled to answer the battery of policy issues in both panel waves, which leaves us with 357 observations. The answering pattern of these respondents for both waves are presented in Figure 6.3. Many respondents show strong attitudes towards the issues. For example, the modal attitude for raising taxes on incomes over 200k a year is in both waves strongly in favor. The attitude patterns do not show strong aggregated shifts in any direction between the two waves.

In the October wave, respondents also placed Obama and McCain on the same eight policy-issues. In the following, I will rely on this information to construct the two candidates' policy platforms. Figure 6.3 further shows the average placements for Obama (straight line) and McCain (dotted line). On issues concerning taxes and health care, the two candidates possess clearly different perceived positions. On the other issues the difference between the two is less distinct. What can not be observed is any trend towards the candidates' positions. This is not surprising, as campaign effects are fundamentally heterogeneous, in a way that a stable distribution of attitudes yields little insights about individual attitude changes.

I employ factor analytical methods to obtain measurements of citizens' policy preferences that correspond to the outlined theoretical model [13]. For the eight policy-issues, I

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[11]Unfortunately, the three panel waves in between do not include the same policy-questions. Moreover, two of the three were conducted in February and March which is before the campaign started. As a result, only the two mentioned are of relevance for the analysis.

[12]The eight issues are the same employed in Chapter 4 of this dissertation. The wording can be seen in Figure 6.3.

[13]Measurement of citizens' policy preferences and candidates' platforms is a widely discussed topic in the political science literature (see e.g. Ansolabehere, Rodden and Snyder, 2008). Most often, tests of spatial voting theory rely on liberal-conservative self-placements as well as candidate-placements on the same scale, to approximate the theoretical concepts (see e.g. Kedar, 2005; Lewis and King, 1999). In the application here, this measurement can be problematic for two specific reasons. First of all, single-item measurements will result in large measurement error, which is of special concern when comparing policy-changes. Second of all, projection and scale-perception might affect the classification. Respondents have different perceptions of the standard issue scales (Hare et al., 2014), which makes comparisons of changes over time to a fixed candidate platform especially challenging. Additionally, placements of
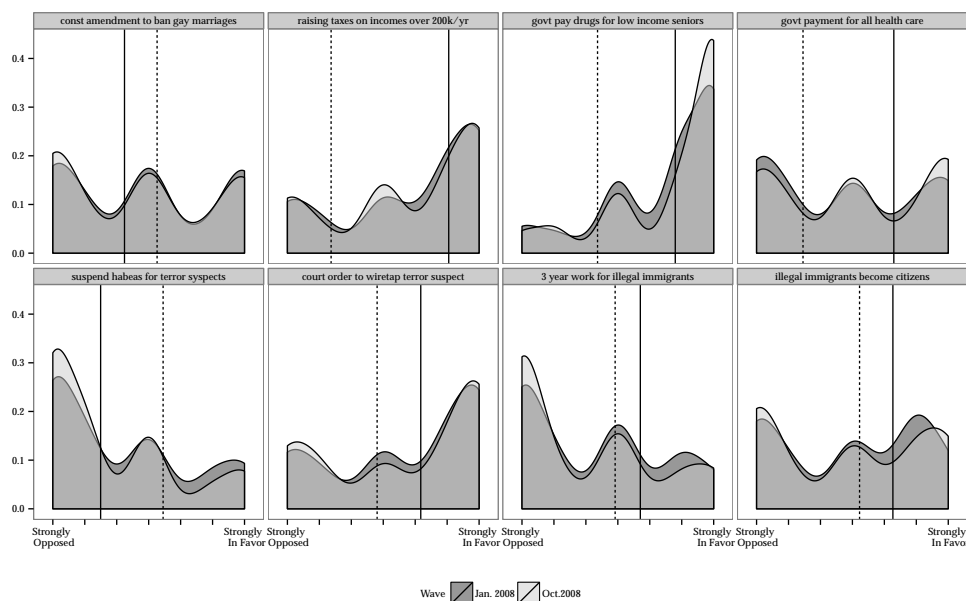
Figure 6.3: Distribution of policy attitudes

calculate a one dimensional explanatory factor model, obtaining factor scores for both panel waves[14]. The one-dimensional model has a reasonable fit (RMSE 0.09 for the January Wave, 0.06 for the October wave). The factor scores approximate a citizen's mean policy belief from the theoretical specification (which are denoted with x_{it}). I recoded the resulting factor-scores to facilitate our understanding, such that higher values indicate more conservative positions. The distribution for both waves are depicted in Figure 6.4. Both distributions have a similar shape, except for the higher density around zero in the January wave.

Relying on the factor loadings further permits me to calculate measurements of both Obama's and McCain's campaigned platform. Based on the perception of each candidate's policy positions in the October wave, policy platforms can be constructed by projecting candidates on the same dimension as the respondents. To approximate candidates' platforms, I rely on the average factor scores for Obama (C_1) and McCain (C_2). While the average score for Obama is at -0.54, the average score for McCain is at 0.91[15] The mean platforms are depicted in the panel on the right hand side of Figure 6.4,

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candidates are issued to projection bias (Grynaviski, 2006; Krosnick, 1990). Projection should result in an adjusted perception of the candidates' platforms over the campaign. To the contrary, a persuasion process results in a changing in preferences(Visser, 1994). The aggregation of multiple policy-issues based on factor analytical models, and the use of mean candidate platforms, should help to overcome the two issues.

[14]For a description of the factor model please see Appendix C.2

[15]I employ respondent's mean platform perception instead of individual perceptions, to mirror the conceptualization of the theoretical model, in which all voters perceive candidates' platforms in a similar way. Relying on the mean platform further minimizes projection bias (Grynaviski, 2006). Projection is another mechanism of how voters preference can be endogenous to a candidate's campaigned platform. Voters perceive one candidate as being closer than this candidate actually is to themselves. Using mean platforms precludes this psychological effect.
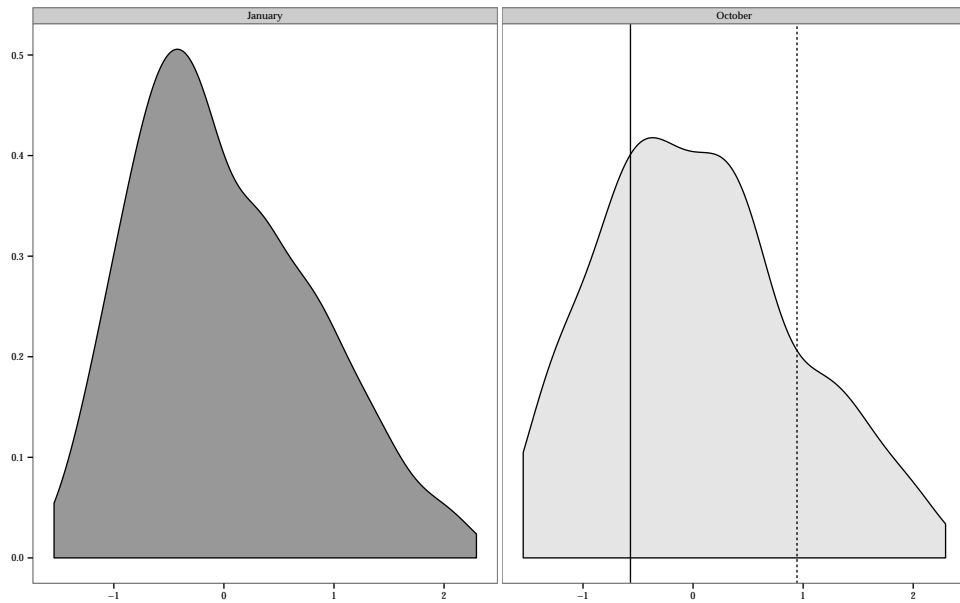
Figure 6.4: Distribution of citizens' mean policy beliefs and candidates' platform

where again Obama is shown with a straight, and McCain with a dotted line. Based on these distributions in Figure 6.4, one can not infer to what extent a voter's preference evolved according to the theoretical specification.

Closely following the implications of the theoretical model reveals the persuasion effect of the campaign and is a test of the first hypothesis. For respondents with a certain predisposition, the distance to a candidate should be smaller after the campaign, when compared to before the campaign. To analyze this, I calculate the quadratic distance for both time points, using a respondent's prior campaign preference and end-of-campaign preference, and the two candidates' platforms. Figure 6.5 shows the difference in distance for different partisan groups. Using a standard seven-point scale on which respondents could indicate if they perceive themselves as strong Democrats, strong Republicans or as Independents, I would expect that a certain share of the partisans are more likely to be persuaded, and as a result decrease their distance to their candidate over the course of the campaign. The box-plots for Obama (to the left) show that the variance in distance-difference for Democrats is generally smaller, when compared to Republicans. One can further observe that for democratic partisans, the median in all three groups is around or below zero, while for Republicans the median values are clearly above zero. This implies that a higher share of Democrats decreased their distance to Obama, when compared to Republicans. A similar pattern can be observed for the difference in distance to McCain. Although this supports the theoretical expectation, it also highlights the strong heterogeneity within the groups, for which I would expect a clear shift towards the candidate. For example, 50 percent of strong democratic partisans even increase their distance to Obama. This finding highlights the importance of developing an empirical specification that takes the heterogeneity of this process sufficiently into account.
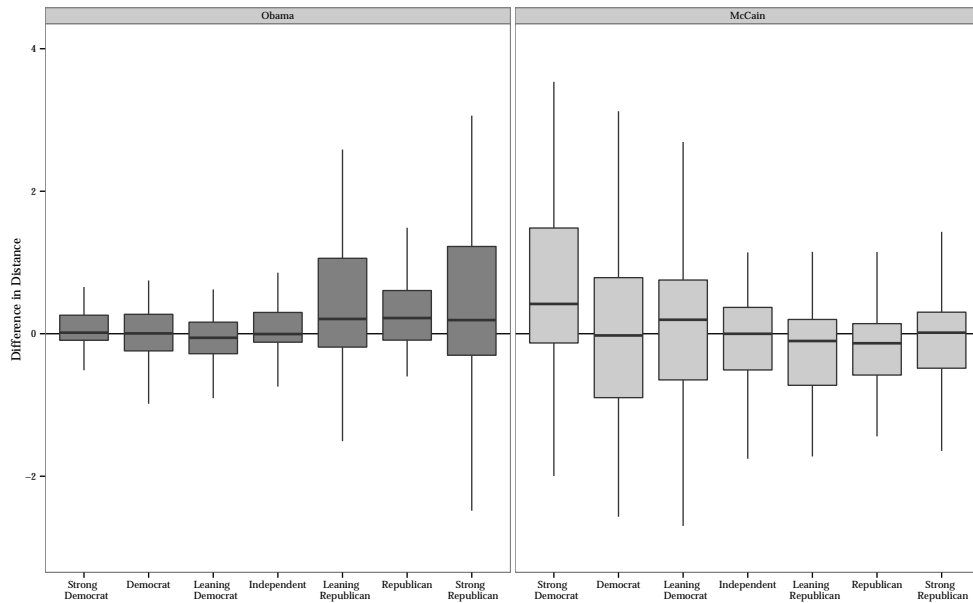
Figure 6.5: Difference in distance to Obama and McCain before and after campaign by different levels of party identification

In order to test the second implication of the theoretical model, which is that voters with higher variance in policy beliefs show stronger shifts as a result of campaign-persuasion, an appropriate measurement of respondents variance in policy beliefs is needed. I employ the same measurement as discussed in Chapter 4. The intuition behind this measurement is that an increasing belief variance should result in additional error when estimating the relationship between answering patterns for concrete policy proposals and underlying platforms. I estimate the varying randomness as a respondent's average sum of squared errors from separate regressions of each respondent's liberal-conservative self-placement on the eight different policy attitudes[16]. Based on the results, I calculate the average sum of squared residuals for each respondent to approximate the belief variance. Higher values indicate a higher belief variance, while lower values indicate more precise beliefs. The values I obtain for the October wave vary from close to zero to just above ten[17]

6.3.2 A latent class model to estimate persuasion-processes

Based on the estimates of citizens' preferences and Obama's and McCain's policy platform, I formulate a latent class model to estimate the persuasion-process of electoral campaigns. Generally, identifying persuasion processes from observable data with two opposing sources is challenging. The major challenge is the strong heterogeneity of this process: While some citizens are persuaded in one direction, others are persuaded

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[16]The measurement can be derived more formally relying on a linear item response model that uses self-placements as a measurement of the latent trait. For a detailed discussion of this measurement I would like to refer the reader to Chapter 4.3.2 The results from the auxiliary regression are reported in Appendix A.2.

[17]For descriptives of covariates used in this chapter, please see Appendix C.3.

in the opposite direction. With equal shares in both of these groups, researchers will observe no average effect of persuasion during campaigns. Because of this, researchers have turned to experimental designs to identify persuasion processes. Studies in political psychology have showed that individual preferences can be shaped under different circumstances (Mutz, Brody and Sniderman, 1996; Cobb and Kuklinski, 1997; Druckman, 2004; Arceneaux, 2012; Jerit, 2009). This, however, does not permit any inference about the persuasion-effect in a particular electoral campaign. Only recently have studies started to employ natural variation to identify the persuasive effects of campaigns and party position-taking (see e.g. Huber and Arceneaux, 2007; Lenz, 2013). This approach does not permit researchers to analyze any particular campaign, as the applicability is limited to situations in which natural variation exists.

My research design relies on the observable implication of the outlined campaign-persuasion model. Building on latent class models, I am able to estimate the share of voters that are not persuaded by any of the candidates, when compared to the share that alter their preferences in accordance with the persuasion models, in the direction of one of the candidates[18]. This variation permits me to identify the importance of persuasion processes in a specific electoral campaign. For citizens' preferences prior and at the end of the campaign, I calculate the quadratic distance of voters' preferences to the two candidates' platforms. For both, I employ the estimates from factor models discussed above. The distance at the end of the campaign is modeled conditionally on the latent class of each respondent: Either a respondent is persuaded by one of the candidates, or sticks with his or her prior distance. In the following, I outline how this class-assignment can be estimated as a function of covariates.

The empirical expectations can be formulated similar to the theoretical expectations of the persuasion process in Equation 6.4. The three classes of voters correspond to three empirical models that relate prior campaign distance to end-of-campaign distance. First, for respondents with exogenous preferences (who are not persuaded) $K_i = 0$, quadratic distance $-(x_{i1} - C_k)^2$ of respondent i at end of the campaign $t = 1$ to candidate k should be centered around the prior distance $-(x_{i0} - C_k)^2$. While this systematic component comes from the theoretical model, in the empirical specification the observed distance is described by additional random error $\epsilon_{ij} \sim N(0, \sigma^2)$. Second, if a respondent is persuaded by a candidate him-or herself, $K_i = k$ distance should systematically be lowered by a factor of γ_{ik}^2. Again, the observed distance is influenced by an additional random error [19] $\epsilon_{ij} \sim N(0, \sigma^2)$. And finally, for a respondent who is persuaded by the other candidate q (where $q \neq k$), the expected distance at the end of the campaign to candidate k depends on the respondent's prior preference according to the equation. The complete model can be expressed as:

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[18]For a comprehensive overview of latent class models please see Hagenaars and McCutcheon (2002). Within the political science literature, this class of statistical models has recently been discussed by Imai and Tingley (2012).

[19]I assume that the error-variance is the same for the three models. This assumption is necessary so as to assure that different class assignments do not simply capture respondents whose distance-decrease is explained by a higher error-variance. The assumption is plausible as the measurement model should generate the same error variance in citizens' policy preferences and candidates' platforms independent of their class.

$$-(x_{i1} - C_k)^2 = \begin{cases} -(x_{i0} - C_k)^2 + \epsilon_{ij} & \text{if} \quad K_i = 0 \\ -\gamma_{ik}^2(x_{i0} - C_k)^2 + \epsilon_{ij} & \text{if} \quad K_i = k \\ -\gamma_{iq}^2(x_{i0} - C_k)^2 - (C_q - C_k)^2 + 2\gamma_{ik}(C_k - C_q)(x_{i0} - C_q) + \epsilon_{ij} & \text{if} \quad K_i = q \end{cases}$$

$$(6.5)$$

One challenge that arises in using measured policy preferences to cluster respondents in the different persuasion classes is the measurement error. It might be that the underlying preferences (and thereby distance) remain stable between two points in time, but researchers take any observed shift in the direction of one of the candidates (that is actually due to measurement error) as an indication for persuasion, leading them to misclassifying this respondent. One aspect about measurement error might be helpful in this regard: It should be unrelated to other political attributes of the respondent. For example, if a decrease in distance to a candidate is more likely for partisans than non-partisans, the results are unlikely to be driven by measurement error alone. In this, the theoretical argumentation relating to how predispositions affect the likelihood of being persuaded cannot only be tested, but can also help to further identify the empirical patterns.

Accordingly, I model the class membership K_i as a function of a respondent's partisanship. Let us denote the first class as those being persuaded by Obama's platform $k = 1$, and the second by McCain $k = 2$. The probability of being part of a specific class is modeled using a multinomial logit formalization. This allows us to meet the constraint that each respondent's probability of being in either of three classes add up to one. I rely on the partisanship question asked in the wave before the campaign. For the analysis, the values are recoded such that negative values indicate partisanship with the Democratic party, and positive values with the Republican party. Values of zero describe independent respondents. Let us denote $Pr(K_i = K) = \pi_i$ to be the probability that voter i is in class $K \in (0, 1, 2)$ and pid_i as a voter's party identification.

$$Pr(K_i = K) = \pi_{i0} = \frac{exp[\mu_{iK}]}{\sum_{k=1}^{K} exp[\mu_{iK}]} \tag{6.6}$$

where μ_{iK} describes a linear propensity to be part of class K. The equation maps this to the probabilities of being in a specific class. In order to identify the model, I set the linear propensity of being not persuaded ($\mu i0$) to zero. In a next step, I model the linear propensity of being persuaded by Obama μ_{i1} or McCain μ_{i2} as a linear function of partisanship.

$$\mu_{i1} = \delta_1 + \delta_3 pid_i \tag{6.7}$$
$$\mu_{i2} = \delta_2 + \delta_4 pid_i \tag{6.8}$$

Given estimates of the δ's, the above allows to calculate the probability that a respondent shifts her preference according to the a specific persuasion-model. The hypothesis expects a negative effect of partisanship on the latent propensity to be persuaded

by Obama's platform δ_3, and a positive effect on the McCain's platform δ_4. Since each respondent can only be part of one class, class membership itself is distributed according to a categorical distribution.

$$K_i \sim Cat(\pi_{i0}, \pi_{i1}, \pi_{i2}) \tag{6.9}$$

While K_i is the latent class of a respondent, π_{iK} represents the probability that a respondent is of class K_i. Where π_{iK} is determined given the parameter estimates of $\delta_1 - \delta_3$, K_i can still vary for two individuals with the same partisanship. In the Bayesian estimation framework I will pursue in this chapter, class membership is drawn at each iteration of the sampling procedure. At each iteration the class-assignment conditions the observations used to estimate the parameters in Equation 6.5 that describe the persuasion-shift.

The second hypothesis from the theory section argued that respondents with higher belief variance should show stronger persuasion-shifts. The persuasion-shifts are represented by γ_{ik}. The variance in beliefs measurement discussed above is used to test this argument. In addition, we can derive the hypothesis that candidate platform ambiguity affects the persuasion-shift. Although the data at hand does not permit me to relate the size of the persuasion-shift to a candidate's platform ambiguity (since there are only two), I can allow for varying shifts by each candidate. Therefore, to model γ_{ik} as a function of campaign belief variance, I employ a logit link to meet the theoretical constraint that the parameter should be constrained between 0 and 1.

$$\gamma_{ik} = \frac{1}{1 + exp(-\zeta_j - \zeta_3 \sigma_{\Theta_i}^2)} \tag{6.10}$$

If the argumentation holds, I should estimate a negative effect of increasing variance in beliefs. A higher belief variance $\sigma_{\Theta_i}^2$ should result in lower mixing parameters, which would indicate that the persuasion-shifts are larger for those respondents.

In the following, I estimate three models, slowly building up the complete specification. As a baseline model, I put informative beta priors on the two separate γ's to meet the constraint (between 0 and 1) and avoid identification problem with γ close to 1^{20}. I choose beta-priors located around 0.5 ($\gamma_k \sim Beta(10, 10)$). In this model, I do not include an effect of partisanship on the class-assignment probabilities. Instead, I only include different constants. In a second model, I include the effect of partisanship on class-assignment as outlined above. In a third model, I additionally model the persuasion-shift as a function of belief variance. I use informative priors for the constant terms $\zeta_j \sim N(0, 1)$, and uninformative priors for the effect parameter $\zeta_3 \sim N(0, 10)$ and $\zeta_4 \sim N(0, 10)$. In all models, I choose uninformative priors for the δ's, uninformative gamma priors for the two variance terms σ_j. For the ζ's MCMC Sampling is used to obtain draws from the posterior of the model. The model seems to converge quickly.

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[20]If $\gamma_k = 1$ there is no difference between the three classes, as there is no persuasion-shift.
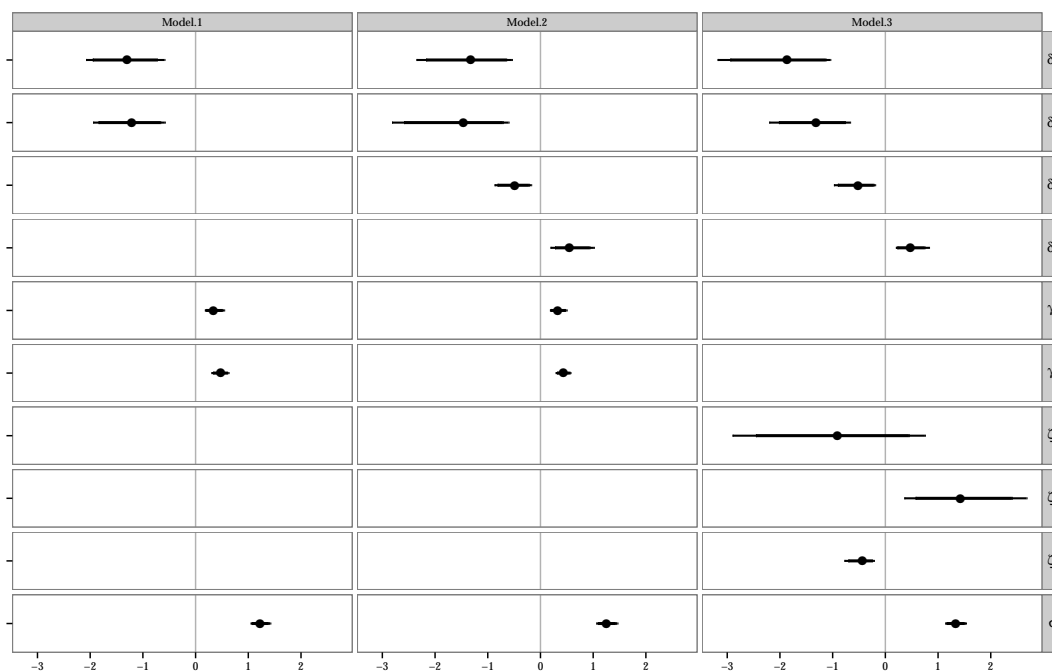
Figure 6.6: Parameter estimates latent class models

Using 2 chains for 32000 iterations discarding the first 30000 as burn-in, I find no sign of dis-converging using standard diagnostic techniques[21]. The model is implemented in JAGS 3.0.1. The next section describes the results from the model.

6.3.3 Results and the electoral consequences

The results confirm the importance of the outlined campaign-persuasion model. I find support for the hypotheses discussed in the theory section. Respondents with a party identification are likely to alter their policy-distance in line with their party's candidate. For both Obama and McCain, the average probability that a respondent will adjust her prior-campaign preference increases according to her respective partisanship for either the Democrats or the Republicans. Modeling the heterogeneity in persuasion-shifts reveals further interesting patterns. For respondents who show stronger variance in policy beliefs, the persuasion-shifts over the entire campaign are estimated to be substantially larger. However, after analyzing the shares of voters that follow implications from the persuasion-models in the 2008 presidential election, I conclude that the individual effects of persuasion (on aggregate) level out. Among respondents for whom persuasion would make a difference (in terms of voting-probabilities) there are equal shares of those persuaded to shift their position in either the direction of Obama or McCain.

The parameter estimates are shown in the Figure 6.6. The figure presents median estimates, as well as, 95% and 99% Bayesian credible intervals for the three model

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[21]I checked convergence using (Heidelberger and Welch, 1981) half-width test as well as the Gelman-Rubin diagnostic (Gelman and Rubin, 1992)
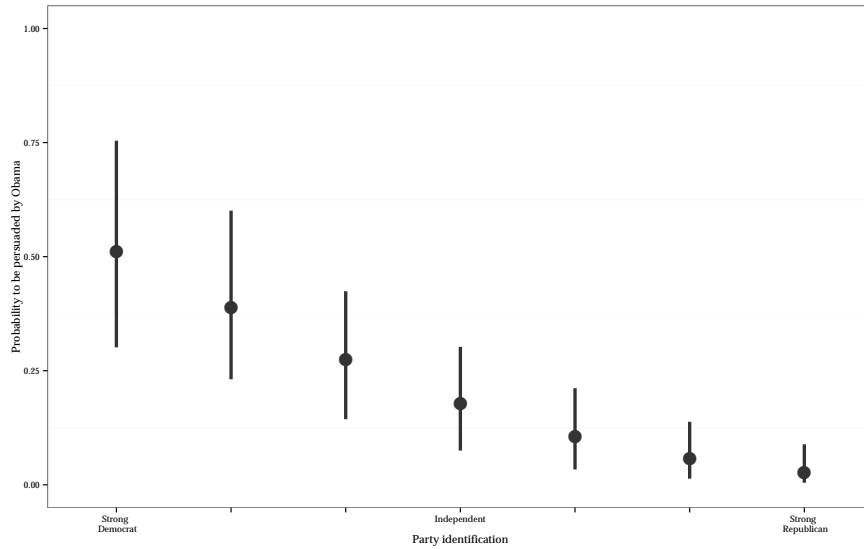
Figure 6.7: Probabilities to be assigned to the different classes by Partisanship

specifications. The first column shows estimates from the baseline model. The mean estimate of the constant for Obama δ_1 has about the same value compared to McCain δ_2. The negative values (and the fact that the credible intervals do not include zero) show that the average size of the class with exogenous preferences is estimated to be substantially large (mean estimate around 55%). On average, less than half of the respondents are likely to shift their preference according to the persuasion-process. The mean estimates for the two mixing parameters γ_1 and γ_2 are both located slightly below 0.5 (for γ_1 0.34, for γ_2 it is 0.47). This indicates that the small share who are persuaded, alter their policy preference to lie close to their candidate. Results from the model, that includes the effect of partisanship are found in the second column. That δ_3 is negative shows that respondents who identified with the Democrats are more likely to adjust their preference in direction of Obama. That δ_4 is positive reveals that the opposite holds true for Republicans. They are more likely to be in the McCain's persuasion group. In this model, the negative mean estimates for the δ_1 and δ_2 imply that independents (partisanship value of 0), are most likely to show exogenous policy preference.

The parameter estimates obtained from the second model confirm the first hypothesis. This can be seen more directly by calculating the class-assignment probabilities for different levels of partisanships, depicted in Figure 6.7. The estimates show similar patterns for Democrats and Republicans. The chance that policy-distance follows the implications of the persuasion model increases with stronger partisanship. For respondents with strong democratic identification, the mean probability to alter their distance towards Obama is 0.51. This probability steadily decreases with decreasing democratic partisanship. The reverse pattern can be found for the probability to be part of the McCain persuasion-class. Republicans are substantially more likely to be characterized by this model when compared to Democrats. The pattern for exogenous preferences (policy-distance stays stable) fits the the Independents. Over the full range of partisanship, the probability never falls significantly below 0.5, but is highest
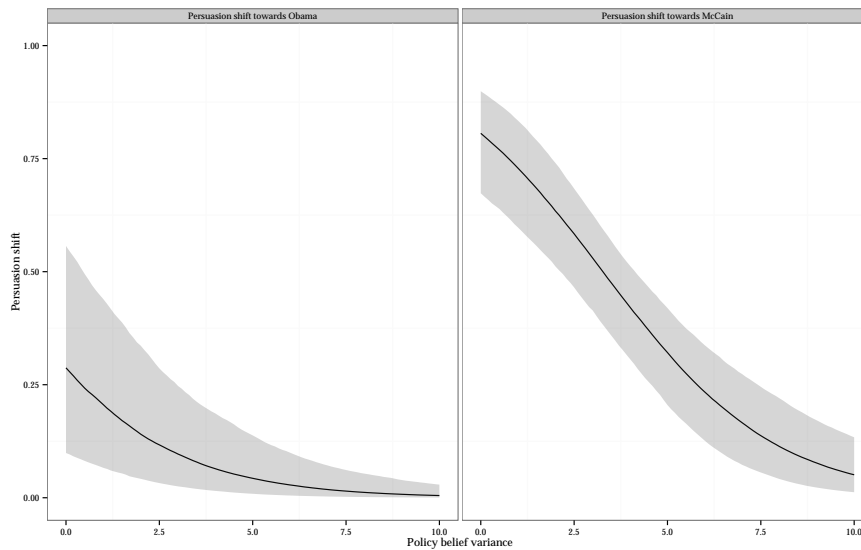
Figure 6.8: Size of persuasion shift for different levels of inconsistency

among Independents. This indicates that the majority of respondents show exogenous preferences. Still, the pattern confirms the hypothesis that among partisans, there is a significantly larger share that follow implications derived from the campaign-persuasion model.

I also find support for the second hypothesis. The third column of Figure 6.6 shows the estimates that model the heterogeneity in persuasion-shifts γ_k. The effect of variance in policy beliefs is captured by ζ_3. The negative mean estimate as well as the credible intervals confirm the expectation: Persuaded respondents with higher variance in beliefs, are characterized by stronger shifts towards the candidate. In particular, the difference in the estimates for the constants is striking. While the estimate for the Obama-class ζ_1 is negative, the constant for McCain ζ_2 is positive. In theoretical terms this implies that those who were persuaded by Obama showed stronger persuasion-shifts when compared to those who were persuaded by McCain. Figure 6.8 shows the persuasion-shift at different levels of belief variance. Among persuaded voters who are quite certain about their ideal-policy platform (low belief variance), the γ_k's are substantially higher, revealing a lower decrease in policy-distance over the campaign. The size of the policy-decrease increases with wider belief variance, such that for high values the shift is basically zero. This implies that all respondents in this class alter their preferences to exactly match the candidate's platform. For those persuaded by Obama, the persuasion-shifts are generally at a low level, ranging from to 0.29 to 0.01. For McCain respondents for low belief variance the shift is estimated to minor (0.89), with high levels the shift is almost perfect (0.078). Theoretically, the difference could be explained by clearer position-taking by Obama during the campaign.

To understand the electoral consequences of the outlined process, the prior-campaign preference of the respondents is of importance: Only if candidates manage to persuade a large share of voters during their campaigned platforms can they substantially
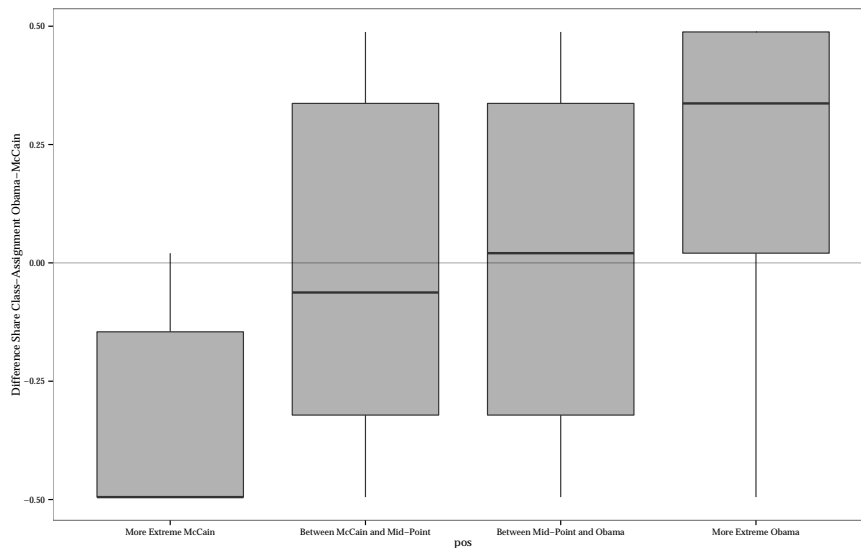
Figure 6.9: Distribution of share of class-assignment by prior-campaign platform

increase their expected vote share. In the example in the theory chapter[22], the highest increase for a candidate is obtained from persuaded voters between mid-point of the two platforms and the other candidate's platform. No electoral-advantage is obtained by persuading voters more extreme than the own position. Based on the estimates of K_i, I can analyze the share of class assignments. For each respondent, I take the share of class-assignments to Obama minus McCain and plot the distribution over different prior campaign positions: for respondents more extreme than Obama, for respondents in between the two candidates, those closer to Obama and closer to McCain (cut point middle position between the candidates), and for respondents who are more extreme than McCain. Figure 6.9 shows the distribution of difference in class-shares for the four groups. Respondents more extreme than the candidates are likely to be of this candidate's persuasion-class. In between the candidates, the shares are about the same size. Following the theoretical considerations, this highlights that the potential increases in electoral support due to the persuasion-process are likely to even out. Because the two candidates persuaded an equal share of respondents.

To summarize: From the outlined model I obtained estimates that stress the importance of an individual persuasion process in campaigns. In the theory section I argued that for candidates there is the chance of electoral support being gained from this process. The empirical examination, however, highlights that the electoral consequences in the case of the 2008 presidential elections might be ignorable. For groups where an increase of voting prob- abilities is the highest, the share of voters that follow implications from the persuasion model are about the same for both candidates. This is not to say that the persuasion process is of smaller importance for electoral campaigns. Indeed, respondents shifted their policy beliefs according to the theoretical expectations. This simply means that it seems as if McCain and Obama persuaded those voter groups

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[22]The estimates obtained from the data-set are comparable to the illustrative example, as the estimated shift-size (from Model 1 and 2) is close to the one used in the illustrative example of the theory chapter.

from whom they could not expect to gain large margins of vote share. This is not to say that this pattern holds for all elections, and subsequent research can use this method to identify elections in which this process yields a considerable electoral advantage. In the next subsection, I discuss the robustness of the results.

6.3.4 Robustness checks

In this subsection, I describe robustness checks I conducted to assure the validity of the conclusions drawn in the previous section. There are valid concerns about using the outlined method to make inferences about changes in policy-distance.

Among the most important concerns is measurement error in policy preferences. Despite the fact that, as argued, measurement error should be unrelated to covariates of the respondents, there is one good reason why the model results might still be spurious. Respondents with extreme factor scores in the first wave are likely to have lower factor scores in the next wave. This revision to the mean effect for factor scores evolves because measurement on the seven-point attitude-scales are truncated. Measurement error cannot increase the score of a respondent who answered extreme attitudes on all issues, but can easily decrease it. This effect becomes a problem as the covariate that should explain these shifts is related to the strength of attitudes. Partisans are generally more likely to respond with strong attitudes. Figure 6.9 highlights why this challenges the results: Class assignment to persuasion-groups is especially high among respondents with extreme prior-campaign positions. For this group, a shift towards the candidate is more likely than a shift towards more extreme values, which can obviously drive the complete results. I employ two robustness checks to investigate this possibility. First, I rerun the analyses on a subsample of respondents who find their prior campaign preference in between the two candidates. For this group, the reasoning above does not apply. I find a similar pattern for this subgroup. Partisanship increases the probability of a persuasion-shift in the direction of the candidate. Second, I analyze the effect of partisanship controlling for prior-campaign preference. The effects are unchanged by this. For a discussion of these results see Appendix C.4.1.

On a more general note, I investigate the effect that measurement error has on the model results. For this, I take the dataset at hand and add random noise to the factor scores in the October Wave, increasing the variance of this additional measurement error. With increasing measurement error, I no longer find support for the effect of partisanship on class-assignment. This emphasizes that measurement error can cause class assignments to be independent of partisanship and leads to the conclusion that the results I find are unlikely to be generated by mere measurement error. For a description of the set-up and results please see Appendix C.4.2.

An additional concern addresses the measurement of the candidates' platforms. One can question if the results are due to the fact that the measurement captures the orientation towards actual candidates platforms, or if they are an artefact in a way that other values would yield similar results. In Appendix C.4.3, I approach this question using placebo-treatments, by moving candidate platforms around. The results confirm that the estimate truly capture partisans oriented towards the platform. For example, an interesting placebo-effect is also found in making the platforms less extreme, by moving one candidate towards the other candidate. From a certain point onwards, I

find no significant effect of partisanship anymore. In general, the effect of partisanship on class-assignment is among the strongest for the platform in the original dataset.

Of further interest is the comparison of the model - that allows for heterogeneity in distance development over the campaign - to one that assumes that distance evolves homogeneous between the two time-points. Using posterior predictive measures, I show that my model yields a better fit in explaining the standard deviation in policy-distance at the end of the campaign using the prior campaign distance. This confirms that the model is able capture important heterogeneity in the development of policy distance that a standard model is not able to reveal. For details I would like to refer the reader to Appendix C.4.4.

6.4 Summary

In this chapter, I have discussed the importance of persuasion-processes in electoral campaigns. Despite long-standing knowledge that campaigns show "minimal effects" it does not necessarily follow that campaigns do not persuade voters to accept or move towards a candidate's policy preference. Candidates' campaigns actually affect voters' policy-decisions by shifting their prior preference in the direction of one particular candidate. In order to analyze this process carefully, I developed an extension to spatial voting models, building on the theoretical model of this dissertation. The extension is tailored to a campaign situation where two competing candidates not only inform citizens about their platforms, but also attempt to persuade them. The theoretical model can be used to identify the importance of this process empirically. For the 2008 presidential elections, I found that although the process explains the way voters' policy-distance evolves during the course of the campaign, the electoral consequences are insignificant, as candidates do not manage to persuade a broad enough share of voters to actually vote differently.

Another contribution to our understanding, demonstrated in this chapter, is a methodological one. Many re- searchers find it hard to make deductions about persuasion-effects from the observable data. I have demonstrated that specifying an empirical model that matches the heterogeneity revealed in the theoretical model, permits a researcher to make valid inferences about the underlying process. I discussed latent class models as a way of doing this. I ran multiple robustness checks that took into account potential problems arising from measurement error, and finally, I dealt with causality of the platform treatments and compared the model fit to homogeneous specifications.

Theorists who rely on spatial models often question the importance of campaigns in understanding representative democracy. I claim that this perspective is deceptive. It is based on the implicit assumption that political preferences are exogenous to the electoral processes. However, campaigns are more than a mere information-device about the candidates' platforms. They can persuade a share of citizens to follow a candidate's policy lead. I show that spatial models are ideally suited for studying the effect of persuasion on preference, *provided* researchers employ the extension put forward in this dissertation. This permitted the adoption of a broader theoretical approach to the study of campaign effects and the examination of the effects on voting behavior.

The presented theoretical conceptualization brings sociological as well as behavioural research on electoral campaigns back into spatial analysis of the electoral process. The expectations derived, coincide with the first systematic empirical investigations of electoral campaigns in the last century. To underscore this, I would like to quote Berelson, Lazarsfeld and McPhee (1954):

> "As time goes on as we compare materials collected early in the campaign with those obtained at later stages, we find that people abandon deviant opinions on specific issues to agree with the position taken by their party (or at least to perceive such agreement)" (Berelson, Lazarsfeld and McPhee, 1954, p.285).

While findings in this direction have been ignored by spatial analysis for decades, the presented modeling approach is a promising way to synthesize these contrasting perspectives on the electoral process.

The extension can certainly be used for further in-depth research in this field. First, it can be employed to study the effect of projection, which is another mechanism showing how a citizen's preference might be endogenous to the candidate's platform. Second, the model can be extended to a campaign situation involving multiple candidates. Last and most important, it can be adopted to a situation in which one party, for specific reasons, has a definite advantage over the others in persuading voters. For example, in cases where one party has control of the national media, which strengthens its ability to promote its own platform and policies, at the opponents' expense. While classic spatial voting models would see no difference in any of the situations outlined above, the newly presented extended model takes account of factors that can directly impact citizens' voting decisions and thereby the overall electoral outcome.

CHAPTER 7

Conclusion

Theories of democracy oftentimes draw on a description of citizens' political capabilities that has been criticized for being out of touch with reality. Indeed, accumulated knowledge in political science about a citizen's involvement in politics and her political behavior, verifies concerns with the sort of simplified depiction regularly used in democratic theory.

> "There can be little doubt that the sophisticated electorates postulated by some of the more enthusiastic democratic theorists do not exist, even in the best educated modern societies"(Achen, 1975, p.1218).

The cause of greatest worry for democratic theory is a general public whose political preferences do not equip them to elect representative leaders, because "without preferences [..] democratic theory - at least in its most liberal guise - loses its starting point" (Bartels, 2003, p.50). In light of this, it is of utmost importance to ask if representation can be achieved with a general public that is "innocent of ideology" (Kinder, 1983, p.391)? And how do citizens that can be "persuaded to leave behind their private judgments" (Garsten, 2009, p.11) affect the electoral linkage? Do politicians who do not "pander" (Jacobs and Shapiro, 2000) to public opinion, but rather shape attitudes through extensive campaigns, shape our portrayal of electoral democracy?

This dissertation directly addresses the century-long debate about the merits of representative democracy. The origin of the argumentation lies in the principal that the central linkage between citizens and their representatives can only be affected if voters with policy preference that deviates from a restrictive theoretical description, also behave differently at the ballot box. Following this line of thought, I study how citizens' electoral decisions are influenced when we assume a wider notion of policy preference; a notion that can be inconsistent with ideological dimensions, persuadable by arguments and endogenous to politicians' position-takings. The central contribution of this dissertation is a theoretical framework that enables us to study such a portrayal, by relaxing implicit assumptions employed in earlier theoretical models. Specifically, I

offer an extension to the wide-reaching theory of spatial voting, which is the work-horse theory in contemporary political science, in order to analyze the connection between citizens' policy views, their voting decisions and representatives' behavior.

The theoretical considerations in combination with the empirical findings underline the significance of a wider notion of policy preference in the study of electoral behavior. In Chapter 2, I identify that researchers in the fields of political behavior, political psychology and public opinion, who question the usefulness of the restrictive definition of voters' policy preferences in spatial voting theory, generally define policy preference in terms of policy beliefs. Policy beliefs represent the idea that citizens themselves can be uncertain about their ideal policy platform. In Chapter 3, I integrate this idea into spatial voting theory, showing that standard models can be expressed as a special case of the conceptualization I put forward. Furthermore, I show how this facilitates studying inconsistent, persuadable and endogenous policy preferences. In Chapters 4 to 6, I focus on understanding how these aspects impact voting decisions and hypothesize that voters with inconsistent preferences put considerably less weight on policy when deciding between political candidates. Using survey data from the American Presidential Elections of 2008, I find support for the hypothesis. In Chapter 5, I analyze the consequences of persuasive political arguments on voting decisions. Building on a novel survey experiment, I find that respondents who were asked to read through a political argument (about a concrete policy) differ in their voting decisions. In Chapter 6, I derive empirical implications for a campaign-persuasion process that permit me to analyze the share of respondents who altered their preference in the direction of either Obama or McCain during the 2008 campaign period. I find that especially party identifiers are likely to follow implications from the theoretical campaign-persuasion model. In all instances where I deal with assumptions which were previously made by researchers about citizens' preferences in spatial voting, I find evidence that voters' behavior can indeed be greatly affected.

In the conclusion, I summarize the central contributions made by this dissertation and discuss the implications for further research based on the theoretical framework set out in this dissertation. Finally, I show how the results presented are of the utmost importance for our basic assessment of democratic representation as a model for governing any country

7.1 Theoretical contribution

The central contribution of this dissertation is the conceptualization of policy beliefs that represent a wider notation of policy preferences. This portrayal is oftentimes employed by behavioural political scientists to explain mechanisms of the electoral aggregation of the people's will that they deem to be of importance. Assumptions made within spatial voting, preclude these aspects in studying the electoral process. Relying on the wider definition, I show that policy beliefs derive novel expectations about electoral behavior and affect the central electoral linkage between citizens and their representatives. In the concluding remarks, I will stress how, on theoretical grounds, this manages to bring together researchers from many different schools of thought within political science.

7.1.1 Ideology and voting decisions

I put forward the argument that the varying degrees to which citizens adopt ideology to structure their beliefs, condition the importance of voting based on ideology. Without doubt, ideology structures the political process. Ordinary citizens who employ the same ideological structures as political elites would find it easy to make well-considered voting decisions. However, many political scientists question this premise: from those who allege that the general public are entirely innocent of any ideological thought, to those who suppose that each citizen possesses an ideal political outcome in the multi-dimensional ideological space. These differing propositions created a division in the way research about electoral democracy has so far been approached. On theoretical grounds the different camps seldom found a means of uniting their viewpoints, instead tending to get lost in details about the empirical applicability of their assumptions. In this dissertation, I follow a innovative theoretical approach. Instead of just offering yet another empirical test, I take a well-established theoretical concept from those who have raised doubts about the public's ideological capabilities and incorporate it into the influential spatial voting theory (which is already well-accepted by the 'opposition' group). In the future, my theoretical contribution will permit spatial theorists to take critics' concerns seriously, by checking if their conclusions are affected if voters do not mimic the restrictive assumptions they had made, and thus enable researchers in the "other camp" to study the electoral consequences of their suppositions about the ideological structure.

7.1.2 Political arguments and the study of electoral behavior

The theoretical framework of this dissertation shows how the evaluation of political arguments can be incorporated into spatial voting theory. The exchange of political arguments enables citizens to form reliable opinions about matters of politics and to make informed voting decisions. For many theorists, public debate about political issues, and the transmission of political arguments are the building blocks for a democratic society. Only by the permanent evaluation of arguments can citizens learn what policy options are best for them personally, and society in general. Researchers in political psychology and public opinion have focused their attention on this aspect of the democratic process. Theoretical arguments as well as empirical examination have greatly enhanced our knowledge of: 1) where policy preferences come from; 2) how they are formed by the evaluation of political arguments and 3) how they change. What has so far been missing,in order to understand electoral representation in general, is how such a process influences citizens' electoral behavior. The theoretical model of this dissertation creates potential for researchers to study the electoral consequences of argument-evaluation processes and thereby accentuates the central role that arguments play in the democratic process.

7.1.3 Partisanship and the electoral process

Policy beliefs can be endogenous to party position-taking, by means of a persuasion process. This process is especially likely to shape partisans' policy beliefs. It has been argued that partisanship anchors citizens' perceptions of the political process. While behavioral theorists maintain that the identification with a political party is in

fact,the driving factor for most of political behavior, spatial voting theorists have never completely acknowledged this proposition. In line with a revisionist's perspective, early spatial voting theories contended that party loyalties are updated in response to a number of short-term political forces, such as a party's positions, so that they are secondary when analyzing the political process. Although newer studies (see e.g. Adams, Merrill and Grofman, 2005) incorporate the idea that partisanship works next to policy, they do not completely respect the original conceptualization of partisanship as the *unmoved mover*. My formulation, which asserts that partisanship increases the likelihood of being persuaded about policy, combines the original formulation with spatial voting models. This will allow further research to investigate the interplay of partisanship, policy preferences and electoral outcome on the basis of an integrative theoretical framework.

7.2 Empirical contribution

The second central contribution of this dissertation is the full reliance on the "empirical implications of theoretical models approach" (EITM). I hope that I have convinced the reader that this approach is fruitful when researcher not only want to introduce novel theoretical concepts, but also want to disclose the empirical explanatory power of these concepts. Three core aspects were developed within this framework:

7.2.1 Theoretically motivated empirical models

In all the empirical chapters (4 to 6), I develop the empirical models from the theoretical specifications that directly estimate parameters taken from the theoretical process. I am convinced that this should be the standard approach to social science data analysis. However, the dull routine of everyday life deviates from this ideal. All too often, researchers rely on a linear approximation of their theoretical mechanisms that sometimes matches these processes, but often does not. In nine out of ten cases, social scientists who are asked to analyze the pattern of data generated by a simple law of physics will run a linear approximation of process, without even considering that the underlying structure might be non-linear[1]. Reliable data analysis requires careful guidance about the correct specification for the empirical model. I have shown that theory can offer guidance as to how the systematic as well as stochastic components of empirical models should be formalized. It is clear that *empirics need theory, as much as theory needs empirics.*

7.2.2 Modeling political processes that defy direct observation

I offer a way to model hard-to-observe political processes, employing latent class models. Social scientists frequently face situations in which they want to explain phenomena that defy direct observation. Building on their theoretical arguments, researchers still have substantial expectations about the implications of these phenomena. I use this modeling approach to classify voters that were persuaded during an electoral campaign. In a similar way, it can also be used to explain other political phenomena. For example,

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[1]For a empirical evidence of this brought claim see (Taagepera, 2008, Chapter 2)

researchers interested in investigating whether states comply with international treaties, never actually observe the intentions. The expectation that compliance should result in changes in state behavior can be used to explain which countries comply and which do not. Another application relates to the literature regarding strategic voting: Researchers interested in the question of which citizens cast their votes strategically, and which of them vote sincerely, can use different empirical expectations to classify voters and explain these two classes as a function of covariates.

7.2.3 Survey experiments

Experimental methods are a valuable addition to the empirical tool-kit used in research on electoral behavior. In many situations, theories require premises that are impossible to test using survey data, as direct variation can only be generated using external manipulation. For this reason, research in political science is increasingly relying on experiments. I combine survey experiments used in political psychology to estimate the effects of political arguments, with experiments used in spatial voting theory to infer the effect of political arguments on spatial voting decisions.

7.3 Implications for further research

This dissertation is innovative on both theoretical and empirical grounds. Future studies will be able to address fundamental research questions, building on the spatial voting extension outlined in detail. In particular, I wish to highlight five aspects that I consider to have far-reaching implications for a greater understanding of electoral democracy:

7.3.1 Estimating policy beliefs instead of ideal policy platforms

The theoretical argumentation builds on a novel conceptualization of citizens' policy preferences in terms of policy beliefs. While I propose an indirect measurement of this concept, by separately estimating mean beliefs and belief variance, further research can derive a direct estimation of each citizen's policy beliefs. Newer studies in political science are concerned with estimating citizens' ideological positions (see e.g. Jessee, 2009; Hare et al., 2014; Ansolabehere, Rodden and Snyder, 2008). Most of this research builds on item response specifications, and/or scaling methods to obtain estimates of citizens' ideal policy platforms. These methods take care of problems concerning different scale-perceptions, projection and measurement error. They do not model heterogeneity in ideological structure: the idea that citizens also vary in how strongly they adopt ideological platforms to structure their policy views, is not integrated into the derivation of these empirical models. Following a similar approach to the one now used to derive the measurement of inconsistency, policy beliefs can be directly integrated into these measurement models. Such a model approximates policy beliefs, instead of restricting estimation to ideal policy platforms.

7.3.2 Multi-dimensional ideology

The political process described in this dissertation is tailored to a situation where citizens can choose between two candidates who position themselves in a one dimensional

ideological space. Contrary to this idea, most researchers stress that the ideology is at least two-dimensional, defined by a cultural and an economic dimension (see e.g. Dalton, 1996; Kenneth and Micheal, 2006; De Vries and Marks, 2012). Further research can extend policy beliefs to cover multi-dimensional ideology. This may yield novel hypotheses regarding the weight voters put on different policy dimensions. The relative variance in beliefs (a voter holds on one dimension compared to the other dimension), should affect the relative weight this voter puts on this dimension when deciding whom to vote for. For example, if a voter has no clue about economic policies, but is sure that she does not want the state to intervene in her private life, this second cultural dimension will become more important in her voting decision.

7.3.3 Beyond two-party systems

Most conclusions reached in this dissertation will also directly apply to multi-party systems. More interesting for these systems (i.e. than merely adopting the results), would be the question of how policy beliefs can affect strategic voting. In multi-party systems, one party seldom determines the complete political outcome, because in building governments most often parties have to form a coalition with other(s), after the election. As a result, the need to take into account post-election bargaining between different parties gains importance for voters, when deciding whom to vote for (Kedar, 2009; Duch, May and Armstrong, 2010). While it is often argued that sophisticated, well-informed voters are more likely to employ strategic calculus, uncertainty about the ideal policy platform might affect an otherwise rational decision, more directly. Thus voters with wide policy beliefs do not generally take post-election-bargaining into account, because their expected benefit is less strongly affected by strategic considerations.

7.3.4 Projection as a source of endogenous policy preference

The main concern of this dissertation was with policy preference that can be endogenous to party position-taking as a result of a persuasion process. Another way in which policy preference can be endogenous is the psychological effect of projection (Brody and Page, 1972; Bartels, 2006). Parties or candidates signal their position, but voters perceive these signals differently. Voters who possess loyalties to a specific party perceive themselves as being closer to this party than is actually the case, and perceive other parties as being further away. It is clear that such misperceptions can directly influence voting decisions. Because voters themselves do not possess fixed platforms, these effects might be amplified by the uncertainty a voter has about her own ideal policy platform. I propose that projection effects can be modeled in terms of correlated errors between a perceived candidate's platform and a voter's policy beliefs. Partisans have a positive covariance between their own position and their party's signaled position, and a negative covariance for other parties' signals. This specification allows for a formalized estimation of projection effects. Furthermore, it yields the interesting implication that the variance in policy beliefs affects the magnitude of projection.

7.3.5 Party-competition with endogenous policy preference

I employ the theoretical model to study the effect that endogenous policy preferences can have on voters' decisions. Further research can build on this, analyzing how

parties act, knowing that a share of voters has an endogenous preference to their position-taking. Do endogenous policy preferences affect the equilibrium in two party-competition? Will parties that enjoy a considerable advantage in persuading voters, tend towards the extreme of the political spectrum in order to pull their supporters 'out of the middle'? The policy belief model can address the electoral consequences of endogenous preferences by employing party competition models.

7.4 The overall implications for democracy

If ordinary voters are not equipped with rigorous policy preferences, does this distort the simple model of representative democracy? The findings of this dissertation indicate that it does. The assumption that citizens have policy preferences which are inconsistent, persuadable and endogenous led, in a variety of ways to a better explanation of the voting act as the central link between citizens and their representatives. a) A general public that does not adopt the same ideology as the candidates, in order to structure personal beliefs, will put considerably less weight on ideology; the voters will be potentially influenced by other aspects that are less important in guaranteeing their political representation. b) Preferences that are persuadable thus open the potential for parties to promote their programs via extensive media coverage and campaign efforts. c) Party-identifiers who follow their party loyalty in electoral campaigns and adjust their policy views accordingly, will make it considerably easier for politicians to propose unpopular policies. These three aspects highlight that the electoral linkage can greatly affected if voters do not mirror the conceptualization in simple models of representation.

Nonetheless, the theoretical considerations reveal the conditions under which voters are able to use policy platforms to make informed, considerate decisions and find matching representatives. If all citizens possess policy beliefs with only a small belief variance (which implies that they exactly know their ideal policy platform), the model presented in this dissertation shows convergence with the classic perspective: a) voters will find it easy to find the closest match to their beliefs b) political arguments do not alter their positions, and c) parties cannot shift voters' position during electoral campaigns. While the empirical results of this dissertation indicate that such a situation is utopian, the theoretical models show how this desirable state can, potentially-speaking, be achieved. Citizens need to be able to learn about their expected benefit from different policy platforms. The central mechanism by which this can be assured, is the ongoing evaluation of political arguments. This enables the public to make inferences about the consequences and value to be gained from political programs, and to elect matching representatives who reflect the "public's will".

If this is the case, it is not enough to presume that holding an election every other year will assure true democratic representation in any country. Democratic institutions need to provide an environment that makes it possible for all citizens to become informed about the potential consequences of different voting decisions. I conclude with the important insight that a perceptual conception of democracy as "a system in which parties lose elections" (Przeworski, 1991, p.10) definitely does not ensure democratic representation, as it is based on the presumption of a very homogeneous public: something which does not actually exist, per se. If political systems adhere

to the goal of political representation, they must ensure the provision of competent independent institutions which enable their citizens to receive a balanced flow of information. This is the crucial factor in the formation of reliable opinions which, in turn, then result in the election of truly representative governments.

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APPENDIX A

Chapter 4

A.1 Factor model

To extract factor loadings for respondents and candidates I rely on 8 policy-issues included in the ANES. The policy-questions were asked in wave 10. All of the policy-questions first asked respondents if the are in favor or opposed to a specific proposition, afterwards asking them about the strength of their attitude. In total, this creates a seven-point scale on which each respondents attitude towards a specific proposition. The exact wording of the propositions are:

- Favor or oppose constant amendment to ban gay marriages

- Favor or oppose raising taxes on incomes over 200k/yr

- Favor or oppose government should pay drugs for low income seniors

- Favor or oppose government payment for all health care

- Favor or oppose suspend habeas for terror suspects

- Favor or oppose court order to wiretap terror suspect

- Favor or oppose 3 year work for illegal immigrants

- Favor or oppose that illegal immigrants become citizens

A.1.1 Respondents mean policy belief

The eight issues give a reasonable mix between cultural (like amendment to ban gay marriages) and economic issues (such as raising taxes on incomes over 200k/yr), Table A.1 shows the descriptive statistics for the different policy-questions. Most answering patterns are distributed around the mid-point.

Table A.1: Descriptive statistics for policy issues

Statistic	N	Mean	St. Dev.	Min	Max
gay marriage	1,348	0.321	2.343	−3	3
taxes high income	1,350	0.875	2.130	−3	3
drugs low income seniors	1,348	1.487	1.830	−3	3
health care	1,348	−0.033	2.349	−3	3
terrorism suspend	1,347	1.030	2.090	−3	3
terrorism wiretap	1,347	0.781	2.247	−3	3
illegal immigrants work	1,347	−0.843	2.146	−3	3
illegal immigrants citizenship	1,349	−0.011	2.232	−3	3

I calculate an explanatory factor model using psych library in **R**, imputing missing values with the mean and using minimum residuals (OLS) to estimate the factor loadings. I recoded all answers, such that positive values indicate liberal attitudes. The factor loadings are reported in Table A.2. The loadings are strongest for high-income taxation and health care, clear-cut liberal issues have a lower loading (e.g. illegal immigration and gay marriage). The one-factor solution still seems to be sufficient, with a small root mean square error (0.09) and a reasonable eigen value of 1.83, that explains 23 % of the variance. Although, including a second factor-dimension slightly increase the fit (RMSE 0.04), I rely on the one-factor solution. Simply because my theoretical argumentation is tailored to one policy dimension.

	Factor Loadings
gay marriage	0.33
taxes high income	0.61
drugs low income seniors	0.61
health care	0.68
terrorism suspend	0.35
terrorism wiretap	0.46
illegal immigrants work	0.25
illegal immigrants citizenship	0.35

Table A.2: Results of a explanatory factor analysis

Based on the factor loadings I extract each respondents factor score using regression based methods. Higher values generally indicate more liberal attitudes. As Figure A.1 shows, the resulting distribution has longer tails to the left. In the chapter the factor scores are taken as each respondents mean policy belief. They highly correlate with respondents self-placement on the liberal conservative scale (-0.62) and a respondents party identification (0.6).
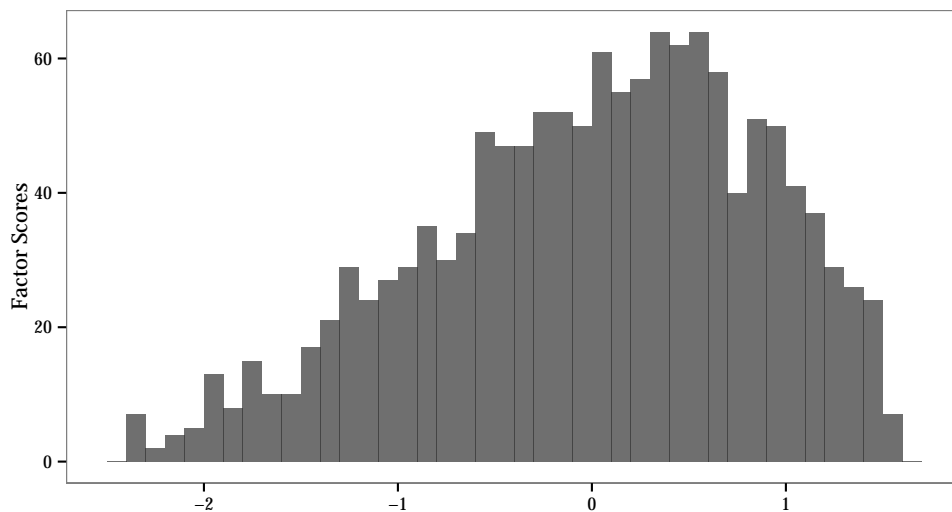
Figure A.1: Distribution of factor-scores

Table A.3: Descriptive statistics for candidate positions

Statistic	N	Mean	St. Dev.	Min	Max
Obama gay marriage	1,321	0.741	1.876	−3	3
Obama taxes high income	1,334	2.061	1.553	−3	3
Obama drugs low income seniors	1,335	1.780	1.514	−3	3
Obama health care	1,333	1.221	1.850	−3	3
Obama terrorism suspend	1,312	1.540	1.617	−3	3
Obama terrorism wiretap	1,330	1.190	1.834	−3	3
Obama illegal immigrants work	1,328	0.723	1.722	−3	3
Obama illegal immigrants citizenship	1,328	1.275	1.569	−3	3
McCain gay marriage	1,315	−0.239	2.381	−3	3
McCain taxes high income	1,312	−1.643	1.871	−3	3
McCain drugs low income seniors	1,316	−0.707	1.937	−3	3
McCain health care	1,316	−1.578	1.648	−3	3
McCain terrorism suspend	1,308	−0.443	2.083	−3	3
McCain terrorism wiretap	1,307	−0.257	2.067	−3	3
McCain illegal immigrants work	1,313	−0.091	1.957	−3	3
McCain illegal immigrants citizenship	1,315	0.124	1.894	−3	3

A.1.2   Obama and McCain platform

In the ANES respondents were asked to place both Obama and McCain on the same eight policy-issues. This can be used to obtain platform estimates for the two candidates on the same dimension than the respondents. Table A.3 reports the statistics for the two candidates over the different policy-issues. The issues have the same order than above. Unsurprisingly on average, on most issues Obama was perceived to have a more liberal
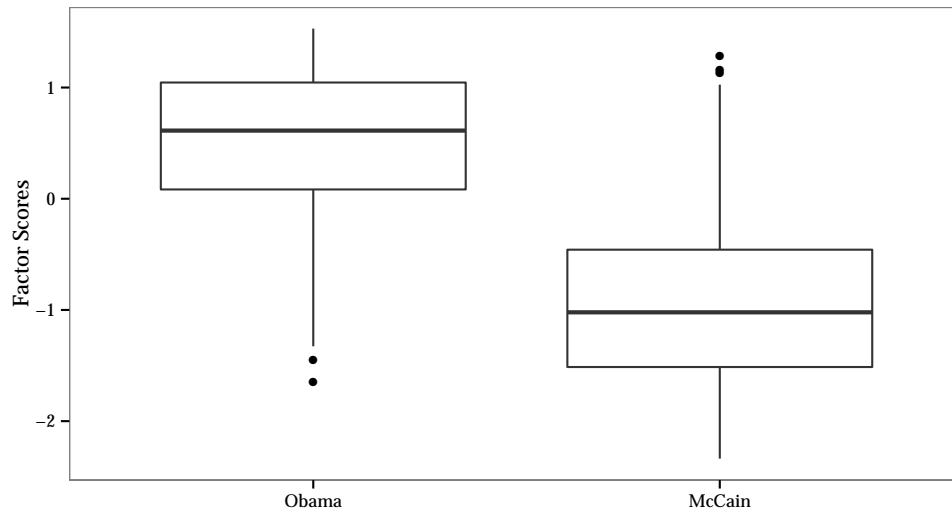
Figure A.2: Distribution of perceived position of Obama and McCain

position. The most drastic difference between Obama is observed for the high-income question. While Obama mean position is located at 2, average placement of McCain is at -1.6. For some issues the perceived positions are closer together (e.g. 3 year work for illegal immigrants).

For perceived positions of the two candidates, the platform can be predicted based on the factor loadings for each of respondent. This gives an approximately perceived platform for Obama and McCain. The resulting distribution shows a clear dived between the candidates platforms (see Figure A.2). Obama is mean platform is located at 0.54 and McCain platform at -0.92.

A.2 Measurement of inconsistency

	(Intercept)	Mean Self-Placement
gay marriage	2.60	-0.53
taxes high income	3.28	-0.56
drugs low income seniors	2.91	-0.33
health care	2.62	-0.62
terrorism suspend	2.79	-0.41
terrorism wiretap	2.70	-0.45
illegal immigrants work	0.27	-0.26
illegal immigrants citizenship	1.61	-0.38

Table A.4: Results of auxiliary regressions to construct measurement of inconsistency

The measurement of inconsistency relies on auxiliary regressions that captures the randomness when relating respondents liberal-conservative self-placement to their policy attitudes. The results of the auxiliary regressions are reported in the Table A.4. Again, all issues are coded in a way that higher values indicate more liberal positions, which is confirmed by the coefficients of the regression. Only for the issue if the government should pay for drugs for low income seniors we find no statistical significant effect. Based on the residuals from the regressions I am able to calculate the estimate of σ_i^* as the average sum of squared errors.

A.3 Controls

Controls and other covariates are described in the Table A.5.

Table A.5: Descriptives for control variables

Statistic	N	Mean	St. Dev.	Min	Max
Vote Obama	2,212	0.535	0.499	0	1
Liberal-Conservative Self-Placement	2,212	4.312	1.829	1.000	7.000
Liberal-Conservative Obama	2,212	2.239	1.608	1	7
Liberal-Conservative McChain	2,212	5.693	1.588	1	7
Income	2,212	12.720	3.830	1	19
Age	2,212	52.390	14.440	18	90
Gender (Male)	2,212	0.577	0.494	0	1
Race (African-American)	2,212	0.094	0.293	0	1
Education	2,212	3.492	1.050	1	5
Home Owner	2,212	1.198	0.490	1	3
Party Identification	2,212	0.175	2.275	-3	3

A.4 Parameter estimates for policy-weighted probit model

Figure A.3 shows the complete parameter estimates (point estimate and 95% confidence intervals) obtained from the policy-weighted model, using perceived candidate positions (in dark) and mean candidate platforms (in light grey). Party-identification as well as race have a strong effect on the expected utility. More liberal party-identification positively effects the voting probability to vote for Obama. African-Americans have a higher chance to vote for Obama. Income also has an substantial effect on the voting decisions. With increasing income a respondent gets more likely to vote for Obama.
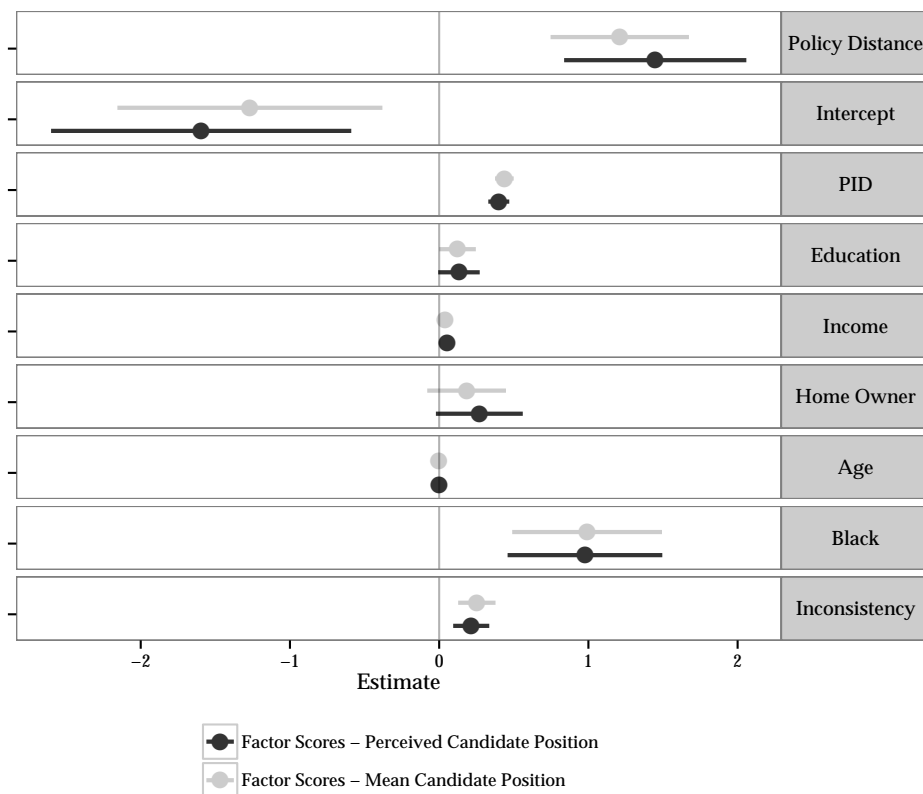
Figure A.3: Parameter estimates policy-weighted model

A.5 Robustness checks

A.5.1 Interaction effect models

Another modeling strategy to test the mediating effect of inconsistency are interaction effect models. Within a linear specification a interaction term between policy-distance and inconsistency allows to test if respondents with higher inconsistency put less weight on policy distance than their counterparts. A substantial interaction effect would confirm the hypothesis from the learning model and allow to reject the hypothesis derived from the expected utility model. The results are reported in Table A.6 below.

What the analysis is mainly concerned with is in how far an increase in policy-distance affects voting probabilities given different levels of policy-consistency. The marginal effect can be depicted from the interaction term in model (2) and model (4). In both models the coefficient of policy-distance is interacted with the measurement of inconsistency. While the coefficient of policy distance in both models increases (compared to the standard models) the interaction coefficient is negative. This hints in the direction that the marginal effect of policy-distance on voting intention is generally higher among respondents with higher consistency in policy preferences. However, in probit models the marginal effect further depends on the predicted probabilities. One has to be especially cautious when interpreting the statistical significance of the interaction term - a standard t-test does actually not apply to all respondents in assessing the moderation (Ai and Norton, 2003). I calculate the marginal interaction effect finding that the effect is strongest for observation with average predicted probability to vote for Obama (See Figure A.4 and Figure A.5). Nonetheless, the t-test of the coefficient can potentially hint in the direction if the inclusion of the interaction is relevant (Berry, DeMeritt and Esarey, 2010), for both cases the effect is significant different from zero. Comparing model (3) and (4) the likelihood substantially increases for the interaction models.

	Model 1	Model 2	Model 3	Model 4
Intercept	−1.74***	−1.56**	−1.41**	−1.22**
	(0.49)	(0.50)	(0.43)	(0.45)
Policy-Distance	0.38***	0.60***	0.29***	0.50***
	(0.04)	(0.09)	(0.03)	(0.07)
Inconsistency		−0.02		−0.02
		(0.03)		(0.03)
Policy-Distance X Inconsistency		−0.04**		−0.04***
		(0.01)		(0.01)
PID	0.41***	0.40***	0.45***	0.44***
	(0.03)	(0.03)	(0.03)	(0.03)
Age	−0.00	−0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.97***	0.99***	0.98***	1.01***
	(0.27)	(0.27)	(0.26)	(0.25)
Education	0.15*	0.13*	0.15**	0.12*
	(0.07)	(0.07)	(0.06)	(0.06)
Home Owner	0.28*	0.27	0.18	0.19
	(0.14)	(0.14)	(0.13)	(0.13)
Income	0.06**	0.05**	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
AIC	529.39	522.23	659.33	647.29
BIC	569.26	572.06	699.42	697.39
Log Likelihood	−256.70	−251.12	−321.67	−313.64
Deviance	513.39	502.23	643.33	627.29
Num. obs.	1079	1078	1109	1108

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

Table A.6: Results from probit interaction model with positions from factor model as a measurement of policy-distance
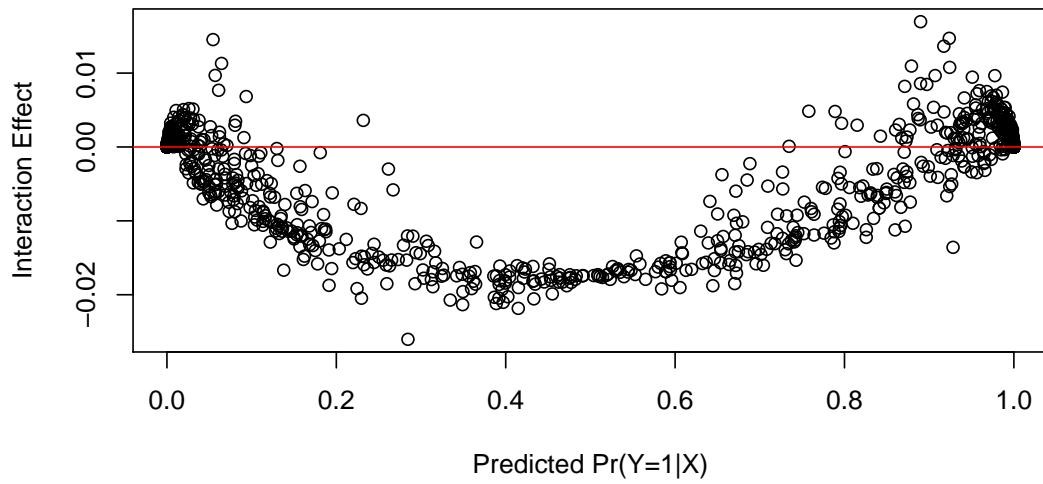
Figure A.4: Interaction effect model (2)
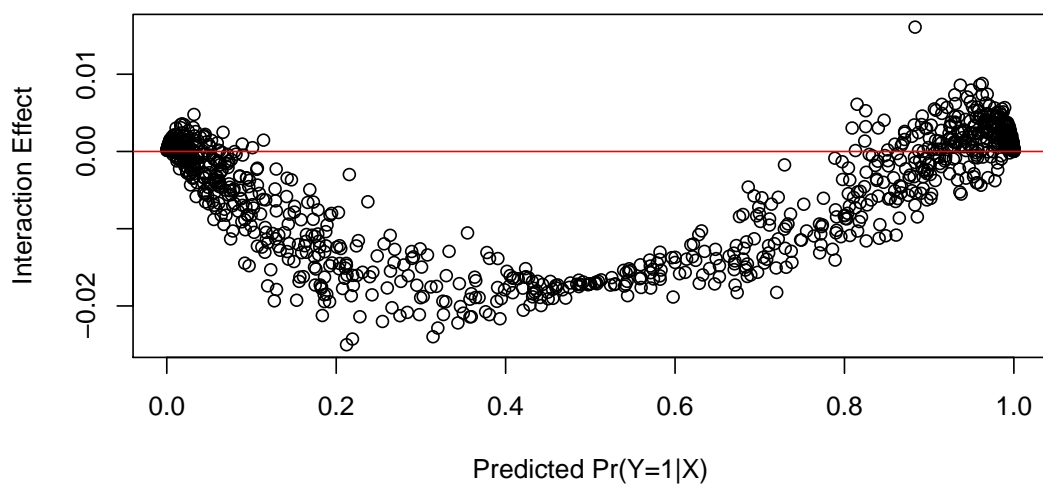
Figure A.5: Interaction effect model (4)

A.5.2 Robustness measurement: Results using liberal-conservative scale

I re-run the model using a different measurement of policy platforms. I rely on self-placements and candidate placements on a liberal-conservative scale. I calculate the quadratic distance of a respondent to the candidates mean placement as well as the perceived candidate position. Based on this I calculate two models, one for perceived positions and one for mean positions.

The results from the policy-weighted model are reported in Figure A.6. In both specifications, negative quadratic distance has a positive effect on the probability to vote for Obama. In the case of perceived platform measurements, this effect is moderated by inconsistency. Increasing inconsistency decreases the effect policy-distance has on expected utility. In the case of the mean positions, the effect of inconsistency on the weight is not significantly different from zero.
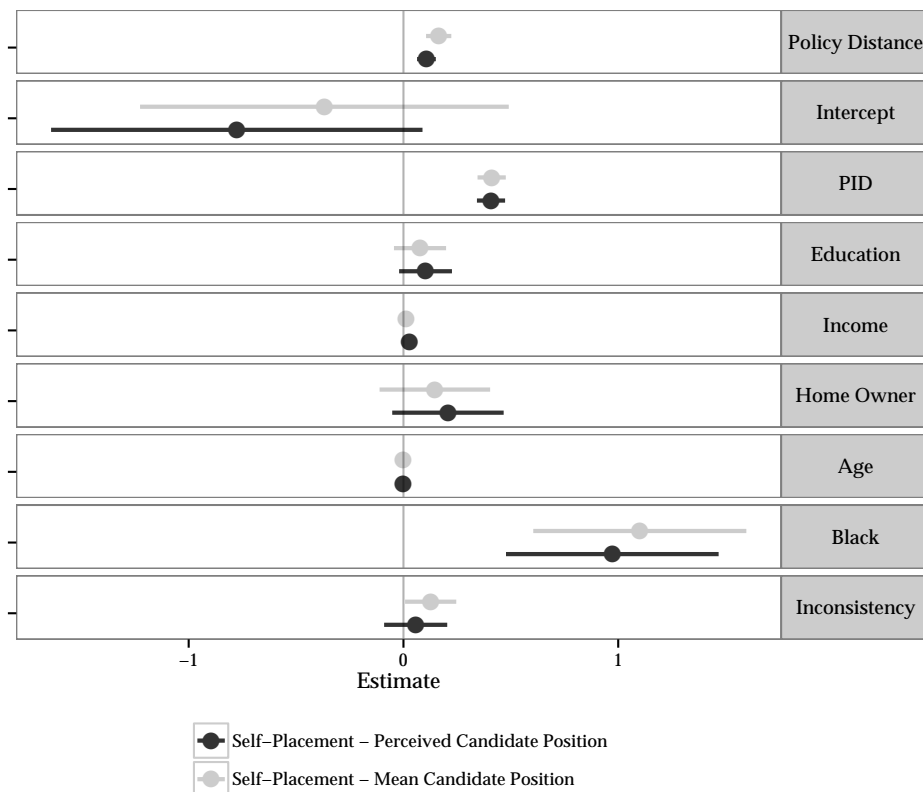
Figure A.6: Parameter estimates policy-weighted model relying on liberal-conservative scale

I further run interaction effect models employing the same measurements. The results are reported in the Table A.8 below. The interaction-models reveal the same empirical pattern: Only in the case of mean platform positions there is significant interaction effect of inconsistency. It shall be noted that this does not directly allow to conclude that there is no moderation at all - for some parts of the respondents the effect might still be substantial.

	Model 5	Model 6
Intercept	−0.51	−0.16
	(0.45)	(0.44)
Policy-Distance	0.06***	0.08***
	(0.01)	(0.01)
Inconsistency	0.03	0.01
	(0.02)	(0.02)
Policy-Distance X Inconsistency	−0.00	−0.01*
	(0.00)	(0.00)
PID	−0.07*	−0.06*
	(0.03)	(0.03)
Age	0.40***	0.41***
	(0.03)	(0.03)
Black	−0.00	−0.00
	(0.00)	(0.00)
Education	1.03***	1.15***
	(0.25)	(0.25)
Home Owner	0.09	0.07
	(0.06)	(0.06)
Income	0.22	0.16
	(0.13)	(0.13)
AIC	615.57	637.88
BIC	665.47	687.78
Log Likelihood	−297.79	−308.94
Deviance	595.57	617.88
Num. obs.	1086	1086

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

*Table A.7: Results from probit interaction model with self-placement as a measurement of policy-distance (1)*

A.5.3   Results using variation over self-placements

I re-run the analysis using a different measurement of inconsistency, employing the standard deviation of self-placements in different panel waves. Results are found in Table A.8. The results are reported in the tables below - the estimates for the controls are excluded from the table. All interaction effect are negative - indicating that with increasing variation of self-placements th marginal effect of policy-distance decreases. However, only for Model 7 and Model 8, which use liberal conservative scale to calculate policy-distance, the interaction effects are significant.

	Model 7	Model 8	Model 9	Model 10
Intercept	0.09	0.23	−1.63*	−1.31*
	(0.48)	(0.48)	(0.74)	(0.64)
P.-D. perceived (lib-con)	0.07***			
	(0.01)			
Inconsistency	−0.22	−0.22	−0.27	−0.13
	(0.13)	(0.13)	(0.20)	(0.19)
P.-D. perceived (lib-con) X Inconsistency	−0.02**			
	(0.01)			
P.-D. mean (lib-con)		0.09***		
		(0.01)		
P.-D. mean (lib-con) X Inconsistency		−0.03*		
		(0.01)		
P.-D. perceived (Factor)			0.61***	
			(0.13)	
P.-D. perceived (Factor) X Inconsistency			−0.09	
			(0.14)	
P.-D. mean (Factor)				0.41***
				(0.08)
P.-D. mean (Factor) X Inconsistency				−0.09
				(0.11)
AIC	503.15	533.82	255.26	329.46
BIC	551.68	582.40	296.85	371.34
Log Likelihood	−241.58	−256.91	−117.63	−154.73
Deviance	483.15	513.82	235.26	309.46
Num. obs.	947	951	473	487

$^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05$

Table A.8: Results from probit interaction model with self-placement as a measurment of policy-distance (2)
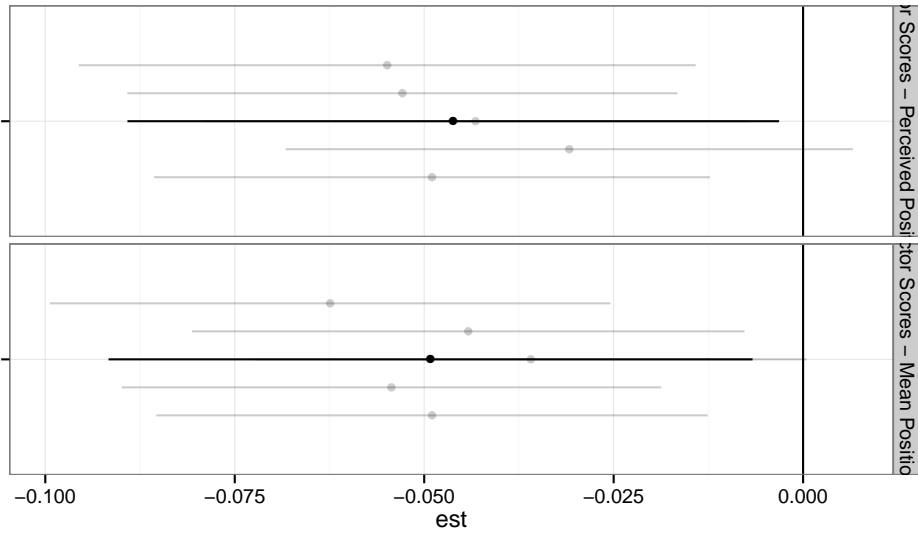
A.5.4 Unobserved confounders

Figure A.7: Unobserved confounders: Estimate from five three quarter subsets, combined with multiple imputation techniques

In further checked if the main results are due to a small share of the sample that greatly affect the moderation of inconsistency. I sample five three-quarter subsets and estimate the policy-weighted model once for policy-distance with perceived platforms and mean platforms calculated from the factor model. The (two times) five estimates of inconsistency on the weight are reported in Figure A.7. In the case of the perceived positions 2 out of 5 confidence intervals do not include zero. In the case of mean positions all five confidence intervals do not include zero. This again hints in the direction that argumentation of the learning model works better with mean platforms. The combined effect over the different samples is in all cases different from zero. To reach this conclusion, I us methods from multiple imputation that takes into account variation within the samples and between the samples (King, 2002).

APPENDIX B

Chapter 5

B.1 Questionnaire experimental study

Policy-Preference

[]

We would like to know your opinion about three highly debated policy issues.

One issue is whether <u>marijuana should be legalized as a medical option</u>. What is your opinion on this issue: Are you in favor or opposed to the medical use of marijuana? You can use the 5-point scale below to indicate your opinion.

*

Please choose **only one** of the following:

○ Strongly opposed

○ Opposed

○ Neither in favor nor opposed

○ In favor

○ Strongly in favor

[]Another issue is whether <u>gay marriage should be legalized</u>. What is your opinion about it: Are you in favor, have no opinion, or opposed to the legalization of gay marriage? *

Please choose **only one** of the following:

○ Strongly opposed

○ Opposed

○ Neither in favor nor opposed

○ In favor

○ Strongly in favor

[]Finally, there is much debate concerning illegal immigration. One such issue is whether <u>illegal immigrants should be granted a pathway to citizenship</u>. What is your opinion about it: Are you in favor, have no opinion, or opposed to granting illegal immigrants a pathway to citizenship? *

Please choose **only one** of the following:

○ Strongly opposed

○ Opposed

○ Neither in favor nor opposed

○ In favor

○ Strongly in favor

Ideology

[]

We hear a lot of talk these days about liberals and conservatives. Some people see themselves as extremely liberal. Suppose these people are at one end of the scale, at -5. Others see themselves as extremely conservative. Suppose these people are at the other end of the same scale, at +5. And, of course, other people have ideological views between these two extremes. Where would you place yourself on this scale?

*

Please choose the appropriate response for each item:

	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	
Liberal	○	○	○	○	○	○	○	○	○	○	○	Conservative

Political Argument

[]

People with different ideological views often differ in their opinions about concrete policy questions. One highly debated issue is whether gay marriage should be legal. Proponents and opponents argue in different directions. Please read the quote carefully, as we would like to know your opinion about it.

> *Marriage has its own dignity and purpose and its own mission: bringing together male and female so that children can know and be known by, love and be loved by, their own mother and father. Same-sex marriage is unjust because it is founded on an untruth. Same-sex unions are not marriage. Only a fairly small minority of same-sex couples actually enter marriages where they are available.*

> *What gay marriage will do and is doing is disconnect marriage as an idea from its natural roots, and increasingly stigmatize the people (and institutions) who adhere strongly to our traditional views of marriage. Same-sex marriage is profoundly unjust because it misuses the law to require something that is not true: these unions, however great they are in other ways, are not marriages and nobody should be required by law to treat them as marriages.*

In your opinion, are the arguments of the quote in favor or opposed to the issue that gay marriage should be legal?

*

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

○ In favor

○ Opposed

[]

People with different ideological views often differ in their opinions about concrete policy questions. One highly debated issue is whether marijuana should be legalized as a medical option. Proponents and opponents argue in different directions. Please read the quote carefully, as we would like to know your opinion about it.

> **The US Food and Drug Administration (FDA), the agency charged with protecting the health of Americans, has never found smoking marijuana to be a safe and effective drug. In April 2006, following my request, the FDA released an interagency advisory confirming that smoked marijuana is not medicine because: (1) marijuana has a high potential for abuse; (2) it has no currently accepted medical use in treatment in the United States; and (3) it has a lack of accepted safety for use under medical supervision. The advisory also stated: ...there is currently sound evidence that smoked marijuana is harmful.**

In your opinion, are the arguments of the quote in favor or opposed to the issue that marijuana should be legalized as a medical option? *

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

- ○ In favor
- ○ Opposed

[]

People with different ideological views often differ in their opinions about concrete policy questions. One debated issue is whether illegal immigrants should be granted a pathway to citizenship. Proponents and opponents argue in different directions.Please read the quote carefully, as we would like to know your opinion about it.

> **Do not grant amnesty to illegal aliens. Regardless of the penalties imposed, any program that grants individuals who are unlawfully present the legal permission to remain here rewards illegal behavior and is unfair to those who obey the law and go through the regulatory and administrative requirements to enter the country legally. Those who enter the United States illegally should not be rewarded with permanent legal status or other such benefits, and they should be penalized in any road to citizenship. Those who enter and remain in the country illegally are violating the law, and condoning or encouraging such violations increases the likelihood of further illegal conduct**

In your opinion, are the arguments of the quote in favor or opposed to the issue that illegal immigrants should be granted a pathway to citizenship?

*

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

- ○ In favor
- ○ Opposed

[]How persuasive do you find the argument? You can use the following 5-point-scale to indicate if you find the argument persuasive, or not. *

Only answer this question if the following conditions are met:
(((! **is_empty**(**Q00007.NAOK**)) || (! **is_empty**(**Q00006.NAOK**)) || (! **is_empty**(**Q00008.NAOK**))))

Please choose **only one** of the following:

○ Not at all persuasive

○ Not persuasive

○ Neither persuasive nor not persuasive

○ Persuasive

○ Very persuasive

Voting Decision

[]

Political candidates differ in their opinions about concrete policy questions. Some candidates are more liberal, some are more conservative.

Here are two candidates with distinct ideological positions, whose names will remain confidential.
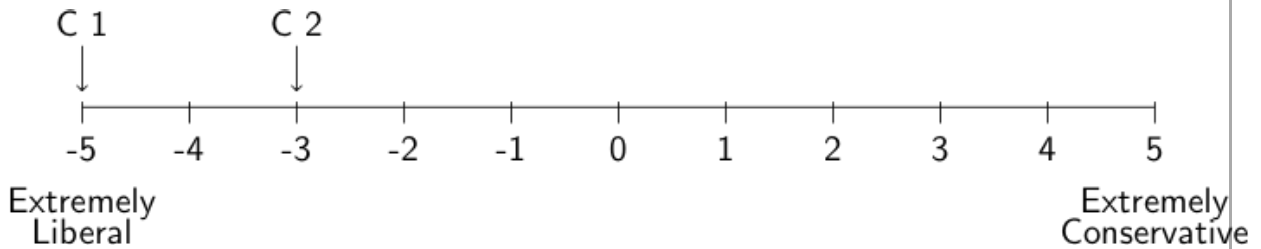
Based on their political ideology, do you prefer one of the two candidates, or are you undecided between the two? *

Only answer this question if the following conditions are met:
Answer was '-4' at question '5 [Q00005]' (We hear a lot of talk these days about liberals and conservatives. Some people see themselves as extremely liberal. Suppose these people are at one end of the scale, at -5. Others see themselves as extremely conservative. Suppose these people are at the other end of the same scale, at +5. And, of course, other people have ideological views between these two extremes. Where would you place yourself on this scale?   (Liberal | Conservative))

Please choose **only one** of the following:

○ Candidate 1 (C1)

○ Undecided between the two candidates

○ Candidate 2 (C2)

Policy Preference Change

[]After reading the argument opposed to gay marriage we would like to know if the argument changed your previously stated opinion in any specific direction. *

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

○ 1 More in favor

○ 2 Argument did not change my opinion

○ 3 More opposed

[]After reading the argument against the medical marijuana we would like to know if the argument changed your previously stated opinion in any specific direction. *

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

○ 1 More in favor

○ 2 Argument did not change my opinion

○ 3 More opposed

[]After reading the argument opposed to gay marriage we would like to know if the argument changed your previously stated opinion in any specific direction? *

Only answer this question if the following conditions are met:
Answer was at question '1 [Q00001]' ({rand(1,4)})

Please choose **only one** of the following:

○ 1 More in favor

○ 2 Argument did not change my opinion

○ 3 More opposed

B.2 An ordered logit model for the experimental treatment

The next paragraphs describe how the ordered logit model, employed to estimate the treatment effect, can be derive more formally. Denote expected utility from voting for the first candidate (C1) as $E[U_{i1}]$ and from C2 as $E[U_{i1}]$. Utility is further affected by a stochastic component ϵ_{ij}, where $j \in (1,2)$ referees to the candidates. Overall utility is, then, given by $V_{ij} = E[U_{ij}] + \epsilon_{ij}$. A respondent should vote for the more liberal candidate, if utility from this candidate is higher than for the more conservative candidate and vise versa. Moreover, a respondent should be indifferent if the utility derived from the two candidates is equal. Denote y_i as respondents decision to vote for C1 $y_i = C1$, C2 $y_i = C2$, or being indifferent $y_i = I$.

$$
y_i = \begin{cases} C1 & \text{if} \quad V_{i1} > V_{i2} \\ I & \text{if} \quad V_{i1} = V_{i2} \\ C2 & \text{if} \quad V_{i1} < V_{i2} \end{cases}
$$

The conditions highlight the latent continuum for this choice situation. What matters for decisions is the difference in utility $V_{i1} - V_{i2}$. If this difference is positive, voters should choose candidate one, if it is negative they should vote for candidate two. Only a utility difference of zero results in indifference. The same latent continuum is also assumed in ordered logit models. The above can be rewritten to include thresholds:

$$
y_i = \begin{cases} C1 & \text{if} \quad V_{i1} - V_{i2} < \tau_1 \\ I & \text{if} \quad \tau_2 > V_{i1} - V_{i2} > \tau_1 \\ C2 & \text{if} \quad \tau_2 < V_{i1} - V_{i2} \end{cases}
$$

This set-up can be extended further integrating the theoretical utility model 5.12. Which shows the effect of an argument's can be understood as mean preference shift $x_i - \xi_i$. Where ξ_i reveals the direction of the shift. The probability to observe a specific outcome (e.g. $y_i = C1$) can, then, be derived by:

$$
\begin{aligned}
Pr\left[y_i = C1\right] &= Pr[V_{i1} - V_{i2} < \tau_1] \\
&= Pr[E[U_{i1}] + \epsilon_{i1} - E[U_{i2}] + \epsilon_{i2} < \tau_1]
\end{aligned}
$$

Extending the systematic component of the left hand side expression to see which aspects cancel out, gives:

$$
\begin{aligned}
E[U_{i1}] - E[U_{i2}] &= -(C_1 - \mu - \xi)^2 + (C_j - \mu - \xi)^2 \\
&= -(C_1^2 - 2C_1 x_i + x_i^2 - 2C_1\xi - 2x_i\xi - x_i^2) + \dots \\
&= -(C_1 - x_i)^2 + 2C_1\xi - 2x_i\xi - x_i^2 + \dots
\end{aligned}
$$

Because $-(C_1 - x_i)^2 = -(C_2 - x_i)^2$ and only $2C_1x_i$ and $2C_2x_i$ depend on the candidate, this can be simplified:

$$E[U_{i1}] - E[U_{i2}] = 2C_1\xi - 2C_2\xi$$
$$= 2(C_1 - C_2)\xi$$

The difference in expected utility can be re-formalized as the treatment effect. $(C_1 - C_2)$ is constant for all respondents. ξ is the effect of receiving a political argument. It is zero for the control group and either positive or negative for the treatment groups. For the controls group the differnce in expected utility is zero: $E[U_{i1}] - E[U_{i2}] = 0$ and for the treatment group it can be expressed as a linear effect from reading through teh argument:

$$E[U_{i1}] - E[U_{i2}] = \beta_1 Treatment_i$$

Integrating this in the above ordered logit formulation, thus allows to obtain an estimate of treatment effect, which directly correspondents to ξ_i from the theoretical formulation.

C.1 Evolution of policy distance, conditional on persuasion process

The following describes how I obtain expression 6.4 that shows the conditional relationship between prior campaign and end of the campaign policy distance. I substitute the conditional expectation of the posterior given the deliberate decisions to accept a candidate's offer K_i from 6.3 in the quadratic distance to the first candidate at the end of the campaign, defined as $-(x_{i1} - C_1)^2$.

- For $K_i = 0$ the expression from 6.3 is $x_{i1} = x_{i0}$, hence:

$$- (x_{i1} - C_1)^2 = -(x_{i0} - C_1)^2 \tag{C.1}$$

- For $K_i = 1$ the expression from 6.3 is $x_{i1} = \gamma_{i1}x_{i0} + (1 - \gamma_{i1})C_1$, hence:

$$\begin{aligned}
-(x_{i1} - C_1)^2 &= -(\gamma_{i1}x_{i0} + (1 - \gamma_{i1})C_1 - C_1)^2 \\
&= -(\gamma_{i1}x_{i0} + C_1 - C_1\gamma_{i1} - C_1)^2 \\
&= -(\gamma_{i1}x_{i0} - C_1\gamma_{i1})^2 \\
&= -\gamma_{i1}^2(x_{i0} - C_1)^2
\end{aligned} \tag{C.2}$$

- For $K_i = 2$ the expression from 6.3 is $x_{i1} = \gamma_{i2}x_{i0} + (1 - \gamma_{i2})C_2$, hence:

$$\begin{aligned}
-(x_{i1} - C_1)^2 &= -(\gamma_{i2}x_{i0} + (1 - \gamma_{i2})C_2 - C_1)^2 \\
&= -(\gamma_{i2}x_{i0} + C_2 - C_2\gamma_{i2} - C_1)^2 \\
&= -(\gamma_{i2}(x_{i0} - C_2) + C_2 - C_1)^2 \\
&= -\gamma_{i2}^2(x_{i0} - C_2)^2 - 2\gamma_{i2}(x_i0 - C_2)C2 + 2\gamma_{i2}(x_{i0} - C_2)C1 - C_2^2 + 2C_1C_2 - C_1^2 \\
&= -\gamma_{i2}^2(x_{i0} - C_2)^2 + 2\gamma_{i2}(C_1 - C_2)(x_{i0} - C_2) - (C_1 - C_2)^2
\end{aligned} \tag{C.3}$$

C.2   Factor analytically model

In order to extract factor scores, for respondents and candidates I rely on 8 policy-issues included in the ANES. The same set of policy-questions was asked in the October and January wave. The policy-issues in October wave is also used in Chapter 4. Here I describe the results from the factor model both waves. Table C.2 shows the descriptive statistics for the different policy-questions from the October wave, Table C.1 for the January wave.

Table C.1: Descriptive statistics for policy-issues January wave

Statistic	N	Mean	St. Dev.	Min	Max
gay marriage	357	−0.272	2.346	−3	3
taxes high income	357	0.829	2.210	−3	3
drugs low income seniors	357	1.683	1.841	−3	3
health care	357	0.087	2.366	−3	3
terrorism suspend	357	−1.266	2.024	−3	3
terrorism wiretap	357	0.703	2.365	−3	3
illegal immigrants work	357	−1.059	2.155	−3	3
illegal immigrants citizenship	357	−0.174	2.372	−3	3

Table C.2: Descriptive statistics for policy-issues October wave

Statistic	N	Mean	St. Dev.	Min	Max
gay marriage	357	−0.112	2.303	−3	3
taxes high income	357	0.854	2.173	−3	3
drugs low income seniors	357	1.412	1.838	−3	3
health care	357	−0.241	2.300	−3	3
terrorism suspend	357	−0.891	2.138	−3	3
terrorism wiretap	357	0.734	2.240	−3	3
illegal immigrants work	357	−0.717	2.111	−3	3
illegal immigrants citizenship	357	−0.076	2.196	−3	3

An explanatory factor model is calculated psych library in **R**, imputing missing values with the mean and using minimum residuals (OLS) to estimate the factor loadings. The factor loadings are reported in table C.4 for the October Wave and for the January wave in C.3. The patterns in the loadings are similar between the two waves. There are strongest for high-income taxation and health care, clear-cut liberal issues have a lower loading (e.g. illegal immigration and gay marriage).

Based on the factor loadings I extract each respondents factor score using regression based methods. For the sake of interpretation, I multiplied all resulting factor scores

	Factor Loadings
gay marriage	-0.28
taxes high income	0.51
drugs low income seniors	0.59
health care	0.65
terrorism suspend	-0.30
terrorism wiretap	0.32
illegal immigrants work	0.25
illegal immigrants citizenship	0.31

Table C.3: Results of explanatory factor analysis January wave

	Factor Loadings
gay marriage	-0.31
taxes high income	0.59
drugs low income seniors	0.59
health care	0.70
terrorism suspend	-0.33
terrorism wiretap	0.43
illegal immigrants work	0.22
illegal immigrants citizenship	0.31

Table C.4: Results of explanatory factor analysis October wave

by -1, such that higher values generally indicate more liberal positions. In the paper the factor scores are taken as each respondents mean policy belief. The fact that respondents were asked to place both Obama and McCain on the same policy-issues in the October wave, allows to obtain campaigned platforms for the two candidates on the same dimension. Table C.5 reports the distribution for the two candidates over the different policy-issues. Unsurprisingly on average, on all issues Obama was perceived to have a more liberal position. The most drastic difference between Obama is observed for the high-income question.

For each respondent's placement of the two candidates the platform can be predicted. This gives each respondents perceived platform for Obama and McCain. The resulting distribution shows a clear dived between the candidates platforms. Obama is mean platform is located at -0.34 and McCain platform at .94.

Table C.5: Descriptive statistics for issues

Statistic	N	Mean	St. Dev.	Min	Max
Obama gay marriage	352	−0.776	1.906	−3	3
Obama taxes high income	354	2.121	1.424	−3	3
Obama drugs low income seniors	354	1.802	1.552	−3	3
Obama health care	353	1.309	1.818	−3	3
Obama terrorism suspend	350	−1.614	1.598	−3	3
Obama terrorism wiretap	354	1.322	1.845	−3	3
Obama illegal immigrants work	352	0.824	1.637	−3	3
Obama illegal immigrants citizenship	352	1.222	1.546	−3	3
McCain gay marriage	348	0.359	2.326	−3	3
McCain taxes high income	350	−1.683	1.801	−3	3
McCain drugs low income seniors	349	−0.653	2.002	−3	3
McCain health care	351	−1.704	1.570	−3	3
McCain terrorism suspend	348	0.230	2.131	−3	3
McCain terrorism wiretap	348	−0.172	2.120	−3	3
McCain illegal immigrants work	350	0.174	1.970	−3	3
McCain illegal immigrants citizenship	348	0.394	1.876	−3	3

C.3 Controls

Controls and other covariates of respondents are described in the table C.6.

Table C.6: Descriptive statistics of respondents included in analysis

Statistic	N	Mean	St. Dev.	Min	Max
Liberal-conservative self-placement	343	4.522	1.881	1	7
Party identification	343	3.015	2.229	0	6
Age	343	50.930	14.920	18	88
Gender (male)	343	0.554	0.498	0	1
Race (African-American)	343	0.076	0.265	0	1
Education	343	3.356	1.063	1	5
Home owner	343	1.233	0.539	1	3
Policy belief variance (Inconsistency)	343	4.030	2.100	0.356	12.640

C.4 Robustness checks
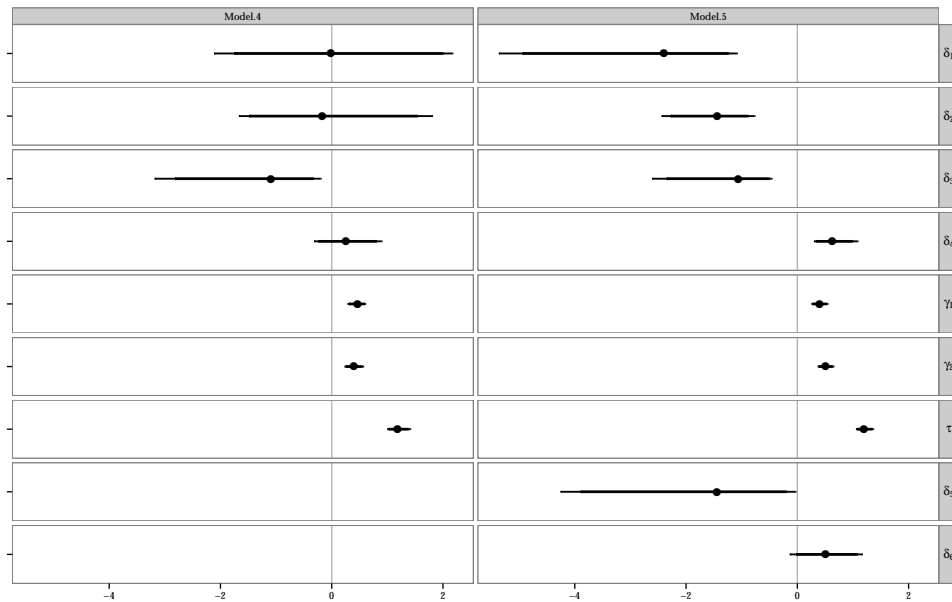
C.4.1 Do extreme respondents bias the results?

Figure C.1: Parameter estimates for subsample and controlling for prior campaign preferences

Subsample of respondents with middle positions

- **Set-up** I rerun the the second model on a subset of respondents from the dataset, only including respondents that posses prior-campaign positions in between the two candidate platforms. This approach allows to check if results are driven by measurement problems related with extreme prior campaign positions. Respondents with extreme factor scores are more likely to receive less extreme factor scores in the next wave due to measurement error. As extreme platforms are correlated with partisanship this might affects the results.

- **Results** The general conclusions are unaffected by running the model on this subset. For Democrats, partisanship still negatively affects δ_3 the class-assignment probability. However, with the smaller number of observations for Republicans the effect can not be clearly distinguished from zero δ_4[1] Nonetheless, the estimates highlight that also for respondent in between the candidates platforms, I estimate an effect of partisanship.

---

[1]The model convergence less quickly, it needs up to 40000 iterations until I see no sign of "disconvergence" according to the standard criterion. Figure C.1 shows the parameter estimates. Of further interest is the increase in estimates for constants of Obama and McCain. They imply that the average share of respondents who are assigned to any of the two persuasion-classes is substantially larger than for the model discussed in the text.

Controlling for prior campaign platform in class-assignment

- **Set-up** In order to minimize the possibility that the results are driven by extreme respondents, I further controlled for prior campaign preferences of a respondent in modeling the class-assignments. If it holds true that the results are only due to the prior position, we should see no effect of partisanship, once controlling for prior position.

- **Results** The results are reported in figure C.1 model 2. δ_5 and δ_6 estimate the effect on class-assignment for Obama and McCain. As expect prior campaign preference have a strong effect on class-assignment. More liberal respondents are also more likely to adjust their campaign preference in direction of Obama, more conservative respondents are more likely to decrease distance to McCain. This does not affect the importance of partisanship in explaining class-assignments, strengthening the conclusion from the chapter.
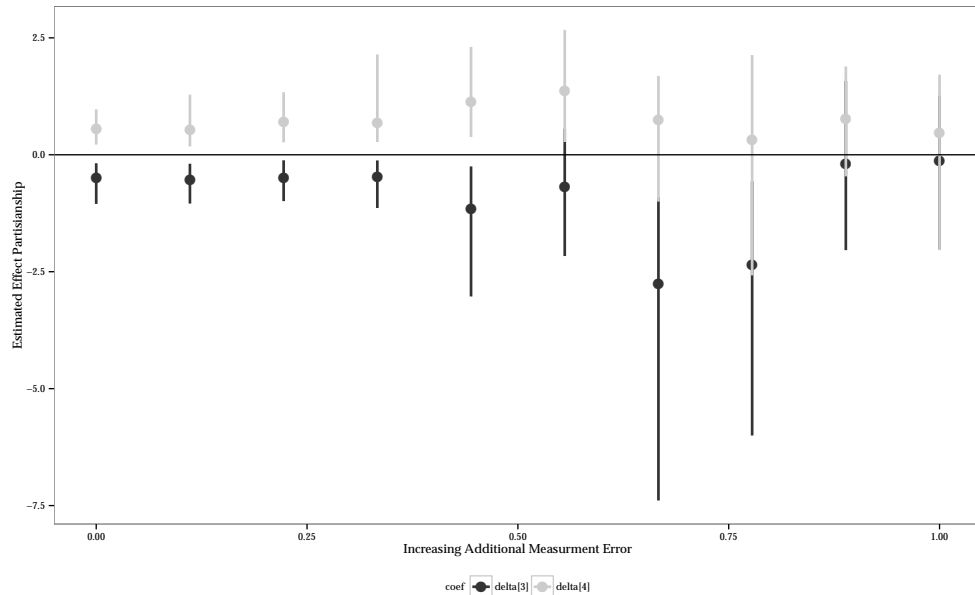
C.4.2 Increasing measurement error

Figure C.2: Parameter estimates with increasing measurement error

- **Set-up** I check if measurement error in policy preference influences the result. I, therefore, add random noise to the measurement of respondents preference in the October wave. With increasing measurement error, one should not observe an effect of party identification on the class assignments anymore. I add random variation to the the factor-scores in the October Wave from a normal distribution with increasing standard deviation. I increase the standard deviation from 0 to 1 in 0.1 steps. This creates 10 new data-sets on which I re-estimate Model 2.

- **Results** The results are reported in Figure C.2. The figure shows the estimate of δ_3 and δ_4, which capture the effect partisanship class-assignment, for the different datasets with increasing measurement error. The estimate to the left (with no additional measurement error (sd=0), basically using the same data set as the original analysis) recovers the same estimates. The estimates are greatly effected when adding additional variation. For small measurement error (sd=0.25) one can still reveal the same pattern, the estimates for measurement error with (sd=0.5) already do not provide evidence for the hypothesis . The relationship gets even weaker with large measurement error around (sd=1). In this case there is no effect of partisanship anymore.

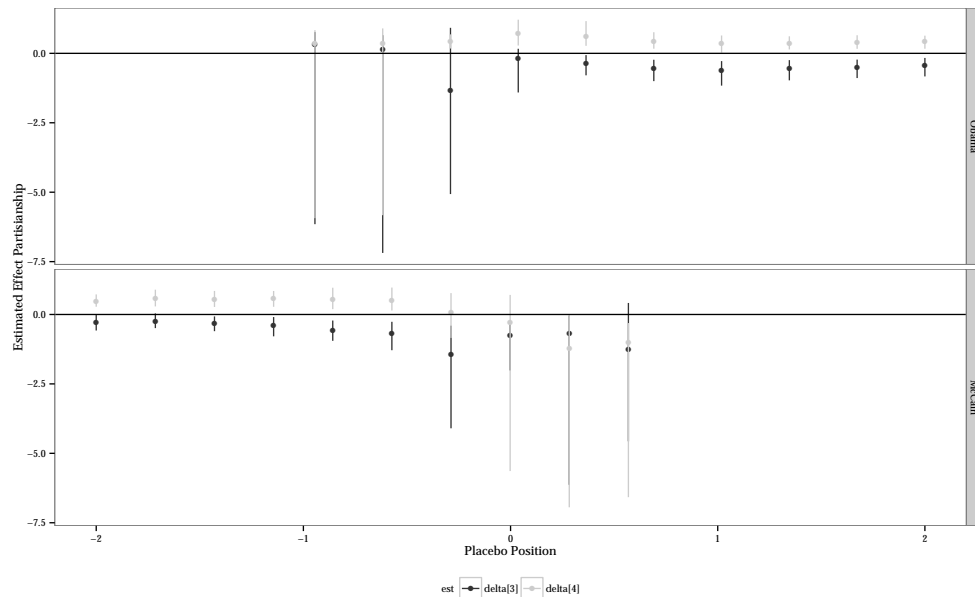### C.4.3 Candidates' platforms: Placebo-treatment

Figure C.3: Results from placebo-test.

- **Set-up** Placebo-tests follow an simple idea: Setting placebo treatments and using the same methods to estimate effect coefficients from the data, the estimates should be affected (Dafoe and Tuno, 2014). For example, the effect should decrease the further away the placebo is from the actual treatment[2]. For the application at hand, such placebo-effects are useful to test in how far the model captures orientation towards the actual candidate's platforms, by manipulating candidates platforms in the analysis. Moving one of the candidate's platform while holding the other constant, the model should estimate no effect of partisanship on class-assignments from a certain point on.

- **Results** The results are presented in Figure C.3. The top panel shows estimates for the effect of partisanship on class-assignments when manipulating Obama's platform and holding McCain's platform constant at -0.93. The lower panel shows the estimates of δ_3 and δ_4 when moving Mccain's platform around and holding Obama's platform constant at 0.53. In both cases the effect vanishes by moving the candidate's platform closer to the other candidate. E.g. supposing that Obama's platform is at -0.11 instead of 0.53 - there is no effect of partisanship on class-assignment anymore. There is still an effect from making the candidates' platforms more extreme. Nonetheless, In both cases the coefficient is strongest around the true value. E.g. If McCain is presumed to be around -0.9 there is the largest difference between the effect parameters. The same holds for Obama if he is presumed to be around 0.5. This indicates that the model captures partisans orientation towards the candidates platforms.

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[2]For a recent application of placebo-treatments in political science see Gohdes (2015).

C.4.4 Posteriori predictive to compare model fit to homogeneous model
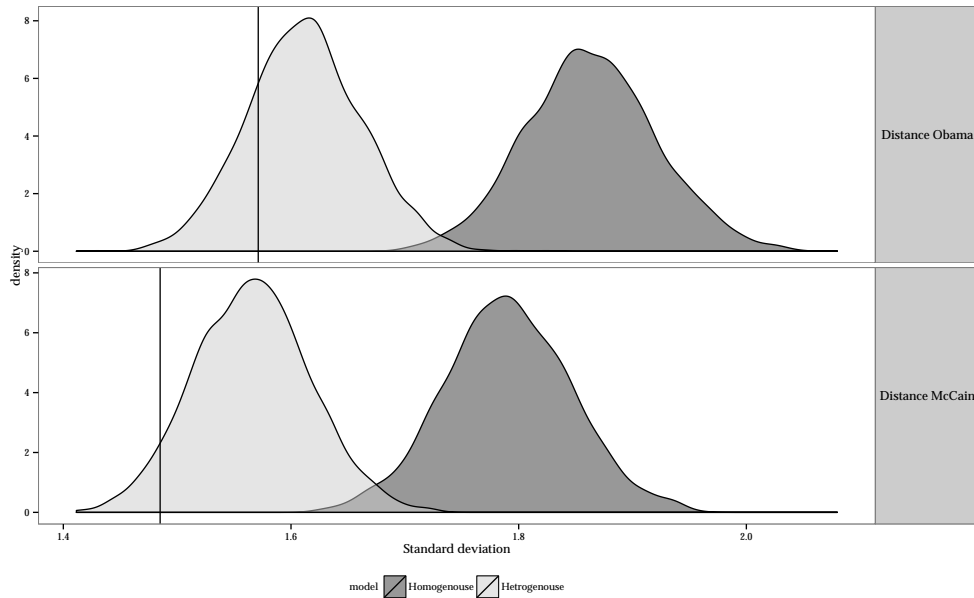

Figure C.4: Posteriori predictive of the standard deviation in distance to compare model fit to homogeneous model

- **Set-up** Posterior predictive distributions are well-suited to compare model fit (Gelman, Meng and Stern, 1996). I compare the posteriori predictive distribution for distance, at the end of the campaign from model 1 (without predisposition) with a model that assumes that distance evolves homogeneous over the two time points. For the the homogeneous model, I assume that all respondents posses exogenous preference $K_i = 0$. This can be set-up using a linear function between the end of the campaign distance to the prior campaign distance $-(x_{i1} - C_k)^2 \sim N(-(x_{i1} - C_k)^2, \tau)$. The test should reveal that the heterogeneous model is better in explaining the standard deviation at the end of the campaign. This which would indicate that the model better fits the heterogeneity in the campaign-evolution of policy distance.

- **Results** The posteriori predictive distributions for both standard deviations of distances are depicted in Figure C.4. The vertical lines describe the observed values. The posterior predictive distribution of the heterogeneous model, fits the data considerably better. The homogeneous model over predicts the standard deviation - the 99 credible intervals, do not include the observed value. The campaign-persuasion model does considerable better in fitting the heterogeneity in distance.