

**Essays on the Conditional Nature of Opinion
Formation: Multilevel Models Explaining
Institutional and Temporal Variation in Behavior**

by

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To Maite

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ABSTRACT

Essays on the Conditional Nature of Opinion Formation: Multilevel Models Explaining
Institutional and Temporal Variation in Behavior

by

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Chair: Ted Brader

This dissertation is composed of three papers that study citizens' opinion formation process considering the contextual conditions surrounding them as a key explanatory source of cognitive variation. Taken together, the papers indicate that political regimes that provide abundant cues and easy-to-process political information favor the organization of political opinions and attitudes. My first paper proposes a conceptual framework that interprets the political environment in terms of its degree of complexity and applies it to the structure of citizens' opinions about political issues. My second paper develops and tests hypotheses about how institutional and party system factors encourage the alignment of citizens' political evaluations in accordance with their partisan dispositions. My third paper is an empirical examination of the contentious claim that citizens update their opinions in unbiased fashion. I test this hypothesis by estimating the influence that party identification has over the rate of change of individuals' political opinions on salient political issues. The first two papers employ a cross-national design which studies individuals' political cognition through the lens of the micro-macro linkage, meaning the connection between system-level properties of a polity and the individuals nested in that polity. The third paper studies individuals' opinions considering the passage of time as a key source of heterogeneity. The three papers identify important, and previously unaccounted, empirical patterns such as the varying role of cognitive resources on the level of association of citizens' opinions, the strong influence that clarity of responsibility exercises over the association between partisanship and political evaluations, and the demonstration that individuals update their opinions with strong partisan biases. All

papers rely on multilevel modeling techniques, and engage in innovative uses of this statistical framework. This includes dealing with multivariate dependent variables, capturing latent variables, and accounting for the initial conditions problem of longitudinal data. A practical consequence that follows from this dissertation is that when political institutions are designed, we should consider the type of information that average citizens will be exposed to. This can help engage a portion of the electorate that would otherwise not care about public affairs.

CHAPTER I

Introduction

This dissertation is composed of three papers that study mass political behavior. Each one of them seeks to expand our understanding of how citizens form their political attitudes and opinions. This common objective, however, is accomplished through different approaches. My first two papers study specific aspects of individuals' political cognition through the lens of the micro-macro linkage, meaning the connection between system level properties of a polity and the individuals nested in that polity. The third paper studies how individuals update their political opinions, but considers the passage of time as a key source of heterogeneity. I begin with a brief description of each paper, and then detail some of the underlying connections between them and their relevance to the discipline.

My first paper (“Opinion Consistency and Contextual Complexity”) proposes a novel conceptual framework that interprets the national political environment in which citizens are embedded in terms of its degree of complexity. The main thesis is that when the political environment becomes more complex, by which I mean it contains less accessible and easy-to-use political information, citizens have to invest more effort to develop their political opinions. I apply this framework to the study of individuals' level of opinion consistency, that is, the degree of association between their opinions about a political issue. Using survey data from forty two countries, I show that as the level of complexity rises the average level of opinion consistency of a population decreases, and the effect that certain cognitive resources—such as broad political orientations and awareness of political affairs— has on citizens' degree of opinion consistency increases.

My second paper (“When Do Political Evaluations Become Partisan Judgments?”) examines what contextual factors encourage voters to align their political evaluations with their partisan dispositions. On the basis of several theoretical frameworks, I develop hypotheses about how institutional and party system factors encourage stronger associations between partisanship and

political evaluations. I test these hypotheses using cross-national survey data that includes 100 surveys from thirty-three European countries. Results indicate that the commonly expected high correlation between partisanship and political evaluations occurs only under certain institutional conditions, namely, when the degree of fractionalization of government is low (that is, when executive power is concentrated in a few or only one political party). Of all the considered factors only this last one has a large and systematic moderating effect over the ability of partisanship to predict individuals' assessments about the economy and the performance of government. This implies, I argue, that as long as contextual conditions enable an easy recognition of who is responsible of public policy, partisan dispositions are highly predictive of individuals' assessments.

Finally, my third paper (“An Empirical Assessment of the Bayesian Unbiased Voter Hypothesis”) examines how citizens update their political opinions. This effort is motivated by a key implication derived by the Bayesian rational learning model developed by Gerber and Green (1998, 1999). According to this model, citizens not only update their political opinions following Bayes' rule (which is something many other scholars argue as well), but also update in an unbiased fashion, that is, independently of their orientations and affiliations. This claim has proven contentious given that it contradicts the more widely accepted view that party identification biases individuals' information processing in directions consistent with their political allegiances. To empirically test this claim, I use ANES longitudinal survey data and estimate the influence that party identification has over the rate of change of individuals' opinions on salient political issues. Contrary to the unbiased voter hypothesis, I find that Democrats and Republicans update their political opinions at substantially and statistically different rates. While the specific direction of individuals' opinions depends on the issue in question, the overall pattern is that each group becomes progressively more supportive of the issues or candidates supported by their parties.

These three papers share a number of similarities. Indeed, several “dyadic” relationships can be easily established between them. For example, the second and third papers share the common focus on partisanship, and study the relationship of of this disposition with respect to political opinions. The first and second papers share, in addition to a similar design and type of data, a special focus on the consequences of the degree of clarity of responsibility of the institutional configuration of a polity. More examples of these types of similarities could be mentioned, but instead, I will concentrate on two common issues that run deeper through the three papers.

The first common element is the conceptualization of the political environment as a key explanatory source of behavioral and cognitive variation. This is quite explicit in the case of the

first two papers, which exploit cross-national variability to study how contextual factors influence the structure of individuals' political opinions. Furthermore, following recent work (Sniderman & Bullock, 2006; Huber et al., 2005; Kedar, 2005a,b; Clark & Golder, 2006; Anderson, 2007; Duch & Stevenson, 2008), both papers represent an explicit attempt to integrate behavioral and institutional approaches. Indeed, they seek to explain how psychological variables—opinion consistency and association between partisan dispositions and political evaluations—respond to specific elements of the institutional setting and patterns of electoral competition of polity in which individuals' are embedded. This implies arguing that not only certain manifestations of political behavior—such as voting decisions, turning out, participating in political events—are intimately related to the political context in which individuals are immersed, but more radically, that citizens' political cognition itself is affected by this element. The key insight that justifies this claim is that the institutional characteristics of a polity can affect the type of information that citizens receive, and thereby the patterns of citizens' opinion formation process. An important consequence of this approach is that certain aspects of citizens opinion formation that are assumed to be widespread are, in fact, highly variable and subject to the systematic influence of the institutional environment in which citizens are embedded.

Although less explicit, the third paper also deals with citizens' political environment. In this case, variation in the political environment is not captured through cross-national comparison, but using a longitudinal design which compares the same individuals' responses repeatedly over time. The main question behind this study can easily be restated as to whether or not citizens adjust their opinions in the same degree to changes in the political environment. Scholars arguing in favor of the common interpretation of events hypothesis are essentially saying that the changes in the political environmental affects all individuals in a more or less equal way, independently of their political inclinations and preferences.

The second common element refers to the statistical methodology employed in the papers. All empirical results were estimated using hierarchical models, also known as mixed effects or random coefficient models (Pinheiro & Bates, 2000; Raudenbush & Bryk, 2002; Steenbergen & Jones, 2002). The three papers make an innovative use of this statistical framework that exploits their high degree of versatility. For example, the first paper specifies a three-level linear hierarchical model in which the first level equation corresponds to a measurement model. As with structural equation models, this allows me to capture the unobserved dependent variable (opinion consistency). Then, as is traditional with hierarchical models, I employ higher-level variables (in this case, at the survey-

respondent and country-level) to explain the variability of the latent construct. The third paper also exploits the flexibility of this statistical framework in a novel way. I specify an autoregressive hierarchical model in which the parameter of the lagged dependent variable is allowed to vary across survey respondents. This captures individual level heterogeneity in the effect of prior opinion on current opinion which is not only unobservable, at least with the employed data, but constitutes one of the key elements that the Bayesian framework has to explain variable patterns of opinion updating. Previous scholarship in political science has not been able to incorporate this variability into empirical analysis. In addition to this, the model also accounts for the initial conditions problem (Heckman, 1981; Wooldridge, 2005) by jointly modeling the first and subsequent observations from the panel data. The statistical specification employed in this paper can be considered a general methodology to empirically model Bayesian updating with survey data.

The statistical model of the second paper is closer to a more traditional hierarchical model in which survey respondents are nested in one or more larger units, such as regions or countries. The specific model definition in this paper, however, is quite complex. It is designed to cope with several problems which include, but are not restricted to, the statistical dependency involved in the usage of time-series cross-sectional survey data, adjusting for a multidimensional measure of party identification appropriate for multi-party systems, and most importantly, accounting for the moderating influence of the political environment. This leads to a statistical specification with four nested levels of analysis (respondents, party groups, survey and country) and numerous interaction terms. The unrestricted version of the model has a total of seventy-seven parameters. Nevertheless, the hierarchical modeling framework is flexible and robust enough to manage these challenges, and no doubt many others was well.

Combined, these three papers seek to contribute to several fields of research, but they have the greatest applicability to the fields of comparative political behavior and public opinion. This contribution has several dimensions. In the first place, these papers uncover important empirical patterns that increase our understanding of citizens' opinion formation process and how this process varies systematically according to the properties of the political environment. This involves discovering both new factors that influence individuals opinion formation process, as well as determining empirical strategies able to capture these previously unobserved sources of heterogeneity. Important examples of these discoveries include the varying role of cognitive resources on opinion consistency, the high level of responsiveness of the association between partisanship and political evaluations relative to the degree of institutional clarity, and the demonstration of biased rates of

opinion updating.

While these results represent a significant advancement, the reach of this dissertation goes further. Indeed, this dissertation not only centers on the identification of new empirical patterns, but also on the development of broad theoretical frameworks that can explain multiple aspects and dimensions of mass opinion. In other words, behind each paper there is an explicit intention to develop broad frameworks that can account simultaneously for several, and apparently unrelated, empirical patterns. This is an important goal given the prominence in the field of theories that are built with a specific problem in mind, and that cannot be easily extended to other, even close, domains of research. The conceptual framework proposed in my first paper is general enough to explain other important aspects of mass opinion than degree of consistency. By modifying the type of information to which voters have access, the degree of complexity of the political environment is likely to have important consequences over, among others, the average level of awareness citizens have about political issues, the degree of opinion stability, the magnitude of ideological (proximity) voting, and response rates to survey questions. My second paper does not propose a new conceptual framework on its own, but provides strong support for the need to expand the study of clarity of responsibility beyond the area where this concept is used most frequently, namely, the economic voting literature. Given the observed patterns in this paper and in the economic voting literature, it is quite plausible to expect that institutional clarity exercises a strong influence over aspects of mass behavior that are related to the availability of political cues that simplify citizens attributional processes, such as rates of retrospective voting, stability of partisan preference, and general evaluations of the performance of political actors. Lastly, my third paper, which is an empirical evaluation of an increasingly popular formal model of opinion updating, has both substantive and methodological relevance. As mentioned above, it proposes a statistical specification able to mimic Bayesian updating processes, and at the same time seeks to indicate specific areas where the formal model needs improvement in order to provide a more accurate representation of individuals' opinion formation process.

The conceptual insights and empirical results from this dissertation also have important consequences about how we think about political institutions. Results from this dissertation provide clear indications that the political environment in which citizens are located affects the costs citizens must overcome in order to organize their political opinions. Political regimes that provide its citizens more abundant cues and easy-to-process political information favor the organization of political opinions in accordance with partisan dispositions, increase the average level of opinion consistency,

and decrease the gap in levels of opinion consistency between politically aware and unaware citizens. From a normative point of view this seems a favorable outcome. Indeed, given the common claims about how widespread voter ignorance is in contemporary democracies (Converse, 1964; Zaller, 1992; Carpini & Keeter, 1996), the existence of political cues that can help citizens organize their political opinions, attitudes and beliefs seems beneficial for democracy itself. This point is at the core of normative democratic theory when it argues that citizens with crystallized preferences are better able to behave and elect representatives that best guard their own interest and concerns. Consequently, when we think about designing political institutions we should not only think about what incentives would citizens receive in terms of electoral participation or civic engagement, but perhaps even more importantly in the type of information that voters will be exposed to given the rules and norms that regulate electoral competition and the exercise of power. In other words, when defining political institutions there should be an explicit effort to incorporate elements that could maximize the availability of political cues and accessible information for citizens. This claim is particularly acute for new democracies that have less consolidated institutional frameworks, and struggle with vast levels of political apathy (Mainwaring & Torcal, 2005). Of course, many other factors should be considered whenever designing and implementing political institutions, but given the results from this dissertation, it is advisable to add to the list how average citizens will process and understand politics in the context of these institutions.

CHAPTER II

Opinion Consistency and Contextual Complexity

2.1 Introduction

A widespread belief among political scientists is that despite voters' widely observed informational shortcomings, they are able to survive in the political arena thanks to the availability of political cues (Sniderman et al., 1991; Lupia, 1994; Lupia & McCubbins, 1998). Whether it is the party membership of a candidate, a political campaign label, or some other element, voters can efficiently, and at a low cost, estimate the policy preferences of competing candidates and decide whom to support accordingly. Underlying this claim lies a simple but critical assumption, namely, that political shortcuts are informative and constantly available to voters. However, is this assumption universally tenable? What would happen if such devices were not available in the political environment? Can we expect to see systematic differences in the nature of mass opinion according to the availability of political cues, or more broadly, according to the informational richness of the political environment?

This article addresses a subset of these general theoretical concerns. Specifically, it proposes and tests a conceptual framework which argues that citizens' proclivity to develop internally consistent political opinions is related to the degree of complexity of the political environment in which they live. More specifically, when the political environment is more complex, by which I mean it contains less accessible and easy-to-use political information, citizens' must invest more effort to develop their political opinions. Consequently, rising levels of contextual complexity are expected to decrease the average level of opinion consistency of a population and to increase the influence that certain cognitive resources—such as broad political orientations and awareness of political affairs—have on citizens' opinion formation process.¹

¹In this paper I do not use the concept of opinion consistency as interchangeable with attitude constraint from

The framework I propose relies as much on public opinion literature, especially on the RAS model of Zaller (1992), as well as on the comparative literature on party systems and institutional design. Through the combination of these elements, I identify a set of key country level attributes that approximate the richness and availability of information to which an average citizen is exposed, and detail how they are connected to individuals' opinion formation process. Behind the combination of these elements is a deliberate effort to integrate a political psychological perspective within the contours of comparative and institutional analysis. This involves arguing that political behavior is not only intimately related with its institutional context, but that citizens' patterns of thought and conceptualization are also affected by this element.

To evaluate the adequacy of the proposed framework several empirical implications are tested against cross-national survey data from 42 democratic polities that were part of the third and fourth waves of the World Values Survey program. I statistically model individuals' responses to a set of questions about economic inequality and welfare policies using a hierarchical linear item response model that simultaneously constructs an individual level latent measure of attitude consistency and estimates the influence of individual and country level predictors, as well as cross-level interactions, over the measure in question. Empirical results provided a significant amount of support for the expected behavioral patterns. It was confirmed that as the political environment becomes less complex, as captured by the degree of clarity of responsibility (Powell & Whitten, 1993; Powell, 2000), the average level of opinion consistency of a country's survey respondents increases as well. Furthermore, the positive effect of having an ideological position and higher educational attainment on opinion consistency decreases significantly as the political system becomes less complex. Some unexpected patterns also emerged, but they are not entirely inconsistent with the predictions of the model.

The article is organized as follows. The next section provides an in-depth review of the main theoretical concepts involved in this study and derives several expected behavioral patterns. The following section details all relevant information about measurement and data sources. Then, I specify the estimation strategies and properties of the employed statistical model, as well as the results from the different model specifications. The final section summarizes the findings and concludes.

Converse (1964). In the next section I provide more elaborated distinctions and definitions, but for now suffice it to say that while both concepts refer to the degree of association between a set of opinions, I restrict the use of opinion consistency to cases in which the opinions and attitudes in question belong to a common issue domain. As a consequence, opinion consistency may be classified as a subtype of attitude constraint.

2.2 Conceptualizing Opinion Consistency

2.2.1 Building from Attitude Constraint and its Social Source

As is well known, the modern debate on attitude constraint was initiated by Philip Converse in his classical paper “The Nature of Belief Systems in Mass Publics” (1964). In that study, Converse claimed, among other things, that the level of attitude constraint (defined as the degree of interdependence between idea elements of a belief system) among the American electorate was impressively low, especially compared with that of political elites. Employing what he called the black and white model, he found that only a small portion of the public reasons about politics in terms of political ideologies (specifically in terms of liberal-conservative), and instead, a large amount of the public hold beliefs in purely random fashion. This implied that average citizens fail to develop a global view of politics.

I seek to uncover two key theoretical constructs from Converse’s framework. The first is the notion of attitude constraint. According to Converse, individuals’ belief systems are composed of idea elements (or in today’s language issue positions), and these can be related to each other in varying degrees. Attitude constraint is defined by the degree of correlation of these idea elements. Among individuals with highly constrained beliefs systems, idea elements are highly predictive of one another, while among those with low levels of constraint, knowing one idea element hardly provides any certainty about another. Although not explicitly mentioned by Converse, the framework contained an implicit assumption of dimension reduction related to increasing levels of constraint. Indeed, higher attitude constraint (or predictability of idea elements) is associated with the usage of abstract and encompassing ideological constructs, such as left-right or liberal-conservative, that operate as a cognitive filter through which many diverse political issues can all be mapped onto one elaborate dimension of judgment. In the current paper, I take from Converse the notion of predictability of idea elements, but avoid dealing with multiple dimensions by considering a set of items that address -presumably- one specific political issue. I elaborate more on this point in the next section.²

A second key theoretical element refers to the sources of attitude constraint. According to Converse, there are three such sources. First, the logical source, refers to the limits imposed on political beliefs by logical consistency; holding all else constant, one can hardly support state

²Through this specification of the object of study, I also depart from a significant portion of the literature on attitude constraint that deals with the issue directly. For examples see Weisberg & Rusk (1970) and Erikson (1979). Similarly I do not address other important research agendas like the role of core values (Feldman, 1988), hierarchical organization of belief systems (Peffley & Hurwitz, 1985), or role of group composition (Kinder, 2003), among others.

regulation of the economy and at the same time favor unrestricted *laissez faire* policies. The second source is psychological or quasi-logical. This refers to the consistency limits imposed by some appeal to a special set of core values or understanding of nature. In this case, one can hardly support state regulation of the economy and at the same time reject any form of social aid programs given that both opinions tend to be supported by common normative assumptions. The third source refers to the social basis of attitude constraint. This consists of the historical configuration of ideas associated with social interests, and to the diffusion of such linkages among the mass public. According to Converse, when a set of ideas, which are not necessary linked by strict logic or psychological tension, tend to co-occur it may well have its root in the social interests of a social group. If this group, given its social position or some other factor, seeks to expand such set of beliefs it does so in the form of “packages” that members of the public internalize as “natural wholes”. Presumably, the degree to which members of the public internalize these packages is highly variable and conditioned by individual level attributes.

In many ways scholars have already recognized the importance of this social element. As a consequence, there is growing literature that connects mass opinion with specific aspects of the political environment of voters. For example, some scholars study the influence that elite communication and information availability have on opinion formation (Zaller, 1992; Kuklinski et al., 2001; Jerit et al., 2006); others study the connection between mass and elite polarization (Carmines & Layman, 1997; Levine et al., 1997; Hetherington, 2001; Fiorina et al., 2005; Abramowitz & Saunders, 2008; Levendusky, 2009); others highlight the importance of reliable political cues for decision making (Mondak, 1993; Lupia, 1994; Kuklinski & Quirk, 2000; Lau & Redlawsk, 2001; Mondak, 2001; Kuklinski et al., 2001); and even others argue how certain institutional factors affect individuals’ level of political knowledge (Gordon & Segura, 1997; Berggren, 2001).³

The current paper follows this general approach, but with a particular twist. Instead of focusing exclusively on specific elements of the political environment it adopts a broad view that incorporates both institutional characteristics and the specific type of partisan politics of a country. It will be argued that these elements can be operationalized as proxies of the type of information to which

³Comparative scholars have also studied extensively the nexus between the political environment and voters. However, they tend to emphasize more, at the individual level, on voting behavior than on opinion formation, and at the country level, on political institutions, especially electoral, rather than the actions of political elites and their communications. A few examples worth mentioning are the economic voting literature (Powell & Whitten, 1993; Powell, 2000; Tucker, 2006; Whitten & Palmer, 1999; Duch & Stevenson, 2005), the strategic voting literature (Duverger, 1955; Ricker, 1982; Cox, 1997; Blais et al., 2001; Alvarez & Nagler, 2003; Kedar, 2005b; Abramson et al., 2006; Gschwend, 2007; Duch et al., 2008) and the turnout literature (Jusko & Shively, 2005; Verba et al., 1987; Powell, 1986; Jackman, 1987; Franklin, 2004; Wolfinger & Rosenstone, 1980). The mentioned developments tend to share a common understanding of the political environment as an institutional setting that provides selective incentives that can modify the costs of engaging in political action and decision making.

voters are commonly exposed. In other words, I focus on institutional and party system elements but as a medium to approximate the informational environment of voters. To capture this institutional and partisan variability, I employ a cross-national approach through which many different political environments are observed. While this observational approach has weak internal validity it allows making connections between voters and “real” elements of their political system.⁴ A second point of departure of this study is that it does not try to explain the prevalence of a certain type of opinion, attitude, or behavior, but the structure of opinions, or more precisely, to what extent individuals’ opinions have structure, and how this differs across varying political realities. Therefore, it implicitly argues that the specific context in which individuals are embedded has far reaching consequences that extend beyond observable behavior.

Lastly, this paper makes an explicit assumption about citizens. As has been frequently argued and widely confirmed, citizens are not assumed to invest much cognitive effort in developing strong and coherent belief systems (Downs, 1957; Converse, 1964; Bartels, 1996; Carpini & Keeter, 1996; Bartels & Achen, 2006). In simple terms, voters are considered “cognitive misers” or in rational choice terms, “rationally ignorant”. As Kuklinski & Quirk (2000) state: *“The structure of modern democracy gives ordinary citizens almost no incentive to think carefully about politics. Because informed deliberation is a collective good, individuals lack not only the incentive to be well informed, but even the incentive to use their limited information in thoughtful ways.”* All expected behavioral patterns proposed later can be traced down to this assumption.

2.2.2 Definition and Determinants of Opinion Consistency

In this paper, I define opinion consistency as belief invariance with respect to a single-dimensional political issue. By definition, the less variable a set of opinions is with respect to certain issue, the more predictable each one becomes of the other. An intuitive way to see this point is to consider the general formula of a bivariate Pearson correlation equal to $r = Cov(X_1, X_2) / \sqrt{Var(X_1)Var(X_2)}$. Imagine two groups of survey respondents (each with n members); in one group respondents’ answers to survey questions X_1 and/or X_2 are very similar between members, and in the other group responses differ greatly. As a consequence, if the variance of either X_1 , X_2 decreases among the first group, the magnitude of r increases (as well as the R^2 of a bivariate regression of X_2 on

⁴Opposed to this, many of the studies cited above employ experimental or semi-experimental designs. While in these cases internal validity concerns are less acute, the typical informational treatments voters receive (i.e. party endorsement of certain policy or source cues) might be considered weaker in terms of external validity (Gaines et al., 2007a). By analyzing the role of political environment across an observational setting we can complement experimental research by providing stronger external validity to the empirical findings.

X_1 or the reverse).⁵ Then, decreasing opinion variance on a set of political issues is equivalent to Converse's argument that a belief system becomes more constrained as it's idea-elements have a higher capacity to predict each other. In Appendix I, I provide a small computer simulation that clearly illustrates this point.

The concept of opinion consistency that I employ has some important similarities with Converse's (1964) definition of attitude constraint. However, it distinguishes itself by making an explicit assumption about the object to which the opinions refer. While opinion consistency, as I define it, refers exclusively to objects that come from a common subject domain (or are single dimensional), attitude constraint is evaluated in reference to a multiplicity of issues, and thus, can include issues that map onto more than one dimension. For example, in his correlation matrices, Converse (1964) includes diverse issues such as housing policy, employment, economic aid, and isolationism. Considering this difference, opinion consistency constitutes a much less demanding concept as it only makes reference to attitudes and opinions from a common conceptual domain. In this paper, I employ survey items that tap general questions about welfare and market economy.

With these definitions in mind, the next step is to theorize about what elements increase individuals' proclivity to develop internally consistent opinions. For this purpose, I borrow heavily from the RAS model (Zaller, 1992), and argue that the degree of association of opinions can be understood as an interactive process between three elements: political dispositions or orientations, political awareness, and the political environment of voters.⁶ To fully capture this joint interaction, I first describe each element separately.

Political dispositions are defined following Zaller's (1992) conceptualization, that is, as "individual level traits that regulate the acceptance or non acceptance of political communications the person receives" (22). These can come in many shapes and forms, but most commonly refer to some broad ideology or value schema that provides evaluative criteria to define what is preferred and desirable. In this cross-national study, I use the left-right ideological continuum as the key predisposition of analysis.

By political awareness, I refer to the common notion of cognitive engagement with political affairs (Bartels, 1996; Carpini & Keeter, 1996; Kuklinski et al., 2001; Mondak, 2001; Sniderman & Bullock, 2006; Zaller, 1992). Such engagement commonly leads to increasing levels of exposure and attention to political events. Among many other things, accumulated knowledge derived from higher levels of awareness has proven to be very effective allowing individuals better comprehension of new incoming

⁵Notice that the argument expands to cases where more opinions are considered in a straightforward manner.

⁶By which I refer to the national political arena in which political actors compete for political support (elections, campaigns, rallies), policy, policy implementation, and private gains.

messages and events from the political information flows. While such measures are commonly captured by factual knowledge questions, they are often unavailable, as in the present case. Common proxies are individuals' education level, as well as subjective indicators of engagement and interest in political affairs.

Both of these elements—dispositions and political awareness—are defined as consistency boosters, that is, as elements that increase opinion invariance with respect to a single dimensional political issue. Political predispositions are expected to have this effect by providing a broad cognitive filter through which individuals process diverse political information within a common interpretive framework. In the absence of an encompassing evaluative criteria, a typical citizen (mostly likely with a low level of interest in political affairs) will have trouble evaluating political information and deciding whether to accept it, reject it, or simply not process it. Ultimately, an increase in the necessary cost to understand the messages fully will overcome the low motivation to engage in them, and thus the probability of not processing (that is, understanding and deciding whether to accept or reject) the information increases.

Political awareness is also expected to increase opinion consistency. Whether it is by boosting levels of exposure, attention or memory retention of the political information flows rising levels of awareness provide voters' more contextual information that can assist them in interpreting incoming messages and evaluating their key implications (Sniderman & Bullock, 2006). Therefore, as Zaller (1992) argues, increases in the available stock of political information allow individuals' to form more consistent considerations about political issues.

The effects of political dispositions and political awareness are also expected to interact with each other. Indeed, they can mutually reinforce or reduce their effect depending on the configuration an individual has of these two elements. For example, the positive effect of political awareness may be even stronger among those who identify with an ideological position. Moreover, the interaction between these two elements can help account for individual heterogeneity within the population, and hence, the effect of dispositions may be very influential among some survey respondents, while among others it may be more loose and inconsequential.

Then, with the above definitions in mind, the key theoretical proposition of this paper is that individuals' level of opinion consistency is not only conditioned by their level of exposure to political information flows or by how inclusive their political dispositions are—though these are critical factors— but also by the nature of the information flows to which individuals are exposed. Or more broadly, and assuming a generalized low level of interest in politics (Downs, 1957; Converse,

1964; Bartels, 1996; Carpini & Keeter, 1996; Bartels & Achen, 2006) propensity to form consistent political opinions is conditioned by the richness and availability of easy-to-process information (or what the political heuristics literature calls “cues”).⁷ When such information is easily available and easy-to-process, voters are more likely to develop considerations on any sort of issues because the processing stage is not demanding and cues are available to indicate “what goes with what”. On the contrary, when the available information is cryptic, lacks clear ideological references or is ambiguous, voters have to invest more time and effort to process and understand it, which presumably, increases the likelihood that they will either not comprehend it, or alternatively, simply not process it. Both scenarios likely lead to higher opinion variability.

2.2.3 The Political Environment

To recapitulate, it is argued that citizens’ propensity to develop consistent political opinions is affected by the type and availability of information they encounter in their political environment. Then, the next step is to define political environments in terms of this information availability. Here I define a political environment to be increasingly complex as the identity and preferences of political actors becomes less well delimited, and the effects of their actions are increasingly difficult to observe and evaluate. By definition, the available political information citizens have in such a scenario is reduced and less easy-to-process.

Under this broad definition, *contextual complexity* can be determined by many different institutional and non-institutional elements. However, in the interest of parsimony I identify two key factors that capture the notion of contextual complexity. These are the degree of *Party System Instructiveness* and *Clarity of Responsibility*. Of course, these two elements, whether alone or together, cannot capture all the existent complexity of a national political arena of any Polity, and neither do they constitute an exhaustive list of all possible elements. However, given the definition of context complexity, they do capture essential aspects of the concept. The definition of the two concepts are the following:

Party System Instructiveness (PSI): This concept refers to the degree to which political parties provide voters simple information and meaningful cues that can be easily processed in order to develop and update political opinions and judgments. In political systems where parties’ performance fluctuates significantly and political appeals are fragmented and lack ideological substance,

⁷Such information can be acquired in many ways, either through friends, colleagues, family members, the mass media, or some other source. Regardless of the importance of this step, the key point refers to the type of information voters receive from the political environment. I assume that the availability of easy-to-process information is independent of the dominant medium of communication across societies.

the informative value of the traits of the parties—such as their labels, ideological positions, linkages with social groups—are lower, and as a consequence, citizens are exposed to an increasingly complex political environment.

This concept is somewhat related to the notion of party system institutionalization developed by Mainwaring and others (Mainwaring & Scully, 1995; Mainwaring & Torcal, 2005).⁸ To a good extent, one can expect that as party systems become more institutionalized, they also become more instructive. Further, as Mainwaring and Torcal argue, party system instructiveness can be regarded as a continuum with parties providing, on one extreme of the scale, uninformative cues with low orientational value, and on the other, very informative cues with clear ideological content. Now, opposed to the Mainwaring and Torcal concept that seeks to characterize broad categories of party systems in multiple dimensions (such as participation or representation), the notion of party system instructiveness emphasizes the informational and cognitive consequences that different party system configurations have for voters.

The notion of party system instructiveness is difficult to grasp empirically given that it is not directly observable. Hence, I will argue that the combined effect of certain observable aggregate characteristics of political parties, such as high levels of electoral volatility, party system fragmentation and the longevity of the parties, can be employed as proxies that capture this notion. The idea is that the joint effect of these three variables can either obscure the preferences and actions of the political parties, or on the contrary, make them much more accessible and easy to process for voters. This issue will be discussed more thoroughly in the measurement section.

Clarity of Responsibility (CofR): Although developed originally for understanding the prevalence of economic voting and political representation (Powell & Whitten, 1993; Huber & Powell, 1994; Powell, 2000), this concept is extremely useful for the current purposes. It characterizes the institutional setting of a Polity in terms of the extent to which citizens can identify who is responsible for public policy. Under institutional designs with high levels of clarity, elections provide the winner concentrated power to make policy, a minor role for political oppositions, and as the incumbents normally enjoy clear majorities, voters can more easily evaluate the outcomes of office. Instead, in systems with low levels of clarity, political actors normally engage in post-election bargaining and form governmental collations with multiple parties. Given the multiplicity of relevant actors, it is not evident to citizens who can be held responsible for the public policy. Therefore, I

⁸According to Mainwaring & Torcal (2005) party systems become more institutionalized as they enjoy rising levels of electoral stability, have stronger roots in social groups, are widely considered legitimate actors and have interests that are not subordinated to those of a few ambitious leaders.

argue that the degree to which citizens can identify the different political actors, as well as their preferences and political record of these actors, is closely related to the degree of clarity of the institutional environment of the Polity. In psychological jargon, individuals' attributional processes become simpler to develop in institutional settings with increasing levels of clarity.

If these two factors affect the type of political information available to citizens, they should also influence the observable levels of opinion consistency. Indeed, political settings with fragmented and unstable parties and obscure institutional frameworks provide less clear referential points for voters to build their own evaluations and perceptions on political issues. Instead, environments with a clearly organized and enduring party system and/or where current and past actions of parties in government are easy to trace, provide information that can be processed easily, thus, they should boost the observable level of opinion consistency across the population. Importantly, not only are supporters of political parties affected by the degree of complexity of the political environment, but the effect spills over to non-partisans as well.

However, the effect of these two factors should not only be limited to the average level of opinion consistency. Even more interestingly, contextual complexity should also condition the effect that political awareness and ideological dispositions have on individuals' propensity to develop consistent opinions. Indeed, as the development of opinions and attitudes depends on individuals' resources, the environment will moderate how influential these elements can be.⁹ More specifically, as contextual complexity increases (operationally either *PSI* and/or *CofR* decrease), individuals' level of political awareness should exercise an increasing effect over their level of opinion consistency. In other words, developing consistent opinions in a simple political environment does not require any formidable skills because the environment itself provides by multiple cues and shortcuts that encourage individuals' to give structure to their opinions. Instead, in environments where the available political information does not come with clear cues, or is always changing and volatile, those individuals with the cognitive and motivational resources will be better prepared to understand and evaluate the information at hand, and thus, should have more structured opinions and attitudes.

Similarly, contextual complexity is also expected to moderate the effect of ideology on levels of opinion consistency. As in the case of political awareness, the "boosting" effect of dispositions should also decrease as individuals are located in less complex political environments. Since information becomes simpler and easier-to-process the comparative advantage of having a cognitive filter to

⁹For a similar argument see Huber et al. (2005). They argue that the influence of cognitive resources on the probability of expressing an attachment to a political party varies according to the costs the institutional environment imposes upon citizens. When these costs increase, cognitive resources have a large influence on the probability of expressing attachments. Instead, in political environments in which the costs are minimal, the effect of cognitive resources will tend to zero.

process information is lower. In a simple environment, where parties' ideological appeals are easy to digest and political institutions allow an easy recognition of actors actions, the marginal value of political dispositions simply vanishes.

2.2.4 Hypothesis

To summarize, I will evaluate the following hypotheses:

Hypothesis 1 : As the political environment becomes increasingly complex [that is, as *CofR* and/or *PSI* decrease], the average level of opinion consistency decreases.

Hypothesis 2 : As the political environment becomes increasingly complex [that is, as *CofR* and/or *PSI* decrease], the effect of having a defined ideological position on individuals' level of opinion consistency increases.

Hypothesis 3 : As the political environment becomes increasingly complex [that is, as *CofR* and/or *PSI* decrease], the effect of political awareness [education level and political engagement] on individuals' level of opinion consistency increases.

2.3 Capturing Individual and System Level Variables

To address these hypothesis, my empirical analysis will center on the comparative analysis of large N cross-national survey data, specifically from the third and fourth waves of the World Values Survey (WVS/EVS, 2006).¹⁰ This data set provides access to opinions and attitudes of thousands of individuals located across extremely diverse political settings. I complement the survey data with an ample set of system level information about the political parties, electoral competition and institutional design of the countries included in this project.

One important feature of this study is that it focuses exclusively on countries with functionally democratic systems. Indeed, the theory developed here applies only to political realities in which competitive electoral politics (or at least semi-competitive) is the rule of the game (Przeworski, 1991). With this sample criteria, I rule out those countries where individuals' opinion formation process can be distorted by political threats and fears (Kuran, 1995) or simply where the nonexistence of formal electoral competition implies the absence of the environmental incentives considered here. In operational terms, this implies including in the analysis surveys applied in countries with

¹⁰Appendix II contains a list of all countries included in the study as well as the year of execution of the survey.

a Polity score (during the year of the survey) equal to or bigger than seven. This restriction, in addition to some missing data issues, leaves a sample of 56 surveys from 42 countries in the analysis.

2.3.1 Individual Level Variables

At the individual-level, the key variables to be included in the analysis are the following:

Opinion Consistency: Following the definition of opinion consistency as belief invariance with respect to a single-dimensional political issue, I measure it as response invariance to a set of survey items that refer to a common issue domain. The concept is captured empirically as a latent variable through a measurement model that is part of the hierarchical linear item response procedure I employ. Further details are provided in the next section. However, the intuition behind the measure is that opinion consistency is maximized as an individual responds more similarly to a set of opinion variables, or minimize the sum of the absolute distances between her response to each variable and the average of her responses. Formally, whenever $\sum_{i=1}^4 |Y_{ijk} - \bar{Y}_{jk}| = 0$, where Y_{ijk} reflects response of individual j from country k to item i , and \bar{Y}_{jk} is individual j 's average response.

The employed survey questions investigate respondents general attitudes about welfare and market economy. The questions are shown below:

Now I'd like you to tell me your views on various issues. How would you place your views on this scale? One means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between.

- *Incomes should be made more equal. v/s We need larger income differences as incentives for individual effort.*
- *Private ownership of business and industry should be increased. v/s Government ownership of business and industry should be increased.*
- *The government should take more responsibility to ensure that everyone is provided for. v/s People should take more take more responsibility to provide for themselves.*
- *Competition is good. It stimulates people to work hard and develop new ideas. v/s Competition is harmful. It brings out the worst in people.*

All four items are rescaled such that higher responses reflects a left-wing opinion.

Political Awareness: As mentioned above the available data does not contain, unfortunately, political knowledge variables. In the absence of such variables, I employ two common proxies: a) formal educational training, and b) subjective engagement in politics index. The WVS provides a formal educational degree variable that is recoded into a common eight point scale to facilitate cross national comparison. For the political engagement index I use two subjective indicators, namely,

interest in politics and frequency of discussion about political affairs.¹¹ I then aggregate these two variables into a combined additive index. Both variables are highly correlated with a Pearson correlation of $r = 0.49$.

Political Dispositions: As mentioned above, I employ the left-right self location scale.¹² It might be argued that the applicability of this disposition is not equal for all countries in the analysis. In some countries it may capture some aspects of political conflict, but in other polities, its significance refers to other features. While this seems quite reasonable, it does not affect this study because I do not use the scale to capture ideological positions, but instead only as a dummy variable indicating whether respondents locate themselves on the scale or not. Moreover, as detailed later, I will treat the effect as a random parameter (so each survey has its own estimate) subject to the influence of aggregate properties of the Polity. Furthermore, it is worth noting that some scholars argue that the cross-national variable content of the scale should not affect cross-national research since the focus of the analysis is on its heuristic value, which may not necessarily be related to its content (Dalton et al., 2008). Some authors even argue that under this logic, the left-right scale can be assumed to apply universally (Duch et al., 2008).

2.3.2 System Level Variables

At the aggregate level, the key variables to be included in the analysis are the following:

Party System Instructiveness (*PSI*): As mentioned above, this variable is not directly observable. In order to approximate it, I employ an additive index that includes three variables. Each of these variables seeks to capture the type of information parties would provide citizens in a given context. These are described in (a) to (c) below:

1. Fragmentation of the party system: This variable is assumed to increase the complexity of available information for two, somewhat related, reasons. In the first place, it increases the number of relevant political actors, and consequently, the number of interests and preferences debated within a polity. Moreover, as the party system becomes more fragmented, political appeals and rhetoric become increasingly narrow and specific, which may undermine the cognitive usefulness of political cues for large segments of the electorate. Second, a higher

¹¹The question wording in the WVS survey are as follows: a) Interest in politics: “How interested would you say you are in politics? Are you very interested, somewhat interested, not very interested or not at all interested?”; and b) Frequency of discussion: “When you get together with your friends, would you say you discuss political matters frequently, occasionally or never?”

¹²The question wording in the WVS survey is as follows: “In political matters, people talk of “the left” and “the right”. How would you place your views on this scale, generally speaking?”.

number of effective parties is associated with an increase in the number of dimensions of political competition (Lijphart, 1984; Stoll, 2011), and consequently, the structure of political debates and conflict between political actors may become more intricate. Fragmentation is calculated using the effective number of parliamentary parties developed by Laakso & Taagepera (1979). The data on seat distribution corresponds to the most recent election before the WVS survey was applied in each country.

2. Volatility of the party system: The level of complexity of available information is assumed to increase as political parties experiment unsteady performance and erratic behavior. In such a context, citizens are left with weaker referents to support their opinion formation process, and parties positions on a determined issue—if they are intelligible at all—contain, presumably, poor orientational value for voters. Electoral volatility is calculated using the Pedersen index (Pedersen, 1979) from popular vote returns of the most recent election before the WVS survey was applied in each country.
3. Age of Party Systems: I consider two routes through which more mature party systems provide richer political information. First, older party systems enable citizens to accumulate continuous experience with the parties from which they can extract key information such as the parties' preferences, expected behavior and past performance. This cumulative effect, of course, does not apply in countries with new democracies or in which parties experience short lives due to high levels of volatility. Second, young generations in polities with old party systems can inherit experiences with the parties from their family members and friends (Converse, 1969). In fact, under this scenario, when young citizens become politically active, they encounter already existing parties. Such information is also relevant in terms of facilitating the identification of the political actors of a polity.

This additive index has some good empirical properties.¹³ For example, the average correlation between the three items is $r = 0.49$ and a single dimensional factor analysis explains 0.58% of the variance of the components. The validity of the index can be supported through some external checks. For example, for the subset of common countries (with possibly repeated surveys) between the WVS countries from wave 3 and 4 (with a polity score of 7 or higher) and for the countries from the Huber & Inglehart (1995) expert survey, there is a relatively high correlation ($r = -0.65$, $n=45$) between the *PSI* index and the average standard deviation of the left-right classification of political

¹³Measures (a) and (b) were recollected and computed by the author. Measure (c) was taken from the Database of Political Institutions (Beck et al., 2001).

parties. That is, increasing levels of *PSI* are negatively associated with increasing variability in experts' assessments of the average location of political parties on the left-right scale.¹⁴

Clarity of Responsibility (*CofR*): Despite the prominence of this concept within the comparative literature, there is no standardized way of measuring of it. There are, however, some indicators that are more extensively used than others. In general, these indicators refer to institutional factors that either disperse or concentrate power, and therefore, diffuse or concentrate responsibility. The first authors that used this concept (Powell & Whitten, 1993) classified countries as either low or high considering elements such as majority vs. minority status of government, single vs. coalition government, cabinet stability, opposition influence on policy, or party cohesion. A few years later, Whitten & Palmer (1999) classified distinct electoral periods within a country in three ordinal levels of clarity. Their measure considered whether a country's government had, at a certain time, bicameral opposition, opposition control of committee chairs, minority support, and weak party cohesion. An important insight from this paper is the recognition that clarity of responsibility is a not a fixed property of a country's political system, but can vary within a single country according to evolving circumstances. Anderson (2000) extended the original measure proposed by Powell & Whitten (1993) by adding the distribution of seats and portfolios among parliamentary parties (or what he calls the "governing party target size"), as well as the effective number of parliamentary parties. More recently, Tavits (2007) offered an additive measure of clarity which included majority vs. minority status of government, cabinet duration, level of opposition influence, and the effective number of parliamentary parties. Duch & Stevenson (2005) offered a similar but more mathematically elaborate measure named "concentration of responsibility" whose main components are seat and portfolio distribution of parties and majority vs. minority status of government.¹⁵ Lastly, Powell (2000), who emphasized the majority vs minority status of government as the single most relevant factor, also discussed some less common factors such as federalism.

In this article *CofR* is captured following and partially deviating from previous practices. On one hand, I incorporate two of the most widely used elements, namely, majority vs minority status of government and whether power is in the hands of a single party or coalition government. On the other hand, I complement these elements with two less commonly used variables: whether the country employs a federal system of regional government and an ordinal measure of how majoritarian

¹⁴This last statistic is computed as the following: $V_k = \sum_j \frac{\sum_i \left(\frac{[P_{ijk} - P_{jk}]^2}{n_{ij} - 1} \right)}{n_j}$ where P_{ijk} is the ideological location of party j as rated by expert i from country k . Unfortunately this measure is available for only 31 countries included in the sample of the study.

¹⁵They also later refined their measure to include the degree of opposition influence (Duch & Stevenson, 2008).

it's electoral system is (for lower house elections). The precise measures and coding of these variables is as follows:

1. Government majority: Measured with a dummy variable indicating whether the governmental parties during the year of the survey had a majority of seats in the lower house.
2. Government fractionalization: Measured as the probability that two lower house members selected at random from among the government parties will be of different parties. It is calculated as $1 - \sum_{i=1, \dots, n_j} s_{ij}^2$, where s_{ij}^2 is the fraction of seats of government party i ($i = 1, 2, \dots, n_j$) from country j . A nice property of this measure is that it does not impose a dichotomous classification (single party vs multi-coalition government), but allows for gradations in between.
3. Majoritarian Electoral System: Coded in the following way: a) 1 for countries that employ a majoritarian electoral formula (which includes three types: SMD, SNTV and Alternative vote); b) 0.66 for mixed electoral systems in which a the plurality tier dominates the distribution of seats; c) 0.33 for mixed electoral systems in which a the party list tier dominates the distribution of seats; and d) 0 for systems with proportional representation.
4. Federalism: measured with a dummy variable indicating whether a country employs a federal system, for which I follow Watts' (1999) definition and classification of countries.¹⁶

The reasoning behind the last two factors is straightforward. Majoritarian electoral systems, as is well known, are associated with a syndrome of conditions that favor more accountable governments. Their lower district magnitude promotes a lower effective number of parties (Cox, 1997), are more disproportional and tend to reward the winner with electoral majorities (Taagepera & Shugart, 1989). Federalism is incorporated as a long term force that promotes a higher degree of power dispersion across a polity. In a recent article, Wlezien & Soroka (2011) make this point very clearly: "In federal systems, however, governments share responsibilities in a good number of policy areas. There may be direct involvement in a policy domain by multiple levels; there may also be transfers conditional or unconditional from one level government to the other. In either case, the actions of governments are more difficult to discern. Spending may have gone up a lot, but did the state or national government produce it? Do we want the national government to spend less? Or do we think that lower-level governments should spend less? Or both?" (pp. 33-34).

¹⁶Watts' (1999) definition of federations is "compound polities, combining strong constituent units and strong general government, each possessing powers delegated to it by the people through a constitution and each empowered to deal directly with the citizens in the exercise of the legislative, administrative and taxing powers, and each directly elected by the citizens."

In summary, measures (a) and (c), and the inverse of (b) and (d) increase the level of clarity of responsibility by concentrating power among fewer political actors.¹⁷ Scores for this variable are calculated using a simple additive index in which all components share the same weight and are scaled uniformly. The combination of all these elements has the additional advantage of balancing factors that might change from one electoral cycle to another with elements that remain relatively constant across time.

Controlling for Economic Development

In addition to these variables, the empirical analysis also accounts for the influence of Gross Domestic Product per capita (with adjustment of purchasing power parity). This variable is included in the statistical models not only as a control variable, but it actually accounts for an important theoretical alternative, the “cognitive mobilization” hypothesis (Dalton, 1984; Inglehart, 1990; Dalton, 2005). According to this perspective, societies that have gone through extended periods of socio-economic growth experience several structural changes. Among these changes, one that is particularly relevant is the eventual de-alignment of the party system with respect to its traditional base of conflict, coupled with a progressive loss of political parties’ orientational function over the electorate. It is argued that rising educational rates across the population plus the ample dissemination of mass media allows voters higher levels of independence from political parties because they are increasingly able to process political information without the assistance of political cues provided by parties. As a consequence, the costs of recollecting and processing political information decrease for voters. In terms of this paper, it is clear that increasing levels of cognitive mobilization should lead to higher average levels of attitude consistency. It is not clear, however, whether economic development should moderate citizens’ political resources (awareness and ideology), and what direction should that effect take. One could actually deduce that the hypothesis goes in both directions.¹⁸

While the implications of this theory are not necessarily at odds with the model developed here, it does de-emphasize the orientational function of political parties—and of political actors

¹⁷Measures (a), (b) are taken from the Database of Political Institutions (Beck et al., 2001). Measure (c) was recollected by the author.

¹⁸Admittedly, capturing the cognitive mobilization hypothesis through level of economic development alone is something of a simplification. While this is the ultimate factor behind the social and political changes highlighted by this theory, more specific indicators could be used. For example, the average level of educational attainment of the adult population may be a more direct element. Similarly, there are more specific measures of mass media penetration. However, for the current purpose, I employ Gross Domestic Product per capita as a general proxy variable. Using GDP per capita does have the positive side effect of being highly correlated with other important political variables such as democratic consolidation (Przeworski et al., 2000), good governance (Kaufmann et al., 2002), and corruption (Treisman, 2000; Kunicová & Rose-Ackerman, 2005; Treisman, 2007), and thereby constitutes an important control variable.

more broadly—in advanced democracies. Instead, this paper claims that even after controlling for economic development, there is a effect of political parties and institutions that cannot be ignored. This difference originates in the way each approach considers the political information to which voters have access. On one hand, by emphasizing increasingly educated publics and proliferation of mass media, cognitive mobilization focuses on how the informational costs become progressively low. On the other hand, the approach proposed here emphasizes the type of information to which voters have access more than the quantity. Even if information is easily accessible, this does not mean it is easy to digest. Therefore, one can argue that even among advanced democracies, there will be heterogeneity in the distribution of opinion consistency despite the relatively homogeneous levels of economic development (and of all associated benefits).

2.4 Statistical Model

2.4.1 A Latent Hierarchical Approach

To test Hypothesis 1 to 3, I estimate several linear item response hierarchical models with varying model specifications. All models share a common general structure which I detail below. The first component is a measurement model that captures individuals’ level of opinion consistency. This is:

$$(2.1) \quad -|Y_{ijk} - \bar{Y}_{jk}| = \theta_{jk} + \phi_{ik}$$

where $-|Y_{ijk} - \bar{Y}_{jk}|$ represents the negative of the absolute distance between the response to each item i (for $i = 1, 2, 3, 4$) of individual j from country k and the average of her responses; parameters ϕ_{ik} represent the degree of response variability associated to each item i , and are allowed to vary from country to country;¹⁹ and θ_{jk} represents the latent degree of invariance of the expressed political opinions of individual j from country k . In other words, θ_{jk} captures the extent to which individuals’ responses deviate from their own individual-specific mean. Given the negative sign on the left side of the equation, θ_{jk} is scaled such that higher values represent more opinion consistency.

I assume that $\theta_{jk} \sim N(0, \sigma_\theta^2)$.²⁰

¹⁹While somewhat unusual in the IRT literature, I allow the item parameters to vary across countries in order to absorb country-specific peculiarities that might tilt the behavior of some items in any particular direction. As I show later either allowing them to vary or fixing them as a constant for the entire sample has small consequences for testing the study’s hypothesis.

²⁰While somewhat unusual, this is not the first study to conceptualize opinion consistency (or related concepts like attitude constraint) as a latent variable. A few important studies from the 1980’s that share this conceptualization are Judd & Milburn (1980), Jackson (1983) and Peffley & Hurwitz (1985).

Now θ_{jk} , in turn, is dependent on a set of individual level variables. Formally,

$$\theta_{jk} = \beta_{1k}LR_{jk} + \beta_{2k}P_{jk} + \beta_{3k}E_{jk} + \beta_{4k}LR_{jk} \times P_{jk} + \beta_{5k}LR_{jk} \times E_{jk} + \sum_{z=6}^Z \beta_z X_{zjk}^c + \pi_k + r_{jk}$$

where LR is a dummy variable indicating whether respondent j mentioned a position on the left-right scale, P is the political engagement index, E is educational level and X_z^c represents a series of socio-demographic control variables. Additionally, π_k represents the country level deviation of attitude consistency with respect to the total sample average, and r_{jk} represents the individual level random error with distribution $r_{jk} \sim N(0, \sigma_{jk})$

Simultaneously, the parameters π_k and β_{mk} (for $m = 1, 2, 3, 4, 5$), are treated as random variables subject to the influence of country level predictors. All six parameters have three predictors:

$$\begin{aligned} \pi_k &= \gamma_{00} + \gamma_{01}PSI_k + \gamma_{02}CofR_k + \gamma_{03}GDP \text{ per capita}_k + \mu_{0k} \\ \beta_{mk} &= \gamma_{m0} + \gamma_{m1}PSI_k + \gamma_{m2}CofR_k + \gamma_{m3}GDP \text{ per capita}_k + \mu_{mk} \end{aligned}$$

for $m = 1, 2, 3, 4, 5$. For the other random terms, I assume that all residual terms of the above equations have distributions $\mu_{mk} \sim N(0, \sigma_{\mu_{mk}})$.²¹ The coefficients of gender and age are held fix across countries.

This statistical model has some important properties worth mentioning. In the first place, it takes into account the “estimated” nature of the dependent variable given that the variance associated with each observation is inflated in proportion to the degree of association observed across the four items included in the study (which is determined by $\sigma_{r_{jk}}$ and the covariance matrix of the vector a country level errors $\boldsymbol{\mu}$).²²

Second, as any member of the mixed-effects model family with multivariate outcomes, missing data is assumed to be missing at random (and not missing completely at random). In this case, each empirical Bayes estimate of θ_{jk} exists as long as individual j has responded to at least one of the four items included in the analysis. Whenever a respondent does not have data on any

²¹Notice that the random β_{mk} parameters are not assumed to be independent, but co-vary between them. Moreover, the country-level random ϕ_{ik} coefficients also co-vary with the β_{mk} parameters. Accordingly, the country level random effects covariance matrix Ω is freely estimated and has dimension 10×10 .

²²Specifically, estimation by maximum likelihood of the multilevel model parameters employs an GLS procedure in which each response is weighted by $V(Y_{jk}) = \sum_{l=2}^L Z_{jkl}\Omega_l Z_{jkl}^t + \sigma^2 I_{n_{jk}}$, where Z represents the matrix of random variables and l refers to the level of the variables (level 2 for survey respondent data and level 3 for country data), and Ω_l is the covariance matrix of random effects of level l . In this specification $\Omega_2 = \sigma_{r_{jk}}$ and Ω_3 is a 10×10 variance-covariance matrix with the elements of μ_{mk} for $m = 0, 1, 2, \dots, 10$.

item i , the missing information is augmented by the “pooled” estimate, which takes into account the respondents information contained among the other items and the independent variables.²³ Through this assumption I can incorporate in the analysis 91% of the sample, as opposed to a complete-case analysis which would included only 82% of the entire sample.

2.4.2 Exploratory Data Analysis

Before analyzing the results from the statistical models it is useful to have some intuition about the distribution of the dependent variable. Figure 2.1 presents the survey average Cronbach’s alpha and the kernel density of each of the items used to measure opinion consistency. Both pieces of information provide important insights to check two important assumptions of the statistical model, namely, the uni-dimensionality of four variables used to measure opinion consistency and their distributional form.

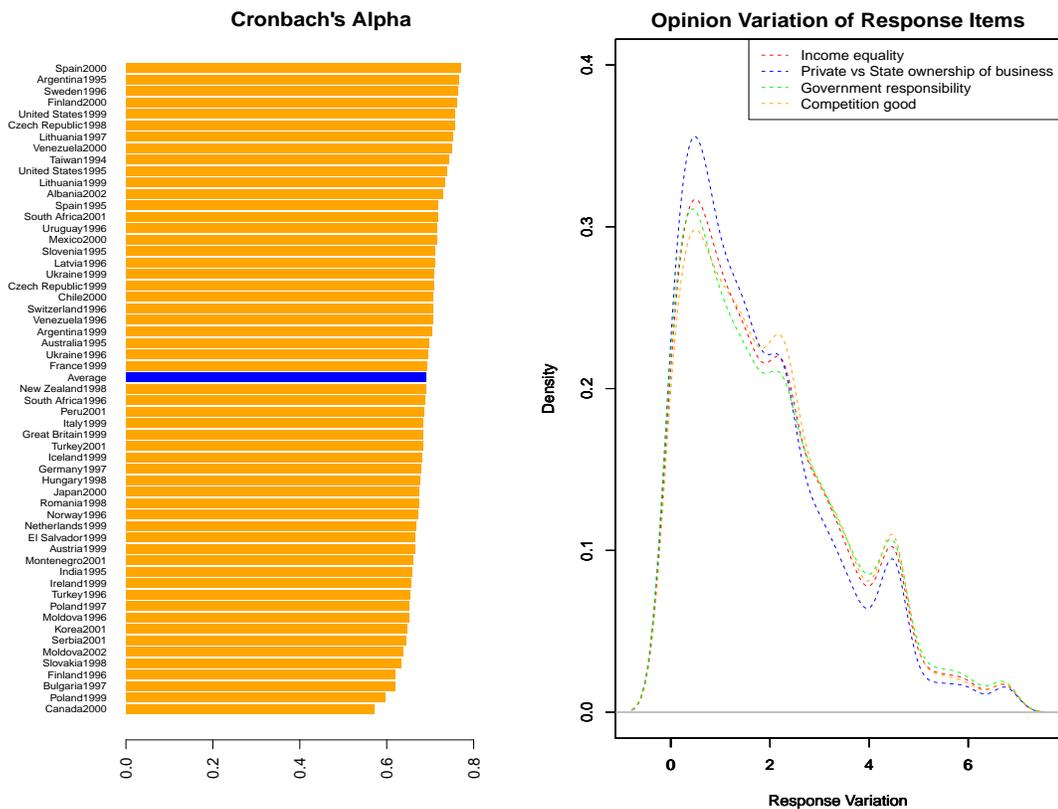


Figure 2.1: Cronbach’s Alpha of $K_y = \sum_{i=1}^4 |Y_{ijk} - \bar{Y}_{jk}|$, and Kernel Density of $|Y_{ijk} - \bar{Y}_{jk}|$

²³For further details on this property mixed-effects models with multivariate outcomes see Raudenbush & Bryk (2002); de Boeck & Wilson (2004); Hedeker & Gibbons (2006).

With respect to the first, there is relatively favorable information. Across all surveys included in the study the average reliability is $\alpha = 0.70$, with a minimum of .57 and maximum of 0.77. The 25th and 75th percentiles are 0.66 and 0.72, respectively. Notice that Canada is the only country with a reliability lower than 0.60. While these coefficients are not necessarily as high as one could wish, they do have a reasonable magnitude, especially given that Cronbach's alpha coefficient increases with the number of included items.

The next plot contains the kernel density of the difference between respondents answer to each survey question and their average response. As can be seen there, all four variables tend to roughly approximate a normal density, albeit a noticeable skew towards the right and two small bumps in the distribution around the values two and four. Another important feature is that the density of all four variables is relatively similar, with the possible exception of the Private versus State ownership of business item, for which there is a slightly higher level of concentration of responses with low levels of deviation from the respondent specific mean.

Overall, the single-dimensionality and normal distribution assumptions do not seem to be entirely misguided.

2.4.3 Results Linear Hierarchical Models

Results from the statistical models are shown in Table 2.1. All binary, ordinal and continuous independent variables have been mean centered. Model I is a three-level random intercept model that only includes country level predictors for the mean level of opinion consistency. Models II through IV allow the coefficients of education (E), engagement in politics (P), ideological self location (LR) and their interactions to vary across surveys. Model II includes only individual level predictors and is presented as a reference point to evaluate the more developed Models III and IV. These last two equations include country level predictors and cross-level interactions between the political awareness proxies and ideological self location, and the country level predictors. They also have the same predictors, but in Model IV the survey item parameters from the measurement model are allowed to vary randomly across surveys, as opposed to in Model III where they are fixed. All models are nested within Model IV.

Given the multiplicity of interactive variables direct assessment of the results from Table 2.1 is somewhat challenging. To assist interpretation and obtain a better impression of the magnitude of the cross national variation, I plot the marginal effects of ideological self location, education and political engagement in figures 2.2, 2.3 and 2.4, respectively. However, before discussing these, it is

worthwhile to mention several points.

First, as Model I and II show, the effects of education, ideological self location, and to a lesser degree, political engagement, are all statistically significant, substantially strong and positive. This indicates that rising levels of opinion consistency are associated with increasing levels of education, political engagement, and self location on the left-right scale. Additionally, the cross-national variation of these coefficients is substantial, especially for the case of political engagement and ideological self location. In both cases the coefficients themselves are smaller than their survey level standard deviation.

Second, of the two individual level interactions in Model II, only the $E \times LR$ term has a statistically significant average effect ($p < 0.01$), while the interactive effect with political engagement is somewhat close ($p = 0.16$). However, this last term has a great degree of cross-national variation, implying that in some countries its effect is indeed different from zero and quite strong. Both interactive coefficients are positive, indicating that the reduction in response variability coupled with increasing levels of education or political engagement is more accentuated among respondents who position themselves on the left-right scale. This is consistent with the RAS model of opinion formation.

Third, the estimated coefficients of the key country level predictors for the average level of opinion consistency (Model I) provide partial support for Hypothesis 1. On one hand, the effect of $CofR$ is positive, quite strong and significant ($p < 0.01$),²⁴ but on the other, the estimated coefficient of PSI is negative, though not statistically significant even at a 90% level of confidence. This result holds as well in the more sophisticated Models III and IV.

The results of these last two models show strong evidence favoring Hypotheses 2 and 3. From now on, I focus the discussion on Model IV given that it obtains the best fit (see AIC statistics) and that Model III contains almost identical parameter values.²⁵ As can be seen, there are several statistically significant cross-level interactions terms, among others, $P \times CofR$ ($p = 0.07$), $LR \times PSI$ ($p = 0.02$), $LR \times E \times PSI$ ($p = 0.001$), $LR \times E \times PSI$ ($p = 0.04$), and $LR \times E \times CoR$ ($p = 0.04$). All these coefficients are negatively signed, which is consistent with expectations in the sense that the effect of ideological self location, education, or political engagement becomes less pronounced as the political environment is simpler, and that such effect becomes more pronounced among respondents that mention a position on the ideological scale.

²⁴All reported p-values of country level variables, as well as cross level interactions, are two-sided and calculated using a student distribution with 52 degrees of freedom

²⁵In fact, likelihood ratio tests confirm that Model IV obtains a significantly better fit than all other Models in Table 2.1 (including Model III). Also notice that Model III obtains a much better fit than Models I and II as well.

Table 2.1: Hierarchical Linear IRT Models of Opinion Consistency

	Model I		Model II		Model III		Model IV	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
<i>Item</i> ₁	-2.0222	0.03373	-1.9276	0.0431	-2.0201	0.0333	-2.0127	0.0457
<i>Item</i> ₂	-1.8045	0.03374	-1.7100	0.0431	-1.8025	0.0334	-1.7834	0.0395
<i>Item</i> ₃	-2.0351	0.03373	-1.9408	0.0431	-2.0333	0.0333	-2.0335	0.0451
<i>Item</i> ₄	-2.0544	0.03375	-1.9598	0.0431	-2.0523	0.0334	-2.0408	0.0417
Gender	0.0175	0.00804	0.0216	0.0080	0.0216	0.0080	0.0215	0.0080
Age	0.0005	0.00026	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003
E	0.0533	0.00202	0.0522	0.0048	0.0485	0.0050	0.0504	0.0050
P	0.0280	0.01117	0.0330	0.0245	0.0081	0.0240	0.0028	0.0238
LR	0.1154	0.01244	0.1218	0.0242	0.0903	0.0256	0.0840	0.0257
E × LR	0.0384	0.00506	0.0324	0.0065	0.0242	0.0060	0.0234	0.0062
P × LR	0.0702	0.02937	0.0539	0.0388	0.0629	0.0378	0.0527	0.0393
Log GDP pc	0.3022	0.04538			0.2991	0.0448	0.2743	0.0436
PSI	-0.0475	0.03973			-0.0455	0.0393	-0.0451	0.0382
CofR	0.1266	0.04360			0.1227	0.0431	0.1143	0.0419
E × Log GDP pc					0.0121	0.0068	0.0064	0.0061
E × PSI					0.0021	0.0060	-0.0010	0.0054
E × CofR					0.0003	0.0066	-0.0031	0.0060
LR × Log GDP pc					0.0783	0.0342	0.0908	0.0342
LR × PSI					-0.0680	0.0301	-0.0733	0.0302
LR × CofR					0.0346	0.0346	0.0334	0.0347
P × Log GDP pc					0.0676	0.0326	0.0838	0.0315
P × PSI					0.0337	0.0285	0.0336	0.0276
P × CofR					-0.0632	0.0317	-0.0552	0.0307
LR × E × Log GDP pc					0.0173	0.0075	0.0180	0.0077
LR × E × PSI					-0.0212	0.0068	-0.0243	0.0070
LR × E × CofR					-0.0170	0.0084	-0.0179	0.0086
LR × P × Log GDP pc					-0.0205	0.0497	0.0005	0.0514
LR × P × PSI					-0.0720	0.0437	-0.0978	0.0452
LR × P × CofR					0.1585	0.0521	0.1496	0.0536
N observations	285545		285545		285545		285545	
N cases	74350		74350		74350		74350	
N surveys	56		56		56		56	
$\sigma_{\theta_{jk}}$	0.880		0.8727		0.8727		0.8805	
σ_{π_k}	0.217		0.3181		0.2135		0.2039	
σ_{Item_1}	-		-		-		0.2832	
σ_{Item_1}	-		-		-		0.1581	
σ_{Item_1}	-		-		-		0.2353	
σ_{Item_1}	-		-		-		0.1996	
σ_E	-		0.0320		0.0294		0.0304	
σ_P	-		0.1603		0.1324		0.1322	
σ_{LR}	-		0.1468		0.1344		0.1363	
$\sigma_{E \times LR}$	-		0.0231		0.0107		0.0148	
$\sigma_{P \times LR}$	-		0.1623		0.1048		0.1260	
σ_ϵ	1.1940		1.1943		1.1943		1.1710	
Log Likelihood	-497714.2		-497448.5		-497409.1		-493525.7	
AIC	995456.4		994977		994928.2		987223.3	

Note: Results are Full Maximum Likelihood estimates.

To obtain a more insightful perspective of these and other patterns, Figures 2.2 to 2.4 plot the marginal effects of self location of the left-right scale, education, and political engagement, respectively.

Figure 22. visualizes the marginal effects of ideological self location at three different levels of education and political engagement according to *PSI*. Across all groups there is negative slope, indicating that the magnitude of ideological self location decreases as *PSI* increases. However, there is a great deal of variability in the magnitude of this effect across different levels of education and political engagement. Indeed, the steepness of the slope becomes much more pronounced as individuals' are more educated or more engaged in political affairs. At the lowest observed level of *PSI*, the effect of locating on the left-right scale among those with tertiary education equals 59% of one standard deviation of the total (unconditional) individual-level variability of the latent measure of opinion variability.²⁶ Similarly, the effect of ideological self location among those located at the 90th percentile of the political engagement index equals 45% of a standard deviation. Opposed to this, the effect of ideological self location among respondents' located in environments where *PSI* is very high is indistinguishable from zero, and even negative and significant among the most educated.

Figure 3 shows the marginal effect of education among those who do and do not express an ideological position at varying levels of *CofR* and *PSI*. The observed patterns of the effect of education among those who express an ideological position follows closely the predictions of Hypothesis 3 for both *CofR* and *PSI*. As can be seen, the estimate of education heads toward zero as *CofR* and *PSI* increases, though it remains significant at any level of the aggregate variables. In neither case, the slope of the effect is as pronounced as in Figure 2, but is there is some considerable change in the magnitude of the effect of education. For example, at the lowest observed level of *CofR*, an increase from incomplete primary to complete tertiary education among those who express an ideological position covers 54% of a standard deviation of the total (unconditional) individual level variability of the dependent variable. This effect reduces to 34% at the highest observed level of *CofR*. The respective numbers at the lowest and highest observed levels of *PSI* are 55% and 28%.

The variation of the effect of education among respondents that do not mention an ideological position is less straightforward to interpret. Among these respondents (who account for approximately 20% of the sample), the effect of education has a positive and very steep slope for both *CofR* and *PSI*; that is, decreasing levels of environmental complexity lead to a stronger effect of

²⁶Which is calculated from an unconditional three level random intercept model. Using the same notation as above the model is represented as the following: $-|Y_{ijk} - \bar{Y}_{jk}| = \phi_{ik} + \theta_{jk} + \pi_k + r_{jk}$.

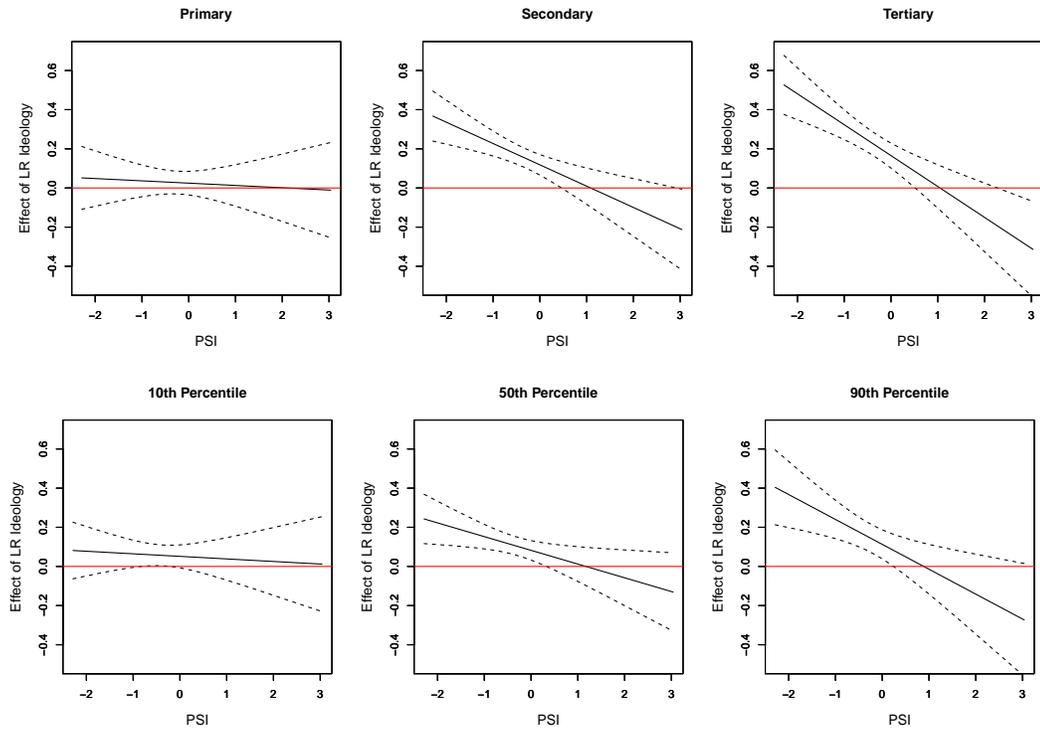


Figure 2.2: Marginal Effect of Ideological Self-Location on Opinion Consistency by Education/Political Engagement & *PSI* with 95% Confidence Intervals

education. This may seem at odds with Hypothesis 2, but through some *ex post* theoretical speculation it is possible to reconcile this pattern. To understand, recall that political orientations were defined as cognitive filters through which diverse information can be evaluated within a common rubric. Then, individuals who lack a well defined political orientation (measured here through the absence of left-right ideological self identification) will be exposed to the information flows unaided, making the structure of their opinions more sensitive to the type of information to which they are exposed. In others words, in the absence of an ideological filter, increasing levels of education (and thus of exposure to information flows) will lead to more consistent opinions as individuals are exposed to less ambiguous political information.

These last patterns as well as the ones in Figure 2.2 clearly manifest the relevance of the interaction between ideological self-location and the political awareness proxies. They demonstrate that the combination of an ideological schema with varying levels of education and interest in politics lead to very different behavioral patterns, both in terms of intensity and direction, as to how individuals structure their opinions.

Finally the marginal effects of the political engagement index are plotted in Figure 2.4. Several

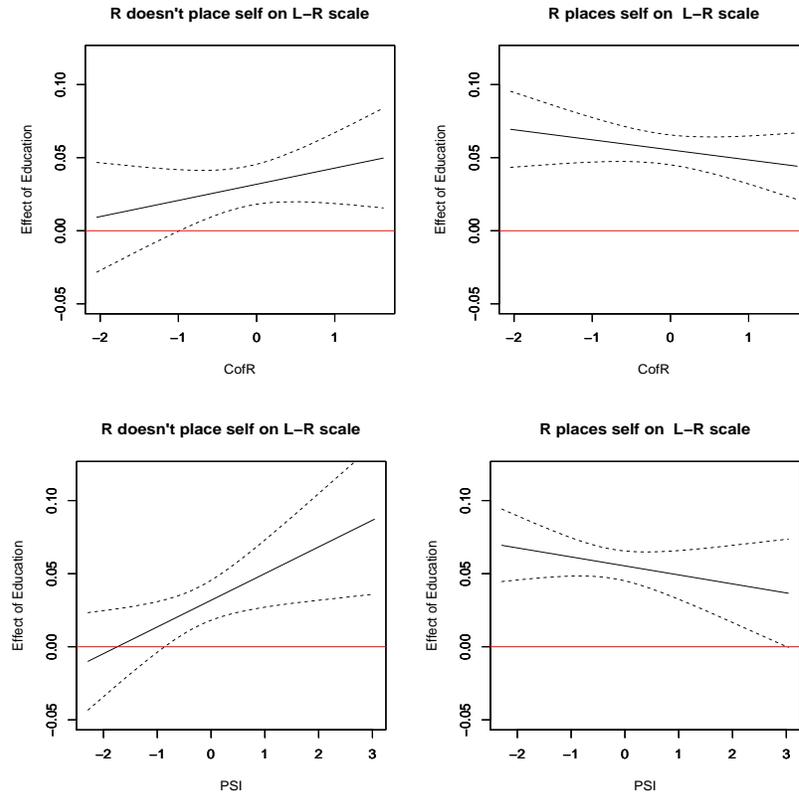


Figure 2.3: Marginal Effect of Education on Opinion Consistency by Ideological Self-Location & PSI/CofR with 95% Confidence Intervals

patterns emerge here. In the first place, and confirming Hypothesis 3, the size of the effect of political engagement decreases at lower levels of *CofR*. However, this pattern behaves very differently whether individuals locate themselves or not on the left-right scale. Among those who provide an ideological location, the effect is very mild and is not significant even at the lowest observed level of *CofR*. Instead, among respondents who do not locate themselves on the scale, the degree of variability of effect is quite dramatic. At very low levels of *CofR* the effect of political engagement is positive and very significant—which implies boosting opinion consistency—but becomes negative and significant at the highest observed level of *CofR*.²⁷

In the case of *PSI* we find information that is somewhat at odds with the theoretical expectations. Both groups that do and do not express an ideological position show a positive slope. The pattern indicates that the boosting effect of political engagement becomes larger as the party system becomes more instructive. However, the magnitude of the effect is quite different. Among

²⁷The reason for the negative coefficient is not entirely clear. However, one possible reason is that more engaged respondents adopt a multidimensional opinion structure in increasingly clear political environments.

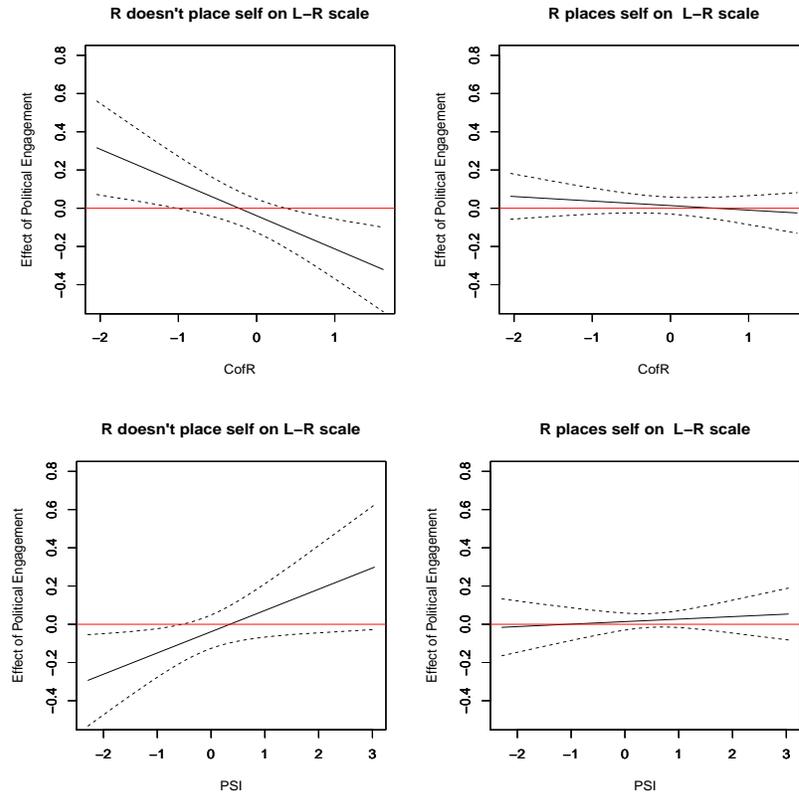


Figure 2.4: Marginal Effect of Political Engagement on Opinion Consistency by Ideological Self-Location & PSI/CofR with 95% Confidence Intervals

those who provide an ideological position, the slope of the effect is almost flat and the intervals always include zero. Instead, among those who do not provide an ideological position the slope of the effect is very pronounced and significant at both low and high levels of *PSI*. This is the same pattern observed between *PSI* and the effect of education in Figure 2.3. As such, it might also fit the explanation provided above for that pattern. That is, to the extent that a citizen lacks a broad political orientation, increasing levels of exposure to political events will lead to less variable opinions whenever he or she is exposed to simpler political information.

Finally, it is worth mentioning a few words about the role of economic development. While this variable has been incorporated into the models mainly for statistical control purposes, it has shown a pervasive influence over average levels of opinion consistency, as well as a strong moderating role over the effect of individuals' level of education, political engagement and self-ideological location. Consistent with cognitive mobilization theory, the overall level of opinion consistency increases very significantly as a country becomes more wealthy. Similarly, the effect of individuals' cognitive

resources tends to increase at rising levels of economic developments. Notice that all cross-level interactions—with the exception of interaction $LR \times P \times \text{Log GDP pc}$ —are positive and significant.

Robustness Analysis

In order to evaluate how sensitive the parameter estimates are with respect to alternative model specifications additional models were estimated. Table 2.2 shows the results of six equations that extend Model III with additional macro-level variables that could possibly affect the original parameter estimates. The additional control variables are the following: compulsory voting (dummy variable), parliamentary regime (dummy variable), polity score, logarithm of average district magnitude, whether a country is a new democracy²⁸ (dummy variable), and the level of economic inequality (measured through the Gini index). Controlling for these variables is important given that they may correlate with either $CofR$ or PSI . However, as can be seen in Table 2.2, parameter estimates tend to remain relatively stable, and more importantly, the inferences one can draw from the models do not change significantly.

One important case refers to the estimates of the main effect of $CofR$. Its parameter estimate across the different models has values between 0.07 and 0.13 with all cases significant ($p \leq 0.05$, or even $p < 0.01$ for all cases except the equation including the Gini index). Notice that controlling for other factors, especially district magnitude, leads to an even larger parameter estimate than the one reported in Table 2.1. Similarly, the key cross-level interactions remain stable, with the biggest exception being the $LR \times PSI$ interaction term that shrinks by almost a third of its size in Model IX (which controls for whether the country is a new democracy). However, this interaction remains marginally significant ($p = 0.14$) and maintains the correct sign. In other cases, some of the cross-level interaction coefficients become larger than reported in Model 3. For example, the interaction $LR \times E \times CofR$ increases from 0.017 to -0.022 in Model IX, or the coefficient of the term $LR \times E \times PSI$ decreases from -0.021 to -0.023 in Model XI. In other words, adding further control variables might decrease or increase the size of some effects reported in Model III, but even when the estimates are reduced, they do not dramatically affect the inferences that can be drawn.

A second set of robustness tests revise any potential changes associated with alternative specifications of the dependent variable. While equation (1) considers the absolute distance between a respondent's answer to each question and her mean response, one could use the squared distance instead, such as: $-(Y_{ijk} - \bar{Y}_{jk})^2 = \theta_{jk} + \phi_{ik}$. The rationality behind this last option is to penalize more respondents' deviation from their own average response. Results from these models are shown

²⁸Coded as 1 if the current democratic regime of the country began in 1980 or after.

Table 2.2: Hierarchical Linear IRT Models of Opinion Consistency with Macro Level Controls

	Model V		Model VI		Model VII		Model VIII		Model IX		Model XI	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
<i>Item</i> ₁	-1.9863	0.0357	-2.0509	0.0439	-2.0756	0.0596	-2.4169	0.2936	-1.8943	0.0679	-1.5329	0.1273
<i>Item</i> ₂	-1.7687	0.0357	-1.8334	0.0439	-1.8539	0.0596	-2.1993	0.2936	-1.6767	0.0679	-1.3153	0.1273
<i>Item</i> ₃	-1.9995	0.0357	-2.0641	0.0439	-2.0873	0.0596	-2.4301	0.2936	-1.9075	0.0679	-1.5461	0.1273
<i>Item</i> ₄	-2.0185	0.0357	-2.0831	0.0439	-2.1072	0.0596	-2.4491	0.2936	-1.9265	0.0679	-1.5650	0.1273
Gender	0.0217	0.0080	0.0216	0.0080	0.0208	0.0080	0.0217	0.0080	0.0215	0.0080	0.0217	0.0080
Age	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003
E	0.0469	0.0056	0.0497	0.0068	0.0415	0.0090	-0.0686	0.0427	0.0564	0.0105	0.0163	0.0215
P	-0.0082	0.0266	0.0201	0.0323	0.0370	0.0434	0.3094	0.2177	-0.0250	0.0510	-0.0863	0.1039
LR	0.0834	0.0283	0.0809	0.0355	0.0111	0.0405	0.0305	0.2506	0.0367	0.0518	0.1453	0.1115
LR×E	0.0227	0.0064	0.0214	0.0087	0.0542	0.0097	0.0220	0.0595	0.0210	0.0114	0.0031	0.0267
LR×P	0.0628	0.0412	0.0532	0.0539	-0.0119	0.0615	0.0892	0.3810	0.0548	0.0758	0.2601	0.1663
Log GDP pc	0.2776	0.0442	0.2769	0.0490	0.3067	0.0440	0.2556	0.0544	0.2470	0.0499	0.2183	0.0446
PSI	-0.0294	0.0385	-0.0427	0.0390	-0.0414	0.0393	-0.0501	0.0388	-0.0765	0.0404	0.0129	0.0377
CofR	0.1077	0.0419	0.1161	0.0432	0.1333	0.0430	0.1209	0.0424	0.1041	0.0423	0.0777	0.0398
Compulse	-0.1703	0.0787										
Parlam			0.0708	0.0661								
Log DM					0.0289	0.0241						
Polity							0.0461	0.0338				
New Demo									-0.1829	0.0860		
Gini											-0.0130	0.0033
E×Log GDP pc	0.0133	0.0070	0.0128	0.0074	0.0138	0.0067	-0.0004	0.0078	0.0089	0.0077	0.0174	0.0075
E×PSI	0.0014	0.0061	0.0023	0.0060	0.0017	0.0060	0.0004	0.0056	0.0002	0.0063	-0.0016	0.0063
E×CofR	0.0010	0.0067	0.0007	0.0067	0.0015	0.0066	-0.0002	0.0062	-0.0009	0.0067	0.0034	0.0068
E×Compulse	0.0075	0.0124										
E×Parlam			-0.0026	0.0101								
E×Log DM					0.0038	0.0037						
E×Polity							0.0136	0.0049				
E×New Demo									-0.0115	0.0135		
E×Gini											0.0009	0.0006
P×Log GDP pc	0.0786	0.0330	0.0756	0.0354	0.0620	0.0325	0.0996	0.0392	0.0827	0.0375	0.0826	0.0364
P×PSI	0.0257	0.0286	0.0331	0.0285	0.0282	0.0289	0.0387	0.0283	0.0406	0.0305	0.0228	0.0308
P×CofR	-0.0575	0.0316	-0.0603	0.0321	-0.0717	0.0323	-0.0604	0.0313	-0.0597	0.0325	-0.0540	0.0329
P×Compulse	0.0706	0.0572										
P×Parlam			-0.0269	0.0484								
P×Log DM					-0.0234	0.0178						
P×Polity							-0.0349	0.0251				
P×New Demo									0.0462	0.0654		
P×Gini											0.0025	0.0027
LR×Log GDP pc	0.0799	0.0349	0.0724	0.0375	0.0885	0.0311	0.0723	0.0421	0.0972	0.0374	0.0685	0.0378
LR×PSI	-0.0689	0.0307	-0.0674	0.0302	-0.0650	0.0276	-0.0690	0.0306	-0.0480	0.0323	-0.0612	0.0326
LR×CofR	0.0392	0.0351	0.0319	0.0354	0.0534	0.0323	0.0340	0.0354	0.0518	0.0355	0.0296	0.0361
LR×Compulse	0.0517	0.0649										
LR×Parlam			0.0212	0.0537								
LR×Log DM					0.0408	0.0163						
LR×Polity							0.0069	0.0285				
LR×New Demo									0.0882	0.0706		
LR×Gini											-0.0015	0.0029
LR×E×Log GDP pc	0.0178	0.0075	0.0168	0.0079	0.0138	0.0074	0.0167	0.0087	0.0185	0.0079	0.0211	0.0080
LR×E×PSI	-0.0217	0.0068	-0.0223	0.0069	-0.0218	0.0068	-0.0209	0.0072	-0.0200	0.0076	-0.0237	0.0073
LR×E×CofR	-0.0163	0.0085	-0.0184	0.0088	-0.0221	0.0086	-0.0158	0.0087	-0.0158	0.0090	-0.0150	0.0089
LR×E×Compulse	0.0093	0.0159										
LR×E×Parlam			0.0053	0.0130								
LR×E×Log DM					-0.0157	0.0041						
LR×E×Polity							0.0003	0.0068				
LR×E×New Demo									0.0062	0.0165		
LR×E×Gini											0.0006	0.0007
LR×P×Log GDP pc	-0.0238	0.0496	-0.0268	0.0529	-0.0142	0.0487	-0.0146	0.0584	-0.0217	0.0538	-0.0496	0.0537
LR×P×PSI	-0.0664	0.0439	-0.0723	0.0438	-0.0669	0.0428	-0.0745	0.0453	-0.0662	0.0485	-0.0512	0.0471
LR×P×CofR	0.1604	0.0523	0.1562	0.0541	0.1683	0.0526	0.1533	0.0534	0.1658	0.0559	0.1378	0.0547
LR×P×Compulse	0.0147	0.0936										
LR×P×Parlam			0.0218	0.0814								
LR×P×Log DM					0.0373	0.0255						
LR×P×Polity							-0.0033	0.0432				
LR×P×New Demo									0.0181	0.1067		
LR×P×Gini											-0.0052	0.0042
N observations	273372		273372		273372		273372		273372		273372	
N cases	71177		71177		71177		71177		71177		71177	
N surveys	56		56		56		56		56		56	
σ_e	1.194		1.194		1.193		1.194		1.194		1.194	
$\sigma_{\theta_{jk}}$	0.873		0.873		0.866		0.873		0.873		0.873	
σ_{π_k}	0.205		0.211		0.208		0.210		0.205		0.188	
σ_E	0.029		0.029		0.029		0.027		0.029		0.029	
$\sigma_{E \times LR}$	0.010		0.011		0.011		0.010		0.010		0.010	
σ_{LR}	0.135		0.134		0.116		0.134		0.129		0.134	
σ_P	0.130		0.132		0.131		0.129		0.132		0.131	
$\sigma_{P \times LR}$	0.101		0.104		0.098		0.103		0.105		0.097	
Log Likelihood	-497407.7		-497411.2		-489368.6		-497407.1		-497408.2		-497402.8	

Abbreviations Note: Compulse: Compulsory Voting dummy; Parlam: Parliamentary Regime dummy; P Log DM: Log of Average District Magnitude; Polity: Polity Score; New Democracy: Dummy variables for countries with current democracy beginning in 1980 or after.

Table 2.3: Hierarchical Linear IRT Models of Opinion Consistency with $Z_{ijk} = (Y_{ijk} - \bar{Y}_{jk})^2$

	Model X		Model XI	
	Coef	SE	Coef	SE
<i>Item</i> ₁	-6.5764	0.1766	-6.5385	0.2519
<i>Item</i> ₂	-5.5026	0.1767	-5.4118	0.2218
<i>Item</i> ₃	-6.6455	0.1766	-6.6511	0.2463
<i>Item</i> ₄	-6.6359	0.1768	-6.5836	0.2316
Gender	0.0716	0.0394	0.0707	0.0394
Age	-0.0016	0.0013	-0.0015	0.0013
E	0.2432	0.0245	0.2487	0.0245
P	0.0244	0.1202	0.0012	0.1196
LR	0.5578	0.1352	0.5419	0.1364
LR × E	0.0988	0.0298	0.0983	0.0298
LR × P	0.1791	0.1760	0.1179	0.1782
Log GDP pc	1.5957	0.2373	1.4791	0.2293
PSI	-0.2683	0.2078	-0.2655	0.2008
CofR	0.6302	0.2282	0.5822	0.2205
E × Log GDP pc	0.0501	0.0331	0.0320	0.0303
E × PSI	0.0083	0.0291	-0.0083	0.0266
E × CofR	-0.0082	0.0322	-0.0236	0.0295
P × Log GDP pc	0.3379	0.1634	0.4082	0.1557
P × PSI	0.1658	0.1430	0.1643	0.1362
P × CofR	-0.3406	0.1588	-0.3013	0.1516
LR × CofR	0.1787	0.1828	0.1822	0.1837
LR × Log GDP pc	0.3120	0.1814	0.3482	0.1824
LR × PSI	-0.3692	0.1596	-0.3666	0.1604
LR × E × Log GDP pc	0.0780	0.0375	0.0791	0.0369
LR × E × PSI	-0.0774	0.0338	-0.0900	0.0333
LR × E × CofR	-0.0938	0.0419	-0.0972	0.0414
LR × P × Log GDP pc	-0.0716	0.2301	0.0386	0.2314
LR × P × PSI	-0.4137	0.2014	-0.4838	0.2023
LR × P × CofR	0.8307	0.2439	0.8290	0.2449
N observations	285545		285545	
N cases	74350		74350	
N surveys	56		56	
$\sigma_{\theta_{jk}}$	3.64		3.704	
σ_{π_k}	1.13		1.078	
σ_{Item_1}	-		1.677	
σ_{Item_1}	-		0.920	
σ_{Item_1}	-		1.367	
σ_{Item_1}	-		1.165	
σ_E	0.14		0.147	
σ_{LR}	0.73		0.744	
$\sigma_{E \times LR}$	0.06		0.065	
σ_P	0.67		0.676	
$\sigma_{P \times LR}$	0.36		0.411	
σ_ϵ	7.35		7.217	
AIC	1999005		1992135	
Log Likelihood	-999456.5		-995981.6	

Note: Results are Full Maximum Likelihood estimates.

in Table 2.3. Models X and XI replicate Models III and IV, respectively. Without exception all the observed patterns, as well as possible inferences, detailed above are replicated with the squared dependent variable.

Lastly, extensive analysis of level one, two and three residuals across many different model specifications confirmed that some countries close to the polity threshold (i.e. Brazil, India and the Ukraine) tended to generate unusually large random effects for the random coefficients. The education variable of the Brazilian survey (from 1997) had a particularly pronounced positive effect that dramatically reduced the size of the cross level interaction between this variable and *CofR*. As a consequence this survey was excluded from the analysis. The India survey from 2001 was also excluded given an unusually strong estimate of the political engagement index. In contrast to the case of Brazil, this survey disproportionately increased the size of several cross-level interactions. Many other potentially influential surveys were studied, but no other survey distorted the sample results in any substantive way.

2.5 Conclusions

This paper has proposed a conceptual framework that seeks to explain how specific contextual conditions can modify citizens' propensity to develop and express consistent opinions on political issues. The main argument is that the opinion formation process is a joint interactive process between peoples' political orientations, their level of political awareness, and the complexity of their political environment. As the political environment becomes progressively complex it contains less accessible and easy-to-process political information, and therefore, it increases the effort voters have to make in order to develop their opinions about political issues. Two key predictions were derived from this framework, namely, that increasing levels of contextual complexity would lead, first, to a decrease in the average level of opinion consistency across a population, and second, to an increase in the effect that political awareness and dispositions have on individuals' level of opinion consistency.

To test these hypotheses, linear item response hierarchical models were estimated using cross-national survey data. The results of analysis provided an important amount of support for the expected behavioral patterns, especially in respect to the varying effects of ideological self identification and education, and to a lesser degree for political engagement. In particular, it was shown that the magnitude of the influence of these variables, and in particular, the case of ideological self identification, decreases substantially as the level of party system instructiveness rises. While the

degree of clarity of responsibility also had some predictive power over the variation of the effect of education, it is proved to have more influence on the average level of opinion consistency among a country's survey respondents.

At the same time there are some behavioral patterns not entirely captured by the theoretical framework—especially some of the marginal effects of political engagement and education among respondents that do not locate themselves of the left-right scale. In some cases, the effects show patterns that are the inverse of those expected by theory, though, through some *ex post* theoretical speculation, they might be reconcilable. Indeed, in the absence of a cognitive filter which helps organize political opinions, increasing levels of education or political engagement can lead to higher levels of opinion consistency if people are exposed to less ambiguous political information. On the other hand, less accentuated departures—especially the effect of political engagement among those who provide an ideological position at varying levels of *PSI*—are among the weakest patterns, and on statistical grounds, it is quiet uncertain if they constitute a departure or simply a null result.

In this paper, all attention, both theoretical and empirical, focused on the degree of consistency of opinions that refer to a single issue domain. Yet, does an individual's level of consistency in one area translate to similar levels of consistency in other areas? This question was at the core of Converse's (1964) theoretical and normative concerns. To address it empirically, access to more than a single set of issue specific survey items is required, something that was not available in the employed data source. If it were available, the multiple latent opinion consistency variables could be modeled simultaneously in a multivariate (multiple) regression context. Such a specification would estimate the covariances between the latent consistency variables, which could provide key information to address this concern. Moreover, it would also allow a direct comparison of the estimates predicting consistency for the different issues, which could indicate whether the influence of individual level resources and system level properties is issue specific, or expands across different issue domains.

A second valuable extension is the incorporation of additional sources of within survey heterogeneity. Indeed, with the exception of the interactions between the political awareness and disposition variables, the current analysis has downplayed the possible impact of any form of social group membership. While it is not easy to think about possible social group variables that could extend across national frontiers, there are some demographic variables that may be relevant, such as respondents' socio-economic status, religious denomination, and perhaps, most interestingly, age. By introducing one of these variables as an additional grouping factor, we could observe whether

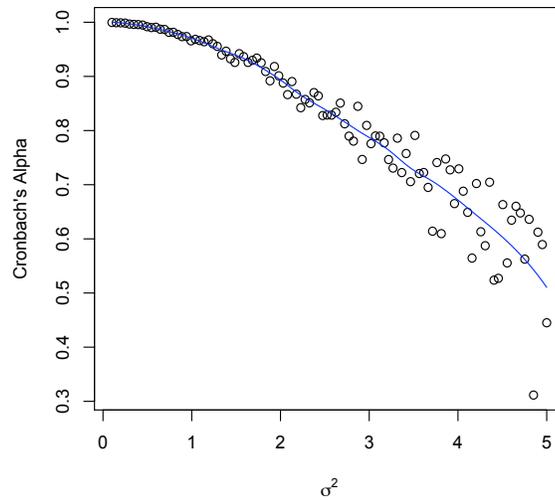
the varying relationship between individuals' opinion consistency, cognitive resources, and the complexity of the environment varies as well according to respondents' demographic characteristics. The case of age seems particularly appealing. It might well be the case that through cumulative learning individuals become less sensitive to the influences of the political environment, and they may compensate for any possible lack of formal cognitive resources (such as scrolling) with direct political experience.

Now, despite all the shortcoming, it is tempting to claim that the results provide strong support for the assertion that the degree of complexity of the political environment exercises a profound influence over individual level cognition. Indeed, if it can condition and moderate the role of cognitive resources over opinion consistency, it can probably influence many other aspects of mass behavior. Potential candidates that may be sensitive to the complexity of the environment include levels of awareness about political issues, degree of opinion stability, magnitude of proximity voting, and response rates to survey questions, among others. Unfortunately, many of these variables cannot yet be subject to analysis given the lack of appropriate cross national data (i.e. comparative opinion stability data), while others present serious methodological challenges (i.e. cross-national analysis of proximity voting).²⁹ None the less, the multiplication of cross-national survey projects and future continuity of the existing ones might alleviate some of these barriers.

²⁹More specifically, not only do the options in the choice set vary across different countries, but also the size of the set, given the varying number of parties across countries. Commonly employed tools such as conditional logit or multinomial probit do not seem flexible enough to account for these varying elements. And this, of course, has not even yet considered yet any specific strategy to address the clustered nature of the survey data, which makes thing even more complex.

Appendix I: Simulation of Opinion Consistency

To provide more intuition on the concept of opinion consistency, I provide a brief simulation that represents the relationship between opinion consistency and opinion invariance. The example is the following: Imagine a society j with n number of voters. Each voter i from society j has four opinions $k = (1, 2, 3, 4)$ about different aspects of market economy. Each set of opinions of each individual are scaled from 1 to 10 with an overall mean \bar{x}_{ij} which is distributed uniformly across population j , and each opinion k is normally distributed with mean \bar{x}_{ij} and common variance (σ_j^2) for all individual members of j . Now, we can calculate the degree of consistency (or correlation between items), as measured through Cronbach's alpha for different populations with varying degrees of opinion variance. The results of the experiment are represented in the figure below. As can be seen, associated to an increase in the variance of individuals' opinions (σ_j^2), there is a dramatic reduction in the degree of internal consistency.



Appendix II: Surveys included in the Sample

Country	Year of Survey	Country	Year of Survey
Albania	2002	Montenegro	2001
Argentina	1995	Netherlands	1999
Argentina	1999	New Zealand	1998
Australia	1995	Norway	1996
Austria	1999	Peru	2001
Bulgaria	1997	Poland	1997
Canada	2000	Poland	1999
Chile	2000	Romania	1998
Czech Republic	1998	Serbia	2001
Czech Republic	1999	Slovakia	1998
El Salvador	1999	Slovenia	1995
Finland	1996	South Africa	1996
Finland	2000	South Africa	2001
France	1999	Spain	1995
Germany	1997	Spain	2000
Great Britain	1999	Sweden	1996
Hungary	1998	Switzerland	1996
Iceland	1999	Taiwan	1994
India	1995	Turkey	1996
Ireland	1999	Turkey	2001
Italy	1999	Ukraine	1996
Japan	2000	Ukraine	1999
South Korea	2001	United States	1995
Latvia	1996	United States	1999
Lithuania	1997	Uruguay	1996
Lithuania	1999	Venezuela	1996
Mexico	2000	Venezuela	2000
Moldova	1996		
Moldova	2002		

CHAPTER III

When Do Political Evaluations Become Partisan Judgments?

3.1 Introduction

The comparative study of party identification has received significant attention during the last few decades (see for example: Converse & Pierce, 1986; Blais et al., 2001; Brader & Tucker, 2001; Dalton & Wattenberg, 2002; Ishiyama & Fox, 2006; Zuckerman et al., 2007; Dalton et al., 2008; Bartle & Bellucci, 2009). During this process, strong empirical patterns have emerged. For example, it has been well demonstrated that more mature and institutionalized party systems are associated with increasing levels of subjective attachment to parties (Converse, 1969; Leithner, 1997; Dalton & Weldon, 2007; Brader et al., 2011). Related work has also demonstrated important degrees of variability in levels and strength of partisan attachment across different types of parties (Richardson, 1991; Schmitt & Holmberg, 1995), types of party systems (Converse & Pierce, 1992), and the institutional configuration of a polity (Huber et al., 2005).

Yet, despite the many advances, important areas in the comparative study of party identification remain almost. One such area refers to the conditions that encourage the use of partisanship as a relevant criterion for forming political evaluations.¹ More specifically, what institutional and contextual factors encourage voters to align their political evaluations with their partisan dispositions? This paper will address this question through a cross-national time series design that includes 100 surveys from thirty-three western and eastern European countries.

While the question addressed here has not been studied among comparative political behavior scholars, those focusing on the American context have done so extensively. In fact, since the *American Voter* (Campbell et al., 1960) the effect of partisanship on political attitudes, opinions, and vote choice has been a central theme of political behavior research. A significant portion of

¹One important exception is Brader et al's (2010) recent comparative work on the influence of partisan cues. However, their main objective is slightly different from what I pursue here. While the current paper explores the role and influence of institutional features of a polity, the work of Brader et al. studies more deeply the moderating role of party and candidate characteristics.

past and current research seeks to demonstrate the presumably exogenous and substantial impact that partisanship exercises over individuals' political outlook and decisions (Markus & Converse, 1979; Lodge & Hamill, 1986; Jacoby, 1988; Miller & Shanks, 1996; Bartels, 2000, 2002; Goren, 2005; Taber & Lodge, 2006; Gerber & Huber, 2010). At the same time, however, other lines of research, commonly referred to as revisionist approaches, argue that the effects attributed to partisanship are, at least, partially misplaced (Jackson, 1975; Page & Jones, 1979; Fiorina, 1981). More recently, theories of Bayesian rational learning are becoming particularly salient within this last position (Achen, 1992; Gerber & Green, 1998, 1999; Achen, 2002; Green et al., 2002; Bullock, 2009).

While this abundant research has produced important advances, I argue that cross-national analysis, like the one I develop here, can provide interesting insights that improve our understanding of partisanship. Indeed, it can help us understand under what circumstances associations between political evaluations and partisanship are more likely to occur. In other words, beyond the influence of individual-level attributes systematic factors may increase or decrease how partisan individuals' judgments become. At the same time, this comparative line of research should also be aware of the risks involved in studying these variables with cross-sectional data. The abundant theoretical and empirical work on partisanship in the American context calls into attention the potential endogeneity risks. Accordingly, I will review some of this literature and specify how it affects the current empirical effort.

To understand what factors encourage stronger associations between partisanship and political evaluations, or what I refer to as *partisan judgments*, I draw from different theoretical frameworks of mass level partisanship. On the basis of these frameworks, I develop several theoretical arguments about how presumably exogenous institutional and party system factors affect how partisan individuals' evaluations can become in reference to two key performance issues; the state of the national economy and how well the government is doing its job. The empirical analysis finds that the degree of fragmentation of government has the largest impact on the association between partisanship and individuals' assessments. While under highly fragmented governments (such as when multiple similarly sized parties form government), the association with partisanship is negligible, it increases dramatically as authority becomes exercised by single party governments. Under this last scenario, both political evaluations considered here become highly partisan and very sensitive to the strength of individuals' attachment.

In methodological terms, this paper also proposes a simple way to measure the association of partisanship with political judgments adjusted to the peculiarities of cross-national analysis and

multi-party electoral settings. Given the absence of some sort of ANES measure that incorporates both direction and strength of partisan preferences into a single variable, I use three variables to analyze the role of partisanship: One captures direction, another that captures strength and the third is the interaction of both. Through these three components it is possible to simultaneously analyze how both dimensions of partisanship behave as well as co-vary. The section devoted to the statistical model provides a detailed explanation.

The article is organized as follows. I begin reviewing some of the literature on party identification, paying special attention to the properties of the relationship between partisanship and political evaluations. Then, I review some comparative theories of mass partisanship and political institutions, and deduce from them theoretical expectations about how specific contextual factors might affect the nexus between individuals' partisanship and their political evaluations. The following section details all relevant information about measurement and the study design. Continuing after this, I specify the estimation strategy and properties of the employed statistical model, as well as the results from the different model specifications. The final section summarizes the findings and concludes the chapter.

3.2 Partisanship and Political Evaluations at the Micro Level

Before theorizing about what conditions might increase or decrease the association between partisanship and political evaluations, it is necessary to ask why should we expect to observe any correlations between these variables at all. A brief description of previous scholarship can clarify this point. As is well known, most work on party identification can be organized around two schools of thought, namely the classical view, or Michigan model (Campbell et al., 1960), and the revisionist view, represented by work such as Jackson (1975), Page & Jones (1979), Fiorina (1981) and (Achen, 1992).

The classical view understands identification with a party as an enduring and emotionally charged psychological attachment. Individuals inherit their identification from their parents and the social context in which they are raised, and are expected to maintain a relatively stable identity across their entire life span. There is some space for change, but it is largely restricted to situations where life conditions change significantly, such as in cases of political realignments or economic crisis. As a psychological attachment, party identification is considered a deep rooted disposition which is expected to shape individuals' attitudes and opinions in accordance to their partisan loyalty. Indeed, individuals' partisan preference is considered a "perceptual screen" that colors their

views of events in the world.

The “revisionist” view of party identification, which came to prominence in the mid 1970s and early 80s through the work of several scholars, is commonly associated with a more instrumental view of this disposition. Fiorina’s “running tally” model illustrates this point. In his influential book *Retrospective Voting in American National Elections*, Fiorina (1981) claims that partisanship is better understood as a summary evaluation of individuals’ retrospective judgments about the positions and performances of the two parties. Whenever the evaluation of one party becomes negative enough, an individual is likely to change his or her preferred party. In other words, individuals change or update their partisan identification whenever they consider that their current identification does not reflect best their political interest. Accordingly, party identification might not only affect individuals’ perception of political objects, as the *American Voter* authors claimed, but might be itself responsive to those retrospective evaluations. This means that changes in the political environment, and in particular in the performance of the political parties, might lead to systematic changes in the distribution of party identification across the population.

The debate between these schools of thought continues today, which, if nothing more, testifies to how well built both theoretical frameworks are. The revisionist approach has received important empirical support both at the individual level with panel data (Gerber & Jackson, 1993; Alvarez, 1998), as well as at the aggregate level (MacKuen et al., 1989; Erikson et al., 2002). The classical view has also received support through the years. Empirical efforts relying on panel data are not uncommon (among others Markus & Converse, 1979; Conover & Feldman, 1986; Bartels, 2002; Goren, 2005; Gerber & Huber, 2010), and more recently, experimental evidence has become available (Gerber et al., 2008).

Despite their differences in conceptualization, the two schools of thought share an important similarity. Indeed, both predict that partisanship and political evaluations should be correlated. While the Michigan model argues that political evaluations are colored by individuals’ partisanship, the “running tally model” equates partisanship with retrospective political evaluations, and therefore both elements should be similar. However, while the Michigan model argues that partisanship’s influence is exogenous, or at least mostly exogenous, the revisionist approach argues that the relationship goes both ways. As Bartels (2002) points out, under the running tally perspective the central role and exogenous character the *American Voter* authors gave to party identification is erroneous, and therefore it does not have independent casual impact on political attitudes and opinions.

This paper does not seek to address this controversy directly, as the matter is well beyond the scope of study. What this paper investigates, as mentioned above, are the specific institutional and party system conditions that influence the predictive capacity that individuals' partisanship has on their political judgments. However, the interpretation of the coefficient that captures the magnitude of the association depends on whether partisanship represents an exogenous force, as in the Michigan model, or a summary evaluation, as in the running tally model. According to the former, and assuming all other elements of the statistical model are correctly specified, the coefficient of partisanship over political evaluations represents an unbiased estimate of its causal influence. In contrast, following the running tally approach, the coefficient of partisanship over political evaluations is biased and inconsistent due to its endogeneity. This problem leads, most likely, to overestimate the true casual impact of partisanship on political evaluations. How sizable is the bias is unknown.

In the current context, a satisfactory solution to the possible endogeneity between partisanship and political evaluations is not easily available. One common solution is to employ instrumental variable estimation, but this has many difficulties in the present case. In the first place, finding an appropriate instrument that satisfies all statistical conditions, in particular covariate exclusion restrictions, for thirty-three different countries is very difficult. Given contextual differences, some instruments may be appropriate in some cases but not in others. Second, the multi-level statistical model employed to capture and explain cross-national variation is quite complex, and the necessary statistical adjustments required to estimate the casual relationship with endogenous predictors seem far from trivial.²

However, introducing complementary assumptions that take advantage of the cross-national design of the study might diminish these concerns. For example, if we assume that the endogeneity bias is relatively constant across surveys, the coefficient of partisanship predicting political evaluations in each survey might be biased, but the degree of heterogeneity of the coefficients across surveys will not be. This would allow the estimation of the contextual variables predicting the variability in the coefficients of partisanship to be unbiased as well.³ It is not easy to justify why

²There is some interesting new work connecting simultaneous equations models with multilevel modeling (for example, Steele et al., 2007), but it still imposes some strong restrictions, such as no more than 2 levels.

³Some mathematical notation can help illustrate (not prove) this point. Define $\hat{\beta}_j$ as the parameter estimate of party identification on some political evaluation estimated from survey j . In this study, partisanship is captured using three variables, but for the sake of the example, let us say that its effect can be captured using a single variable, as is common in the American context. Then, if partisanship is endogenous with respect to political evaluations, then we can define $\hat{\beta}_j = \beta_j + \theta$, where β_j is the true effect of partisanship and θ is the bias, which, by assumption, is equal for all surveys. If this assumption is accurate, the survey level variance of $\hat{\beta}_j$ and β_j are equal since $Var(\beta_j + \theta) = Var(\beta_j)$. Moreover, the ordinary least squares estimate of the effect of a contextual variable Z_j (for example, some characteristic of the institutional configuration of the polity) predicting $\hat{\beta}_j$ is also unbiased since

the endogeneity bias would be constant across countries. More generally, it is not easy to argue in favor of any distributional form because the possible bias due to simultaneity is not directly observable. One possible argument in favor of the constant bias assumption is that absent any contextual differences, the cognitive process of developing political evaluations and partisan identities is relatively homogeneous, and differences in the association between these two are only due to the possible varying effect of partisanship on evaluations. This may seem less restrictive than assuming no endogeneity at all, but is still hard to justify. Future work should explore alternative assumptions that, taking advantage of the cross-national designs, can minimize (or at least attenuate) the introduction of possible biases due to reciprocal causation.

In any case, this paper will be very careful in making claims about causality between partisanship and political evaluations. At the same time its effort will concentrate on the analysis of the key inferential process that I pursue here, namely, predicting variability in the degree of association between partisanship and political evaluations. While this analysis might be affected by potential endogeneity biases among the individual level variables, the analysis constitutes a valuable contribution in terms of highlighting important degrees of heterogeneity in mass level partisanship. Future research will explore ways of increasing our certainty about the results.

3.3 Partisanship and Political Evaluations at the Macro Level

This section explores what factors might encourage the expression of performance evaluations in accordance to partisan preference. To do this, I draw on multiple lines of research and focus on five key concepts: social learning, cognitive mobilization, ideological polarization, clarity of responsibility, and degree of personalism of electoral systems. While none of the conceptual frameworks directly addresses the issue under consideration here, one can deduce potential patterns from them. I briefly review these approaches and suggest the main explanatory factors involved in each one.

Social Learning: Originally proposed by Converse (1969), and tested by many other scholars (Brader & Tucker, 2001; Converse & Pierce, 1986, 1992; Dalton & Weldon, 2007), the social learning model argues that individuals' partisanship can be understood as a habituation process that is reinforced with age. A brief description of the model elucidates this point.

In Converse's model the strength of partisan identification is determined by two key elements: parental socialization and life cycle processes. Young voters enter the political system without $\overline{COV(\hat{\beta}_j, Z_j) = COV(\beta_j, Z_j)}$ given that $\sum_{j=1}^J([\beta_j + \theta] - [\bar{\beta}_j + \bar{\theta}])(Z_j - \bar{Z}_j)$ is equal to $\sum_{j=1}^J(\beta_j - \bar{\beta}_j)(Z_j - \bar{Z}_j)$ because $[\bar{\beta}_j + \bar{\theta}] = \bar{\beta}_j + \bar{\theta}$, and the θ terms cancel each other.

direct political experience, but inherit the partisan dispositions of their parents. At this point, their dispositions are weak because they have not been fed with direct experience. However, once new voters start accumulating electoral experience by themselves, their initial dispositions crystallize and strengthen. In other words, by being continuously exposed to the same parties, and particularly by voting repeatedly for the same party, individuals tend to strengthen their preference for their most favored party. Importantly, only a political setting in which parties persist over the years enables the cumulative learning processes. Instead, in young or highly volatile party systems, voters will not only be unable to inherit the electoral experiences of their parent, but their own habituation process might be truncated, and thereby, will be unable to strengthen.

This model provides explicit implications about the conditions that increase the strength of citizens' identification with political parties, but not about possible factors that could influence the correlation between performance evaluations and degree of partisanship. However, it can be argued that the same conditions that foster stronger attachment to parties simultaneously promote a higher predictive power of voters' partisanship on their political opinions. Accordingly, the age of a party system is expected to increase the subjective strength of partisan identification, and thereby also increase the association between partisanship and political evaluations. By the same reasoning, voters located in new democracies should also express less partisan judgments.

Cognitive mobilization: According to this framework, societies that have gone through extended periods of socioeconomic growth experience several structural changes that have important consequences for their party system and patterns of political competition (Dalton, 1984, 2005). Particularly, sustained increases in the educational rates and ample dissemination of mass media allow voters higher levels of independence from political parties because they are increasingly able to access and process political information without the assistance of political cues provided by parties. Simultaneously, changes in the value systems associated with sustained increases in wealth lead to the dissemination of post-material values, which tend to undermine the importance of traditional political issues and emphasize new issues such as environmental protection, subjective well-being, and others (Inglehart, 1990). Consequently, the increasing level of material wealth leads to an eventual de-alignment of the party system with respect to its traditional base of conflict, and to a progressive loss of political parties' orientational function over the electorate (Dalton & Wattenberg, 2002). These changes signify both a decrease in the prevalence of partisanship across the population as well as an erosion of the attachment among the portion of the population who feels close to a party. In the words of Dalton & Wattenberg (2002): "Fewer voters now come to elections with

standing partisan predispositions. Even if they have loyalties to a party, these loyalties are weaker; more voters now make their electoral choices based on campaign issues and candidates” (pp. 60). To support this claim Dalton & Wattenberg (2002) provide abundant individual and aggregate data showing increasing levels of ticket splitting, rising temporal instability of partisan attachments, and higher levels of electoral volatility among the electorates of advanced industrial democracies.

Similarly to the social learning model, indirect implications about the correlation between judgments and partisanship are straight forward. To the extent that the changes associated with sustained economic growth lead to an erosion and weakening of partisan attachments, they should also decrease the predictive power of citizens’ party identification over their political judgments.

Ideological polarization: Some scholars argue that the key to understanding mass partisanship is in the patterns of electoral competition of the polity, particularly its level of ideological conflict. For example, Schmitt & Holmberg (1995), Schmitt (2005), and Berglund et al. (2005) argue that both the prevalence and strength of party identification are nurtured by ideological conflict. Without ideological conflict among parties, individuals’ partisan attachments weaken, as well as their influence over vote choice. Instead, an increasing level of ideological polarization leads to wider and firmer support for parties.

In support of this thesis, Schmitt & Holmberg (1995) argue that the generalized decline in partisanship diagnosed by modernization theorists is an imprecise description of the actual trends. On the basis of Eurobarometer surveys, they find that country specific trends of partisanship are highly variable and that declining partisanship is observable only in countries where levels of political polarization and issue conflict between the main two parties have declined as well. They also find important levels of heterogeneity in levels and time trends of partisanship among the different parties of each country. New and ideologically moderate parties are the ones that seem to have lost the most ground according to their analysis. From these results they conclude that aggregate levels of partisanship may respond more to short or middle range political factors than to broad and long term socioeconomic transformations highlighted by cognitive mobilization theory.

A somewhat similar argument can be observed in the American context, where many scholars argue that rising levels of ideological polarization among party elites have spilled over to the mass electorate, leading to more and stronger partisans (Hetherington, 2001; Layman et al., 2005; Baldassarri & Gelman, 2008; Brewer, 2009; Levendusky, 2009). Some studies do not speak directly about the precise origins of the increased levels of polarization, but they do find abundant evidence that the rising ideological differences lead to stronger partisanship and partisan voting (Bafumi &

Shapiro, 2009).

Then, by the same logic of the frameworks described above, it can be argued that increasing ideological conflict within a polity will be associated with increasing levels of partisanship, and higher associations between degree of partisanship and political evaluations.

Clarity of Responsibility: Although developed originally for purposes of understanding the influence of economic voting (e.g. Powell & Whitten, 1993; Whitten & Palmer, 1999; Anderson, 2000; Nadeau et al., 2002), this concept is very useful for current the purposes as well. It characterizes the institutional setting of a polity in terms of the extent to which citizens' can identify who is responsible for public policy. Institutional designs with high levels of clarity—commonly associated with majoritarian electoral formulas—provide the winner of elections with concentrated power to make policy, give a minor role political oppositions, and, as the incumbents commonly enjoy legislative majorities, allows voters to easily evaluate the outcomes of office. Instead, in systems with low levels of clarity—normally associated with consensual democracies—political actors often engage in post-election bargaining and form governmental coalitions with multiple parties. Given the multiplicity of relevant actors, it is not clear to citizens' who is responsible for what.

For current purposes, the key point is that a clear institutional design facilitates retrospective evaluations of political actors by enabling a simple identification of who they are, their actions, and their performance (Huber & Powell, 1994; Powell, 2000). Therefore, in countries with clear institutional designs, one can expect a high predictive capacity of individuals' partisanship over their political evaluations since the nexus between performance of government and the affiliations of political actors is increasingly accessible to all citizens. In other words, rising degrees of institutional clarity are expected to increase the influence of partisanship by facilitating citizens' attributional processes. Instead in countries where many actors are responsible for policy making, it is—comparatively speaking—less clear who is responsible for what, and thus, the nexus between individuals' partisanship, government partisanship and performance is less clear as well.

Electoral Personalism: Following Carey & Shugart (1995), the electoral system of a country can influence the extent to which politicians benefit from developing a personal reputation different from that of their party. Indeed, in polities where the electoral system provides “personalistic” incentives, candidates tend to adopt individualistic strategies, and consequently, their parties tend to suffer more intra-party conflict and are more internally heterogeneous. Instead, in political systems where the incentives favor coordination among different members of the same party, these are expected to be more disciplined and organized.

In terms of partisan judgments, two possible arguments can be made. Similarly to the role of clarity of responsibility, in countries where parties enjoy high levels of internal discipline and coordination it should be easier for voters to make judgments about their performance and actions (Huber et al., 2005). More simply, whenever the “brand name” of the party is distinctive, voters have clear referential points to sort out their opinions. Instead, in contexts of high personalism the party itself becomes a less distinct unit of observation, and therefore partisanship should exercise a less relevant role in their judgments about political reality. A second, somewhat related possibility is that in electoral contexts where personalistic incentives predominate, the visibility and saliency of political parties diminishes in favor of clear and identifiable individual politicians and candidates. In either case, it can be argued that in electoral contexts where personalistic incentives dominate political evaluations, judgments will become less partisan given that patterns of electoral competition are not sorted and organized around political parties.

3.4 Study Design and Measurement

To evaluate the arguments proposed above, I conduct an empirical analysis based on cross-national survey data from waves 1 through 4 of the European Social Survey (ESS, 2002, 2004, 2006, 2008). This rich and high quality data set provides appropriate and comparable measures of party identification, political attitudes and demographic variables for thousands of individuals located across thirty-three eastern and western European countries across a time span of 8 years (2002 to 2010). I complement the individual-level data with an ample set of system-level information about the political parties, electoral competition and institutional design of countries included in the study.

An important feature of this study is that it focuses exclusively in countries with functionally democratic systems. Indeed, I only include surveys from countries that have at least partially institutionalized party systems with political parties seeking electoral support through mass level mobilization (Mainwaring & Scully, 1995). With this sample criteria, I rule out those countries where the nonexistence of formal electoral competition might imply the absence of some of the environmental incentives considered here. In operational terms, this implies including in the analysis only countries with a Polity score (during the year of the survey) equal to or greater than seven. This restriction, in addition to having some missing data issues, leaves a sample of 100 surveys from thirty-three countries.⁴ Appendix I contains a list of all surveys included in the study as well

⁴This implied dropping both surveys from Russia given the polity score of less than seven for both years during the application of the surveys. The 2002 survey from Ireland did not ask one of the dependent variables (satisfaction

as its year of execution. As the list shows, there is some degree of imbalance in the sample of included countries. While some include up to four surveys, others have only one. This and other methodological issues will be addressed in the section detailing the statistical specification of the estimated empirical models.

To model the association between partisanship and political evaluations, I employ a hierarchical model in which survey respondents are nested within their partisan groups, and these are nested within surveys, which in turn are nested within countries. Through this specification, I will be able, among other things, to capture both of the main dimensions of partisanship: first, direction in terms of identification with an incumbent or opposition party and second, the subjective strength of individuals' attachment. I detail the statistical specification and its properties below. However, before doing so, it is important to consider which variables will be included in the empirical models, as well as their measurement.

3.4.1 Individual and Party Level Variables

In this study, I consider two dependent variables, namely, survey respondents' level of satisfaction with their country's national economy and their level of satisfaction with the performance of government. Both variables are measured using an 11-point satisfaction scale. The wording of these questions and all other survey level variables is available in the appendix.

Each of these performance evaluations will be considered as a linear function of a series of individual level variables. These include the following:

a) *Political information variables*: Following Conover et al. (1986) and Duch et al. (2000), I include political information variables to capture the influence that higher political awareness, and therefore higher exposure to the information flows, has on individuals' perception of political affairs. It is expected that as individuals become more informed, they are more likely to have more accurate perceptions of political affairs, and therefore should express opinions that are different from those of less informed individuals. Given the absence of a political knowledge variable I use respondents' educational level, a media usage index, and interest in politics as proxies. All details of these variables are in the appendix.

b) *Ideological orientation variables*: Respondents' self-location on the left-right scale is incorporated as an important control variable that seeks to capture individuals' ideological preferences. This is important given that partisanship tends to correlate highly with ideology. Unfortunately, a very large portion of the sample (15%) does not provide a valid response to this question. Following with government), so is excluded from the analysis of that variable.

Jackson et al. (2010), I assign to cases the sample mean and add a dummy variable differentiating these respondents from those who did express an ideological position.⁵

c) *Partisanship*: When dealing with multi party systems, there is no measure like the ANES battery that can include both direction and strength of partisan preferences in a single variable. Instead, to capture both of these dimensions, I employ three variables that are built from the party closeness battery included in the European Social Survey (ESS). The screening question of the battery is, “Is there a particular political party you feel closer to than all the other parties?” As mentioned in the ESS documentation, the word closeness attempts to capture the party the respondents most identify with or feel attached to, regardless of for whom they voted. Respondents who answer affirmatively to the screening question are then asked which is their preferred party and their perceived degree of closeness to the party (specifically, “How close do you feel to this party? Do you feel that you are . . . very close, quite close, not close, or not at all close?”). Arguably, this framing of the partisan battery in terms of closeness is less appropriate for purposes of self-identification with a political party to the extent that it does not highlight a direct reference to the respondent’s self (Johnston, 2006). That said, it is flexible enough to be applied in countries with very different party systems, and therefore ensures a higher degree of comparability. Probably for this reason, the Comparative Study of Electoral Systems (CSES) also employs a similar formulation that frames the identification process in terms of closeness. Research comparing party closeness batteries with the standard ANES battery are somewhat mixed. While Barnes et al. (1988) argue that both measures are highly correlated, Huber et al. (2005) report only a modest correlation ($r = 0.47$). For this reason, Huber et al. (2005) prefer to call what the closeness measures as partisan attachment instead of identity. While it is certainly possible that both the survey batteries do not capture identical proclivities among respondents, both measures capture a general favorable disposition towards a political party. In this paper, I refer to this general proclivity indiscriminately as either party identification or partisan attachment. Perhaps with future research we will be able to make sharper distinctions.

Despite these difficulties, I measure *direction* of party identification considering the type of party a respondent mentioned feeling close to, specifically, whether it refers to an opposition or incumbent party. These options are assigned codes -1 and 1, respectively. Respondents who did

⁵An alternative to this procedure is to employ multiple imputation. While this technique has many favorable properties, I do not think it is appropriate for this case given that many respondents may have decided voluntarily not to provide a response. If so, imputing an ideological position is not entirely appropriate given that it is not only missing data problem, but a conscious response by survey respondents that do not feel that their ideological positions are well reflected by the left-right scale. The procedure employed here assigns to these respondents the sample mean, but also adds a dummy variable to differentiate this portion of the sample from the other segment that does self-locate on this scale.

not express feeling close to a party (independents) are assigned code 0. This variable is treated as an ordinal measure.⁶ To capture *strength of identification*, I employ the degree of closeness respondents mention having with respect to their preferred party.⁷ Lastly, I add an interaction between direction and strength. Through this interaction, and its constitutive terms, I capture the association between strength of partisanship and political evaluations for each of the different levels of the direction variable.

Lastly, in addition to the variables reviewed above all estimated statistical models include socio-demographic control variables, in particular, gender (male coded as 1), age, age squared and employment status (unemployed coded as 1).

3.4.2 Survey and Country-Level Variables

I complement the survey-level data with multiple measures of survey and country level attributes that seek to characterize varying and stable properties of the polity in which the surveys were applied. I detail each measure according to its respective theoretical framework.

a) *Social Learning*: To capture the predictions of this framework, I employ two variables:

- Log weighted average age of the party system, with weights given by the vote share of each party during the last election before the survey. This measure is commonly used to capture the longevity of the party system. Other works have used it includes Huber et al. (2005), Dalton & Weldon (2007) and Brader et al. (2011)
- New democracy indicator, with values of one for all countries that transitioned from a non-democratic regime to a democratic regime during the “third” wave of democracy, dated by Huntington (1991), perhaps somewhat arbitrarily, on April 25, 1974 with the beginning of the Carnation Revolution in Portugal. I include this measure to capture political contexts in which not only the party system is young, but the democratic regime itself is recent.

⁶A party was coded as an incumbent party if during the time of the survey it was part of the government cabinet; otherwise it was coded as an opposition party. Independents are those respondents that mentioned not feeling close to any party in the party identification screening question (see the appendix for question wording) or who refused to answer the question. In parliamentary and presidential systems, this coding is straight forward, but not necessarily in semi-presidential regimes. For most of these cases (France and Romania), the coding was simplified by the fact that the president and prime minister were from the same party during the times of all the available surveys. The same applies for the first and last survey from Ukraine. Instead, the Ukrainian survey of 2006 turns out to be slightly more challenging, given that the prime minister and president were from different parties. In this case I assigned code 2 to the president’s party because this seems the most important executive office. A possible indication of this is that current president Viktor Yanukovich, as well as former presidential contender Yulia Tymoshenko, were both prime ministers before.

⁷This last question was applied only to those who mentioned feeling close to a party on the screening question. Accordingly, all respondents who mentioned not feeling close to a party (or refused) on the screening question are coded zero for the strength variable. Additionally, given a very small proportion of respondents that answered “not at all close”, I collapsed this response with respondents that mentioned “not close”. In the end, the scale goes from 0 (independent) to 3 (feels very close to party).

To reiterate, it is expected that as the party system becomes older, individuals' ties with parties become stronger, and therefore, partisanship become an increasingly better predictor of individuals' political evaluations. Partisanship is also expected to more poorly predict individuals' performance evaluations in new democracies, given that such scenarios even further reduce their chances of cumulating continuous political experience.

b) *Cognitive Mobilization*: For this framework I use the following variables:

- Average years of completed education among each country's population aged 15 or older.
- GDP per capita with purchase power parity and scaled at constant 2005 international dollars.

Both measures are taken from the World Bank Development Indicators data base. Ideally, instead of using the GDP per capita measure one would use a more direct measure, of access to information, but such a variable is not easily available. The World Bank Development Indicators counts with some better proxies such as the amount of published daily newspaper (per 1000 individuals), but the data is very sparse and would entail dropping around two-thirds of all the available surveys. For the small amount of cases for which there is data, there is a relatively high correlation ($\rho = .60$) between GDP per capita and the number of published daily newspapers. More generally, while specific measures of access to information might capture more directly the structural changes in question, cognitive mobilization claims that the ultimate factor that triggers all political changes is socioeconomic development, which of course, is commonly measured through a country's GDP per capita.

Following cognitive mobilization theory, both variables considered here are expected to reduce the association between partisanship and political evaluations.

Lastly, introducing GDP per capita is also well justified as an important control variable given it's very high correlation with other important political dimensions such as democratic consolidation (Przeworski et al., 2000), good governance (Kaufmann et al., 2002), and corruption (Treisman, 2000; Kunicová & Rose-Ackerman, 2005; Treisman, 2007), just to name a few.

c) *Clarity of Responsibility*: Despite how prominent this concept is within the comparative literature, there is no standardized way of measuring of it. There are, however, some indicators that are more extensively used than others. In this paper I employ two variables that are also employed as some of the most influential work on the matter (Powell & Whitten, 1993; Powell, 2000; Duch & Stevenson, 2005, 2008). These variables are:

- Government majority: Corresponds to a dummy variable indicating whether the governmental parties during the time of the survey had a majority of seats in the lower house.
- Government fractionalization: Measured as the probability that two lower house members selected at random from among the government parties will be of different parties. It is calculated as $1 - \sum_{i=1, \dots, n_j} s_{ij}^2$, where s_{ij}^2 is the fraction of seats of government party i ($i = 1, 2, \dots, n_j$) from country j . Some of the work cited above (specifically, Powell & Whitten, 1993; Powell, 2000) employ a more simply distinction between single party and coalition government. A useful property of the fractionalization measure is that it does not impose this sort of dichotomous classification, but allows for gradations in between.

Both measures were adjusted in case an election occurred during the time of the survey fieldwork. If so, updated codes were applied to the subset of the survey respondents who were interviewed from the day after the new cabinet took office.

While government majority increases the level of clarity of responsibility, government fractionalization decreases clarity by diffusing power into more political actors. Therefore, the first measure is expected to increase the association between partisanship and performance evaluations, while the second is expected to decrease it.

d) *Ideological Polarization*: Following the recent proposal by Dalton (2008), polarization is captured using a survey based measure equal to:

$$Polarization_k = \sum_{j=1}^J \sqrt{(I_{jk} - \bar{I}_k)^2} \times S_{jk}$$

where I_{ij} is the left-right position of party j from survey k , \bar{I}_k is the weighted average position of all parties from survey k , and S_{jk} is the proportion of seats each party j has in the lower house of parliament during the fieldwork of survey k . As can be easily recognized, the measure corresponds to a weighted sum of squares where larger distances between the position of each party j with respect to the survey mean leads to higher levels of polarization.⁸

Ideally the calculation of I_{ij} and \bar{I}_j would be based on survey respondents' assessment of the position of party j . However, such data is not available in the ESS data set. Instead, I calculate I_{ij} as the average left-right position of the subsample of respondents who mentioned they feel close

⁸Dalton's (2008) measure is equal to: $\sqrt{\sum_{j=1}^J ([I_{jk} - \bar{I}_k]/5)^2} \times S_{jk}$. While this measure is very similar to my proposal, there are two subtle differences. The measure I use does not divide the distances between I_{jk} and \bar{I}_k by 5, and gives less weight to bigger parties given that the square term does not include the weight component S_{jk} .

to party j . Fortunately, some exploratory analysis using the CSES data set (CSES, 2003, 2007) indicates that both measures are highly correlated.^{9 10}

Following previous empirical work cited above, increasing levels of ideological polarization are expected to produce higher correlations between partisanship and political evaluations.

e) *Personalism*: captured as an additive index based on the three key variables distinguished by Carey & Shugart (1995):

- **Ballot**: Refers to the level of control that party leadership has over candidates access and location on the ballot. At one extreme one can find closed party lists where the party leadership has complete control over nominations and ranking of candidates, and at the other, some single member district systems in which independent candidates can appear on the ballot provided very few requirements.
- **Vote**: Refers to the extent to which voters cast a ballot for parties or individual candidates. Whereas in closed party systems voters vote directly for a party, in other systems such as open party list, voters might exercise preferential votes, and in others they may even vote only for candidates.
- **Pool**: Refers to the extent to which votes among the candidates of the same party are pooled. While in a closed party list all votes for all candidates from the same district are pooled, some other electoral designs introduce more limited forms of pooling or no pooling whatsoever. For example, during the time of the STV system in Japan, multi-member districts were employed but seats were allocated only considering the vote shares earned by each candidate.

These variables are available in the Electoral Systems and the Personal Vote data set developed by Johnson & Wallack (2007). Each is coded from 0 to 2, with 0 representing the least personalistic rules. A particularly nice feature of this data is that it accounts for mixed electoral systems in which voters are, most commonly, required to make two vote decisions; one for a local level single member

⁹More specifically, the CSES data set contains measures of partisanship, perceived location of political parties on the left-right scale and respondents' self location on the left-right scale. With these variables, I constructed two measures of I_{ij} : one that corresponds to the sample average of respondents' perceived location of each party in their country during the time of the survey, and another that corresponds to the measure employed in this paper, that is, the average left-right position of respondents' who mentioned feeling close to party j . I then calculated the correlation between both measures using the 46 available CSES surveys (from Modules I and II) that were applied in countries also included in the ESS sample. The calculations included up to the sixth biggest party of each country during the time of the survey since ideological positions of smaller parties are not included in the CSES questionnaire. The correlation turned out to be extremely high ($r = 0.93$).

¹⁰Another possible source is the Comparative Manifestos data or the Benoit and Laver Party Policy in Modern Democracies (PPMD) data set. However, neither of these two sources contains updated scores for more recent years. While the CMP data has some updated data for a subset of countries, PPMD is a cross-sectional data set measured during 2003-04. If I were to use the CMP data, I would have to drop 29 surveys (out of 100) for which there is no CMP data covering the most recent election.

district contest, and another for a regional or national party list contest. For these cases, Johnson & Wallack (2007) provide a weighted average measure of both electoral contests with weights given by the number of seats contained in each tier.¹¹

Given the set of incentives related to electoral systems with a stronger personalistic profile, it is expected that higher scores on the personalism index lead to a decrease in the association between partisanship and political evaluations.

Lastly, all models will be estimated taking into account economic performance variables, namely, economic growth and unemployment rate during the year of the survey. Given that the dependent variables ask respondents' about their level of satisfaction with the performance of certain aspects of their country, it is important to account for the potential influence that some salient objective conditions might have had during the time of the survey.

3.5 Statistical Models

In order to estimate the influence of contextual conditions on the role of partisanship, I employ a four-level linear hierarchical random coefficient model. The model decomposes all variation of survey responses into the variability attributable to survey respondents, to the party groups respondents mention to identify with, to the period of time when respondents were interviewed (or survey level variability) and to the country where the survey was applied.¹² This model is relatively complex; therefore I review it by breaking it down into its different levels. At the survey respondent level, the following equation is specified:

$$(3.1) \quad Y_{ijkl} = \beta_{0jkl} + \beta_{1k}PIDS_{ijkl} + \beta_{2k}LR_{ijkl} + \beta_{3k}NR.LR_{ijkl} + \sum_{z=4}^n \beta_z X_{zijkl}^c + \epsilon_{ijkl}$$

where Y_{ijkl} represents the political evaluation of respondent i who identified with party j included in survey k and living in country l . Respondents' answers are specified as linear function of their level of strength of party identification ($PIDS$), location on the left-right scale (LR), a dummy variable capturing respondents who did not locate on the left-right scale ($NR LR$), and the series of demographic and political control variables mentioned in the previous section (X_{zi}^c). The next

¹¹There is only one country in the ESS data set not entirely coded in the Electoral Systems and the Personal Vote data set, which is, Turkey. This case was coded by myself considering the extensive coding scheme provided by the authors of the data, as well as multiple data sources such as Parline (<http://www.ipu.org/parline/parlinesearch.asp>), IFES election guide (<http://www.electionguide.org/>), and a particularly informative entry of Matthew Shugart's blog (<http://fruitsandvotes.com/?p=1235>). The codes are ballot=0, vote=1, and pool=0.

¹²In the party grouping variable independents are considered as one more group nested in a survey.

step is to model the variability of the parameters β_{0jkl} and β_{1k} . This is:

$$(3.2) \quad \beta_{0jkl} = \pi_{00kl} + \pi_{01k}Dir_{jkl} + \mu_{0jkl}$$

$$(3.3) \quad \beta_{1k} = \pi_{10k} + \pi_{11k}Dir_{jkl}$$

In equation (2) the mean level of Y_{ijkl} is made a function of an intercept (π_{00kl}) and the type of party an individual mentioned to feeling closest to (either opposition, no party, or incumbent), or what was called earlier the direction of individuals' partisanship (Dir). The influence of this variable is captured by π_{01k} . Notice that the β_{0jkl} coefficient varies across party groups given that the type of party an individual mentions as identifying with is considered a property of the party. The variance term μ_{0jkl} captures random variability of Y_{ijkl} attributable to the party level grouping that is not captured by Dir . Equation (3) specifies a fixed coefficient of $PIDS$ and an deterministic interaction between $PIDS$ and Dir . Through this interaction, and it's constitutive terms, I capture the association between strength of partisanship and political evaluations at different levels of the partisanship direction variable. Notice that the coefficients of this equation do not vary at the party-level, but are allowed to vary across surveys (notice the k subscript).¹³ Given the potential endogeneity between partisanship and political evaluations, the parameters π_{01k} , π_{10k} and π_{11k} are the ones at risk of being biased, and most likely, oversized.

The next level in the hierarchy is the survey level. At this level I incorporate institutional and party system features of the polity, as well as the economic aggregate variables (all represented as Z_{kl}). These variables are expected to predict the mean level of the dependent variable (represented by parameter π_{00kl}) and the coefficients of partisanship direction (π_{01k}), strength of partisanship (π_{10k}) and their interaction (π_{11k}).¹⁴ The coefficient of the left-right scale (LR) and the dummy for those not providing a location (NR_LR) are also allowed to vary at the survey level. This is important given the association between of two variables with the dependent variables probably depends on the ideological composition of government. However, I leave such variability un-modeled

¹³The decision to hold the coefficient β_{1k} fixed at the party level is more practical than anything else. Extensive Likelihood ratio tests comparing the fit between the different models as defined above and the unrestricted versions that allows β_{1k} to vary at the party group level indicate no statistically significant improvement. Furthermore, no noticeable change in the parameters was detected either.

¹⁴Recall that if the parameters π_{01k} , π_{10k} and π_{11k} are biased due to the endogeneity of partisanship respect to political evaluations, the cross-national constant bias assumption leaves the γ parameters unbiased.

given that it is not a theoretically relevant aspect of the paper. The respective equations are:

$$(3.4) \quad \pi_{00kl} = \gamma_{000l} + \sum_{v=1}^n \gamma_{001lv} Z_{vkl} + \nu_{00kl}$$

$$(3.5) \quad \pi_{01k} = \gamma_{010} + \sum_{v=1}^n \gamma_{011v} Z_{vkl} + \nu_{01k}$$

$$(3.6) \quad \pi_{10k} = \gamma_{100} + \sum_{v=1}^n \gamma_{101v} Z_{vkl} + \nu_{10k}$$

$$(3.7) \quad \pi_{11k} = \gamma_{110} + \sum_{v=1}^n \gamma_{111v} Z_{vkl} + \nu_{11k}$$

$$(3.8) \quad \beta_{2k} = \gamma_{20} + \nu_{20k}$$

$$(3.9) \quad \beta_{3k} = \gamma_{30} + \nu_{30k}$$

Lastly, I incorporate a random effect for the intercept at the country level to account for the fact that surveys are not independent of each other since they were implemented a variable number of times within the same country.¹⁵

$$(3.10) \quad \gamma_{000l} = \theta_{0000} + \delta_{000l}$$

As usual, with hierarchical models, there are several distributional assumptions involved in the random effects of the models. These are $\epsilon \sim N(0, \sigma_\epsilon^2)$, $\mu \sim N(0, \sigma_\mu^2)$, $\nu \sim N(0, \Sigma_\nu)$ and $\delta \sim N(0, \sigma_\delta^2)$. Extensive residual analysis did not find any major deviation from these assumptions.

3.6 Empirical Results

3.6.1 An Exploratory View of the Data

Before analyzing the results from the statistical models it is useful to have some intuition about the distribution of the dependent variables, as well as their level of “raw” association with individuals’ partisanship. The first point is particularly important given that the statistical model detailed above assumes that the dependent variables are continuous and normally distributed. However, as one can expect, 11-point response scales can only, at best, approximate such conditions. Figure 3.1 plots the histograms and kernel densities of respondents’ level of satisfaction with the national economy and government. As can be seen, their distribution is not strictly normal but their kernel density indicates that they are roughly bell-shaped and unimodal, and not terribly

¹⁵Alternatively one could also use country-level fixed effects. Preliminary exploration of this option lead to results that are very similar to those presented below.

skewed in any direction. There is a significant portion of “zero” responses on both variables, but despite this the highest proportion of responses tends to concentrate on the mid-level values of the scales. In summary, while treating these responses as normally distributed is not ideal, their rough approximation to a normal distribution does not seem an entirely misplaced assumption.

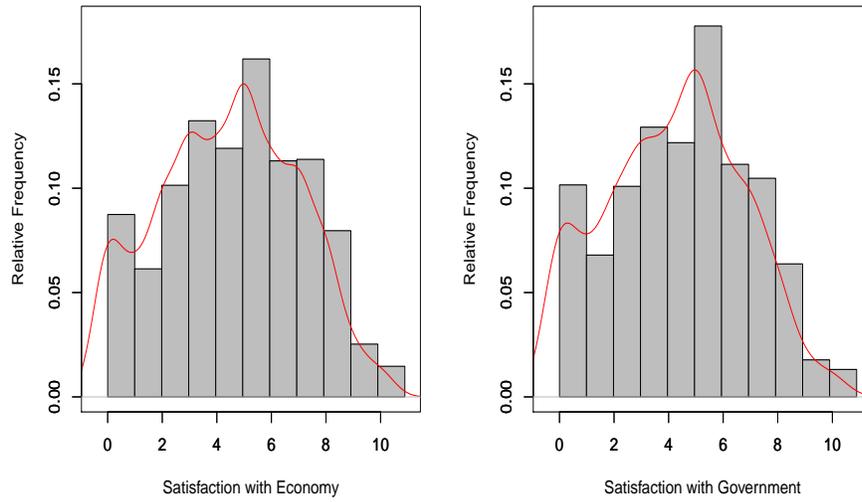


Figure 3.1: Histogram and Kernel Density of Satisfaction with the National Economy and Satisfaction with Government.

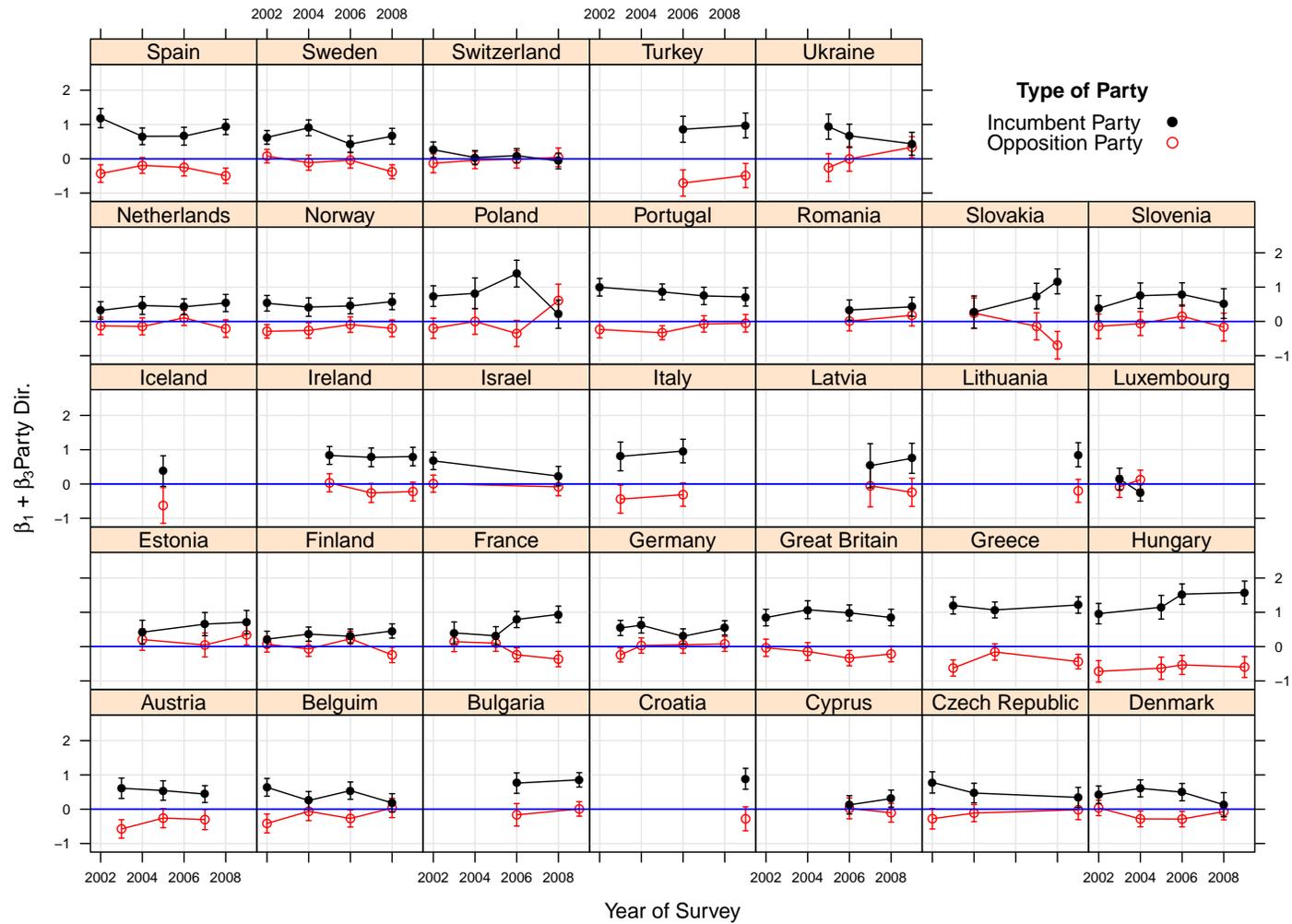


Figure 3.2: Association Between Satisfaction with Government and Strength of Party Identification by Type of Party and Survey Wave with 95% Confidence Intervals.

With respect to the second issue, Figure 3.2 plots the coefficient of strength of partisanship (*PIDS*) and its interaction with partisanship direction for each survey and country included in the study.¹⁶ A simple glance at the figure shows high degrees of variation not only across countries (just compare Hungary and Switzerland for a sharp contrasting pattern), but also within each country as well. Many cases can be highlighted as examples: In Slovakia there were no differences between partisans in 2004, but sharp differences emerge in the later surveys; in the 2003 and 2005 French surveys, there were almost no differences in the association between *PIDS* and government satisfaction across opposition and incumbent partisans, but they have been progressively increasing during the 2006 and 2008 surveys; another remarkable case is Poland, where strength of partisan identities seem moderately correlated with government satisfaction in general, but with a notable exception in the 2006 survey. More broadly, these patterns clearly demonstrate the important degree of variability of the association between strength of partisanship and satisfaction with government between different surveys from the same country. These clearly time variant patterns seem to go well beyond simple country specific fixed effects.

3.6.2 Statistical Results

Parameter estimates from the statistical models are shown in Tables 3.1 and 3.2. All independent variables have been mean centered. Each table contains the results of five different model specifications. The first four share the same set of economic predictors (namely, growth rate, unemployment rate and the logarithm of GDP per capita), but include only the covariates suggested by one or at most two of the theoretical frameworks reviewed in section 2: Model 1 contains the variables representing cognitive mobilization theory; Model 2 includes the clarity of responsibility covariates; Model 3 includes the social learning contextual covariates; and Model 4 contains the variables corresponding to the personalism and polarization frameworks. The last model on each table corresponds to the full model which includes all macro level predictors. I included these different model specifications to compare how simplified models, that only include a subset of the macro level variables, fit the data compared to a model that includes all independent variables. I refer to Models 1 through four as restricted models and to Model five as the unrestricted model.

Results from likelihood ratio tests comparing each of the restricted and unrestricted models provide interesting insights. These indicate that the fit of Models 1, 3 and 4 of both dependent variables is significantly worse than the fit of the unrestricted model (with all $p < 0.0001$). On the

¹⁶More formally, each point represents $\frac{\partial Y}{\partial PIDS}$ of the model: $Y = \beta_0 + \beta_1 PIDS + \beta_2 Party Dir + \beta_3 PIDS \times Party Dir$. The model was estimated separately for all 99 surveys.

other hand, the model fit difference between model 2 (which includes the clarity of responsibility variables) and the unrestricted model is not significant for either the model predicting satisfaction with the economy or with government.¹⁷ The likelihood ratio of the model predicting satisfaction with the economy is $\Lambda = 19.71$ with $p = 0.475$, while for the satisfaction with government model, the statistics are $\Lambda = 27.06$ with $p = 0.12$. While the p-value of the last test calls for some caution in order to avoid accepting a false null hypothesis, it does indicate, at the very least, that the full model does not fit the data much better than the reduced one. In fact, by AIC standards Models 2 fit the data better than the unrestricted models. A more detailed look at the regression coefficients across Tables 3.1 and 3.2 can clarify the reasons behind these results. Before looking into this, I review some general results that apply to all the estimated models.

A first result that generalizes across different model specifications and dependent variables is the large effect of the political information and ideological preference variables. Increases in education and political interest are associated with a higher degree of satisfaction with the national economy and government. The parameters of these two variables are highly significant ($p < .001$) in Tables 3.1 and 3.2. On the other hand, increases in the level of consumption of political news (as reported by survey respondents) has no discernible effect on the level of satisfaction with government, and a negative and significant ($p < 0.001$) effect on the evaluation of the economy. The ideological preference variables—self-location on the left-right scale and a dummy indicating respondents who did not provide a location on the scale—are also highly significant across all estimated models. Moreover, both variables show, as expected, an important degree of survey level variability. In fact, the estimates of σ_{LR} and $\sigma_{NR.LR}$ are almost as big as, or even bigger, their respective coefficients. Interestingly, higher locations on the left-right scale (which denote a more right-wing position) are associated, on average, with an increase in the level of satisfaction with the national economy and government. Not indicating a position on the left-right scale is associated with a statistically significant decrease in the levels of reported satisfaction.

A second result that generalizes is the very strong and statistically significant parameter estimate for strength and direction of partisan identification (*PIDS* and *Party Direction*), and their interaction (all cases with $p < .0001$). With no exception, all coefficients of the three variables are positive, but their correct interpretation is affected by the mean centering of the independent variables. Indeed, when *Party Direction* is larger than zero (which is the case for incumbent parties) the positive coefficients indicate that stronger identification with a party is associated with more positive evaluations. Instead, when *Party Direction* is negative (as for opposition parties),

¹⁷Or more technically, the null hypothesis that the fit of Models 2 and 5 is equal cannot be rejected.

Table 3.1: Hierarchical Linear Models of Satisfaction with Economy

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE								
Intercept	4.618	0.123	4.614	0.119	4.640	0.119	4.622	0.123	4.636	0.111
Gender	-0.179	0.009	-0.179	0.009	-0.179	0.009	-0.179	0.009	-0.179	0.009
Age	-0.007	0.000	-0.007	0.000	-0.007	0.000	-0.007	0.000	-0.007	0.000
Age ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Education	0.004	0.001	0.004	0.001	0.004	0.001	0.004	0.001	0.004	0.001
Unemployed	-0.552	0.021	-0.552	0.021	-0.552	0.021	-0.552	0.021	-0.552	0.021
Political Interest	0.117	0.006	0.117	0.006	0.117	0.006	0.117	0.006	0.117	0.006
PIDS	0.110	0.012	0.114	0.011	0.111	0.012	0.113	0.012	0.115	0.011
L-R Scale	0.102	0.008	0.102	0.008	0.102	0.008	0.102	0.008	0.102	0.008
NR L-R Scale	-0.223	0.027	-0.223	0.027	-0.223	0.027	-0.222	0.027	-0.223	0.027
Media Usage	-0.021	0.006	-0.021	0.006	-0.021	0.006	-0.021	0.006	-0.021	0.006
Party Direction	0.097	0.021	0.105	0.020	0.099	0.021	0.097	0.021	0.107	0.021
Growth	0.065	0.013	0.065	0.013	0.061	0.015	0.063	0.013	0.061	0.015
Unemployment	-0.071	0.028	-0.071	0.027	-0.076	0.027	-0.065	0.028	-0.072	0.028
Log GDP pc	1.549	0.268	1.585	0.258	1.223	0.343	1.602	0.273	1.199	0.339
Mean Years School	-0.007	0.087							-0.027	0.082
Gov. Frac.			0.442	0.320					0.691	0.335
Majority			-0.138	0.121					-0.172	0.122
Log Age Parties					0.388	0.190			0.463	0.190
New Democracy					0.163	0.204			0.185	0.202
Polarization							-0.172	0.219	-0.123	0.206
Personalism							-0.096	0.097	-0.009	0.092
PIDS×Party Type	0.161	0.018	0.168	0.015	0.163	0.018	0.157	0.018	0.164	0.015
PIDS×Growth	0.003	0.003	0.002	0.003	0.003	0.003	0.004	0.003	0.003	0.003
PIDS×Unemployment	0.007	0.004	0.003	0.004	0.008	0.004	0.005	0.004	0.003	0.004
PIDS×Log GDP pc	0.024	0.032	0.005	0.030	0.003	0.044	0.001	0.033	-0.010	0.042
PIDS×Mean Years School	-0.001	0.010							0.014	0.009
PIDS×Gov. Frac.			-0.227	0.042					-0.236	0.053
PIDS×Majority			0.061	0.026					0.060	0.028
PIDS×Log Age Parties					0.025	0.021			0.004	0.023
PIDS×New Democracy					0.015	0.035			0.005	0.035
PIDS×Polarization							0.019	0.026	0.007	0.026
PIDS×Personalism							0.026	0.009	0.008	0.011
Party Direction×Growth	-0.006	0.005	-0.005	0.005	-0.004	0.005	-0.006	0.005	-0.004	0.005
Party Direction×Unemployment	0.010	0.007	0.010	0.007	0.012	0.007	0.010	0.008	0.011	0.008
Party Direction×Log GDP pc	0.089	0.057	0.102	0.056	-0.046	0.081	0.084	0.060	-0.001	0.082
Party Direction×Mean Years School	0.008	0.017							0.017	0.017
Party Direction×Gov. Frac.			-0.187	0.079					-0.195	0.096
Party Direction×Majority			-0.084	0.048					-0.073	0.053
Party Direction×Log Age Parties					0.093	0.037			0.041	0.041
Party Direction×New Democracy					-0.030	0.063			-0.037	0.067
Party Direction×Polarization							-0.013	0.049	-0.039	0.050
Party Direction×Personalism							0.003	0.017	-0.004	0.019
PIDS×Party Direction×Growth	0.005	0.004	0.004	0.004	0.003	0.004	0.005	0.004	0.002	0.004
PIDS×Party Direction×Unemployment	0.013	0.006	0.005	0.006	0.012	0.006	0.011	0.006	0.005	0.006
PIDS×Party Direction×Log GDP pc	-0.063	0.048	-0.109	0.041	-0.037	0.067	-0.070	0.051	-0.010	0.059
PIDS×Party Direction×Mean Years School	-0.036	0.014							-0.010	0.013
PIDS×Party Direction×Gov. Frac.			-0.388	0.057					-0.391	0.072
PIDS×Party Direction×Majority			0.099	0.035					0.109	0.039
PIDS×Party Direction×Log Age Parties					0.016	0.032			-0.028	0.032
PIDS×Party Direction×New Democracy					0.086	0.052			0.040	0.049
PIDS×Party Direction×Polarization							0.093	0.041	0.066	0.036
PIDS×Party Direction×Personalism							0.019	0.014	-0.008	0.014
N obs		175998		175998		175998		175998		175998
N parties		1191		1191		1191		1191		1191
N surveys		100		100		100		100		100
N countries		33		33		33		33		33
σ		1.425		1.425		1.425		1.425		1.425
$\sigma_{PartyGroup}$		0.301		0.301		0.303		0.300		0.299
σ_{Survey}		0.556		0.553		0.560		0.555		0.558
σ_{LR}		0.073		0.072		0.073		0.072		0.072
σ_{NR-LR}		0.212		0.212		0.212		0.212		0.212
σ_{PIDS}		0.054		0.029		0.053		0.047		0.031
$\sigma_{PartyDir}$		0.050		0.036		0.049		0.046		0.040
$\sigma_{PID \times PartyDir}$		0.124		0.078		0.125		0.126		0.079
$\sigma_{Country}$		0.609		0.580		0.576		0.599		0.516
LogLikelihood		-375219.057		-375178.550		-375214.232		-375215.874		-375168.690
AIC		750544.115		750471.099		750542.464		750545.748		750491.380

Table 3.2: Hierarchical Linear Models of Satisfaction with Government

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE								
Intercept	4.089	0.099	4.102	0.103	4.105	0.102	4.072	0.102	4.093	0.102
Gender	-0.028	0.009	-0.029	0.009	-0.028	0.009	-0.028	0.009	-0.028	0.009
Age	-0.004	0.000	-0.004	0.000	-0.004	0.000	-0.004	0.000	-0.004	0.000
Age ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Education	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
Unemployed	-0.327	0.021	-0.327	0.021	-0.327	0.021	-0.327	0.021	-0.327	0.021
Political Interest	0.119	0.007	0.119	0.007	0.119	0.007	0.119	0.007	0.119	0.007
PIDS	0.199	0.015	0.202	0.013	0.201	0.014	0.200	0.015	0.206	0.013
L-R Scale	0.116	0.016	0.117	0.016	0.116	0.016	0.116	0.016	0.117	0.016
NR L-R Scale	-0.241	0.028	-0.240	0.028	-0.241	0.028	-0.241	0.028	-0.241	0.028
Media Usage	0.007	0.006	0.007	0.006	0.007	0.006	0.007	0.006	0.007	0.006
Party Direction	0.302	0.027	0.317	0.026	0.309	0.027	0.297	0.027	0.318	0.026
Growth	0.037	0.013	0.037	0.012	0.041	0.014	0.039	0.013	0.043	0.013
Unemployment	-0.076	0.025	-0.070	0.025	-0.072	0.025	-0.077	0.025	-0.076	0.025
Log GDP pc	1.172	0.224	1.155	0.230	0.834	0.307	1.152	0.235	0.926	0.318
Mean Years School	-0.126	0.073							-0.135	0.076
Gov. Frac.			0.059	0.296					0.335	0.319
Majority			-0.185	0.116					-0.216	0.118
Log Age Parties					0.215	0.169			0.229	0.178
New Democracy					-0.084	0.189			-0.015	0.186
Polarization							0.237	0.191	0.273	0.189
Personalism							-0.000	0.082	0.064	0.086
PIDS×Party Type	0.323	0.022	0.331	0.018	0.326	0.022	0.323	0.022	0.333	0.018
PIDS×Growth	0.002	0.003	0.002	0.003	0.001	0.004	0.002	0.003	0.002	0.003
PIDS×Unemployment	0.010	0.005	0.006	0.005	0.010	0.005	0.009	0.005	0.006	0.005
PIDS×Log GDP pc	-0.065	0.039	-0.082	0.035	-0.054	0.053	-0.081	0.041	-0.045	0.050
PIDS×Mean Years School	-0.005	0.012							0.011	0.011
PIDS×Gov. Frac.			-0.244	0.050					-0.285	0.062
PIDS×Majority			0.032	0.030					0.031	0.032
PIDS×Log Age Parties					0.011	0.026			-0.034	0.027
PIDS×New Democracy					0.045	0.042			0.008	0.041
PIDS×Polarization							0.003	0.033	-0.021	0.031
PIDS×Personalism							0.011	0.012	-0.006	0.012
Party Direction×Growth	-0.002	0.006	-0.002	0.006	0.003	0.006	-0.002	0.006	0.002	0.006
Party Direction×Unemployment	0.014	0.010	0.013	0.009	0.018	0.009	0.016	0.010	0.019	0.009
Party Direction×Log GDP pc	0.077	0.073	0.077	0.069	-0.184	0.102	0.096	0.077	-0.096	0.099
Party Direction×Mean Years School	-0.009	0.022							0.022	0.022
Party Direction×Gov. Frac.			-0.364	0.101					-0.442	0.120
Party Direction×Majority			-0.073	0.061					-0.020	0.065
Party Direction×Log Age Parties					0.155	0.047			0.064	0.050
Party Direction×New Democracy					-0.092	0.080			-0.167	0.081
Party Direction×Polarization							0.027	0.063	-0.016	0.062
Party Direction×Personalism							-0.018	0.022	-0.047	0.023
PIDS×Party Direction×Growth	0.005	0.005	0.005	0.004	0.002	0.005	0.005	0.005	0.002	0.004
PIDS×Party Direction×Unemployment	0.013	0.008	0.005	0.007	0.013	0.008	0.013	0.008	0.005	0.007
PIDS×Party Direction×Log GDP pc	-0.041	0.059	-0.082	0.049	0.003	0.080	-0.054	0.062	0.023	0.068
PIDS×Party Direction×Mean Years School	-0.014	0.018							0.028	0.015
PIDS×Party Direction×Gov. Frac.			-0.504	0.070					-0.592	0.085
PIDS×Party Direction×Majority			0.085	0.042					0.109	0.044
PIDS×Party Direction×Log Age Parties					0.036	0.039			-0.047	0.037
PIDS×Party Direction×New Democracy					0.140	0.063			0.064	0.056
PIDS×Party Direction×Polarization							0.023	0.051	-0.024	0.042
PIDS×Party Direction×Personalism							0.010	0.018	-0.027	0.017
N obs		172565		172565		172565		172565		172565
N parties		1180		1180		1180		1180		1180
N surveys		99		99		99		99		99
N countries		33		33		33		33		33
σ		1.427		1.427		1.427		1.427		1.427
$\sigma_{PartyGroup}$		0.455		0.452		0.456		0.455		0.450
σ_{Survey}		0.455		0.443		0.444		0.450		0.428
σ_{LR}		0.157		0.158		0.158		0.157		0.158
σ_{NR-LR}		0.217		0.217		0.217		0.216		0.217
σ_{PIDS}		0.084		0.057		0.081		0.082		0.050
$\sigma_{PartyDir}$		0.123		0.082		0.112		0.124		0.081
$\sigma_{PID \times PartyDir}$		0.174		0.120		0.169		0.174		0.112
$\sigma_{Country}$		0.476		0.502		0.496		0.491		0.489
LogLikelihood		-368682.922		-368651.019		-368674.277		-368682.658		-368637.219
AIC		737471.844		737416.039		737462.553		737479.317		737428.438

the interaction term $PIDS \times Party\ Direction$ becomes negative, which also turns negative (or at least reduces the positive size) of the the coefficient of $PIDS$. However, these parameters should be considered with caution given that they may be subject to endogeneity problems.

Now, the predictive capacity of the strength and direction of partisanship is also strongly moderated by contextual features, and in particular by one: government fractionalization. Of all the institutional and party system variables studied here, government fractionalization is the only one that provides systematic and very strong results for both dependent variables. At the core are three patterns. First, the coefficient of the interaction $PIDS \times Gov. Frac.$ is highly significant for both dependent variables ($p < 0.001$) in the restricted and unrestricted model (2 and 5, respectively). The smallest t statistic is equal to -4.45, and consequently $p < 0.001$.¹⁸ This result indicates that as government fractionalization increases, while holding partisanship direction constant, the association between partisanship strength and political evaluations decreases. Second, the interaction $Party\ Direction \times Gov. Frac.$ is also significant for both political evaluations, though the t statistic of the model predicting satisfaction with the economy is more modest ($t = 2.03, p = 0.04$). This pattern indicates that as fractionalization increases, the association between direction of partisanship and political evaluations decreases too. Third, the triple interaction $PIDS \times Party\ Type \times Gov. Frac.$ is also highly significant for all the political evaluations under study. In this case, the smallest t statistic was 5.43 ($p < 0.001$) for the satisfaction with the economy model. This last result implies that as fractionalization increases, the estimate of the interaction between direction and strength of partisanship decreases as well.

Beyond the pervasive moderating influence of government fractionalization, there are other important results worth noticing. Related to the clarity of responsibility framework, whether a government has a majority of seats (*Majority*) has some statistically significant estimates, though they are more modest than those of government fractionalization. These refer, on Model 2, to the triple interaction $PIDS \times Party\ Direction \times Gov. Majority$ for satisfaction with the economy ($p < 0.01$) and with government ($p = 0.05$). The respective results in the unrestricted model are slightly stronger. The coefficients are positive which indicates that the association between partisan strength and political evaluations increases when governments have legislative majorities. Importantly, these results are also consistent with expectations derived from the clarity of responsibility framework. The interaction $Party\ Strength \times Gov. Majority$ for the model predicting satisfaction with the

¹⁸From now on, all reported p-values referring to cross-level interactions are two-sided and calculated using a student distribution with 89 degrees of freedom. This number corresponds to the total number of available surveys minus the number of parameters included in each of the cross-level equations of the full model. If I employed the number of parameter of the reduced models, p-values would be even smaller.

economy is the only other significant estimate for this macro variable.

The economic variables also have some important effects, but they seem to be strongest when predicting the average level of the dependent variables. The signs of the coefficients confirm intuition with higher levels of growth and GDP per capita associated with higher levels of satisfaction, and increases in unemployment associated with lower levels of satisfaction.¹⁹ There is only one case in which an economic variable has a significant moderating effect on any of the partisanship variables in the unrestricted models. This corresponds to the estimate of the interaction *Party Direction* \times *Unemployment* ($p = 0.037$) in the satisfaction with government model. In all other cases, coefficients that have a significant effect in the restricted model lose their status when full controls are included. A few examples of these are the coefficients of the terms *Party Direction* \times *Log GDP pc* and *PIDS* \times *Party Direction* \times *Unemployment* in the satisfaction with the economy models.

Among all the other macro-level variables, there are a few exceptions to null results. Those that remain significant when full controls are introduced are even rarer. That said, a few interesting cases do appear. One is the case of ideological polarization which shows a marginally significant estimate ($p = 0.07$) in the triple interaction *PIDS* \times *Party Type* \times *Polarization* for the satisfaction with the economy model; the average years of schooling also has a significant interaction *PIDS* \times *Party Type* \times *Mean Years School* for the models predicting satisfaction with the government ($p = 0.07$); and the degree of personalism has a close to significant interaction *PIDS* \times *Party Type* \times *Personalism* ($p = 0.11$) in the model predicting satisfaction with government.

Given the multiplicity of interactions contained in the models and the mean centering of all covariates, it is easier to appreciate the magnitude and direction of the results by plotting the marginal results. Figures 3.3 and 3.4 show the marginal estimate of strength of partisanship at varying levels of all contextual independent variables and for each dependent variable.²⁰

Results from the figures confirm the previous discussion, although they introduce new insights as well. Of all aggregate factors, by far the one with the greatest influence on the marginal estimate of strength of identification is the degree of government fractionalization. As can be seen in both figures the marginal estimate of *PIDS* among supporters of the incumbent party decreases in quite dramatic fashion as government fractionalization increases. A numerical example can make illustrate this point. A unit change of *PIDS* at the lowest observed level of fractionalization is

¹⁹At the same time, government fractionalization and majority status do not have significant effects as predictors of the mean level of the dependent variables. The one exception is the estimate of government fractionalization on satisfaction with the economy in the unrestricted model.

²⁰The plotted results are based on the results from Model 5 of Tables 3.1 and 3.2.

associated with a change of 0.16 in the level of satisfaction with government, which corresponds to 6% of its (unconditional) standard deviation. This magnitude increases to a change of 0.87 in the dependent variable when government fractionalization is at its minimum. This corresponds to 35% of its (unconditional) standard deviation. The respective numbers for satisfaction with the economy are 0% to 21%. The slope of the marginal estimate of those identifying with a opposition party is positive, which is consistent with the clarity of responsibility framework, though the steepness is less accentuated. As the government becomes a clear unitary actor opposition party supporters become more critical. The marginal estimate is negative and significant up to the 75th percentile of government fractionalization for the satisfaction with government question, and significant up to the 45th percentile for the satisfaction with the economy question. The fact that the slope of the marginal estimates for opposition party sympathizers tends to be much less steep than for incumbent supporters seems to indicate that government fractionalization exercises a stronger moderating role over supporters of incumbent parties than over those of opposition parties.

One important related question is whether the effects associated with government fractionalization are actually due to the degree of fragmentation of the parties in government or some more broader and generalized process of fragmentation of the party system. It might well be the case that party labels become less informative when the party system is increasingly fragmented. Some additional empirical results not reported here²¹ reject this possibility. I estimated a modified version of Model 2 for both dependent variables in which government fractionalization was replaced by the effective number of parties, and all remaining specifications were left untouched. By standards of the fit of the models, the models that included government fractionalization clearly outperform those that use the effective number of parties.²² These results reinforce the idea that it is the specific level of fragmentation of government that is the key factor moderating the predictive capacity of partisanship, as opposed to a generalized process of party system fragmentation.

Some interesting patterns can be observed among the other contextual variables as well. When it comes to satisfaction with the economy, the growth and unemployment rate, majority government status and the degree of polarization seem to exercise some influence. Both polarization and majority government status show a positive slope among supporters of incumbent parties and a negative slope among opposition party supporters. This indicates a higher association between partisanship and satisfaction with the economy as polarization increases, and among majority governments (as

²¹But available upon request.

²²The respective AIC statistics between the model employing government fractionalization and the effective number of parties are: a) Satisfaction with the Economy: 750471.1 and 750512.3; b) Satisfaction with Government: 737416.0 and 737450.7.

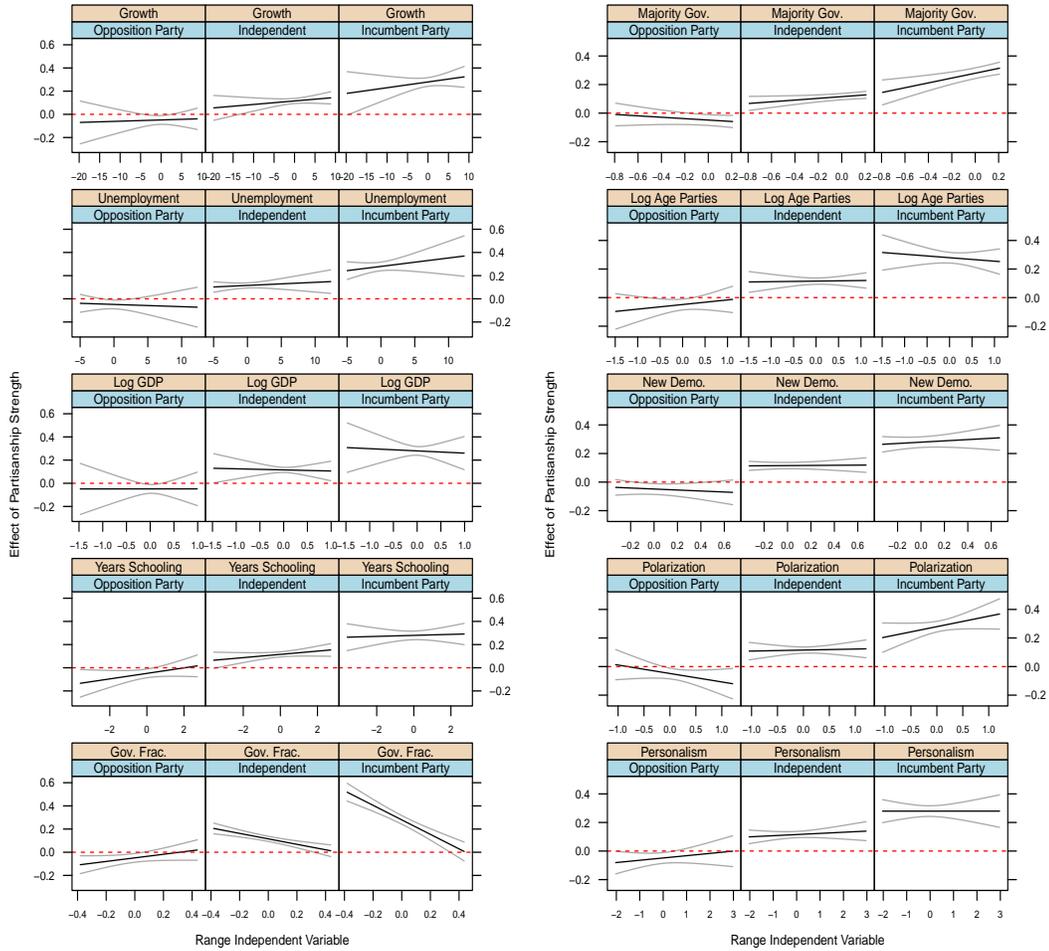


Figure 3.3: Marginal Estimate of Strength of Party Identification on Satisfaction with the Economy by Direction of Partisanship and Contextual Factors with 95% confidence intervals.

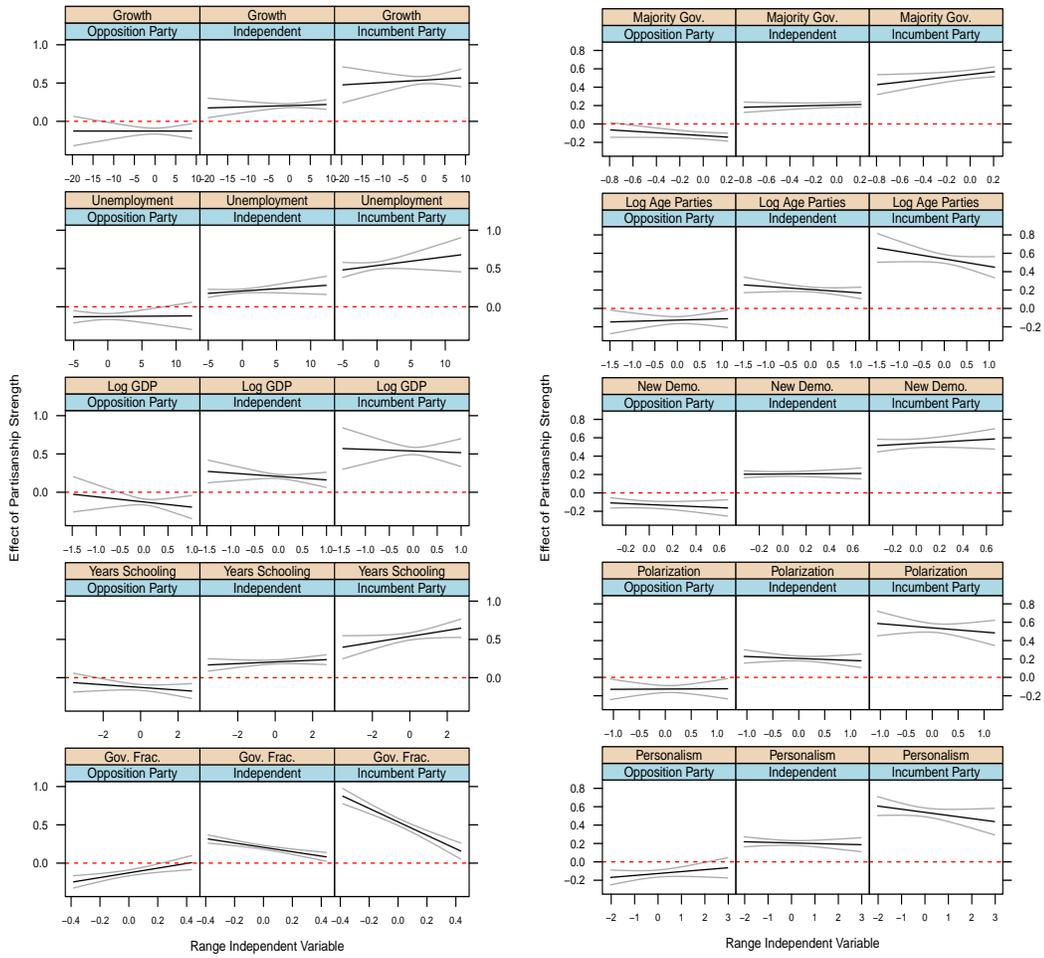


Figure 3.4: Marginal Estimate of Strength of Party Identification on Satisfaction with the Government by Direction of Partisanship and Contextual Factors with 95% confidence intervals.

opposed to minority governments). Both of these patterns are consistent with theoretical expectations. The rate of economic growth and unemployment also shows a positive slope, mostly among supporters of incumbent parties.

When it comes to satisfaction with government, the contextual variables that show the strongest moderating influence are the unemployment rate, mean years of schooling, age of parties, and degree of personalism of the country's electoral system. In some of these cases patterns are observed that seem at odds with respect to their theoretical frameworks. For example, as the population becomes, on average, more educated, the degree of association between partisan strength and political evaluations increases for both supporters of incumbent and opposition parties, though the pattern is more accentuated among the former. This pattern is in the opposite direction of cognitive mobilization theory, which predicts a decrease in the role of partisanship. A similar situation occurs with the age of the party system; as parties become older, the association between partisanship and satisfaction with the government decreases, mostly among supporter of incumbent parties. The results from degree of personalism of the electoral system are consistent with expectations. In this case, the marginal estimate of partisan strength among supporters of incumbent parties decreases as the level personalism increases. The inverted pattern can be observed among supporters of opposition parties.

3.7 Conclusions

Drawing from different theoretical frameworks this paper developed and tested several theoretical arguments about how institutional and party system factors encourage stronger associations between partisanship and political evaluations. The empirical analysis was based on 100 surveys from thirty-three countries included in the European Social Survey program, and considered respondents' answers to two important political evaluations, namely, the level of satisfaction with the national economy and satisfaction with the performance of government.

Results from linear hierarchical four-level models fitted against these political evaluations were unambiguous. Of all the considered contextual factors, only those related to the degree of clarity of responsibility proved to have systematic effects on the degree of association between partisanship and individuals' political evaluations. More specifically, it was found that as the level of government fragmentation increases, the predictive capacity of the direction and strength of individuals' partisanship becomes dramatically reduced. While under highly fragmented governments, the association with partisanship is negligible, it increases dramatically as authority becomes exercised

by single party governments. In the second place, the strength of individuals' attachment also has a stronger predictive capacity over their evaluations when government holds a legislative majority. This last result proved to be more moderate, however. It is also important to specify that the bulk of the effect of these factors applies particularly to people who identify with an incumbent party. The marginal effects of supporters of incumbent parties tends to be much more accentuated than among supporters of opposition parties.

Given this prominent moderating role that government fractionalization, and to a lesser extent majority status, exercises over the partisanship variables, it is no surprise that when comparing the fit of the different models, only the specification including the clarity of responsibility variables was not statistically different than the unrestricted models.

Among the remaining political contextual factors some interesting results we also observed, though these were more modest and in many cases non significant in the unrestricted models. Worth noticing are the moderating and positive effects of average years of schooling and level of personalism of the electoral system in the satisfaction with government model and the effect of polarization on the satisfaction with the economy model. In some other cases the results were inconsistent with theoretical predictions. Results from these variables should not necessarily be read as negative support for their respective theoretical frameworks. Indeed, the implications for partisan judgments were not derived directly from the theoretical frameworks, but through the presumable influence of strength of partisanship. However, what can be argued is that contextual factors that simplify the nexus between partisan preferences and government's party affiliation seem to play a much more influential role than those factors that promote a stronger subjective attachment to parties. This suggests that the role partisan identities play on citizens' cognition is related to the functional value that partisanship might have. Indeed, as a political setting provides clearer signals of who is responsible for policy, voters have greater access to clear-cut political cues, which in turn encourages higher correlations between their partisan preferences and political evaluations. In other words, as the institutional design becomes more transparent, party identification becomes an increasingly efficient cognitive cue. In contrast, in political settings where actions of political actors are difficult to monitor, individuals' attachments become less salient given the absence of a clear signal connecting their partisan preference to the actions of their preferred party.

Despite how strong some of the results are, they should be considered with caution. As discussed in Section 2, the potential endogeneity between political evaluations and partisanship might lead to overestimation of their true magnitude. Some complementary assumptions about the distribution

of the bias, in particular if we consider it to be constant across surveys, can help ameliorate the concern. In fact, if this assumption is true, the effect of the contextual level parameters are not biased. However, this assumption, as in general any assumptions about how the endogeneity bias might distribute across surveys, is difficult to justify. Future research should explore what other assumptions or strategies that take advantage of the hierarchical structure of the data can help mitigate the concerns related to endogeneity biases. The potential benefits could be important.

Lastly, these results also highlight an interesting route for future work on comparative mass behavior. While most research on the influence of clarity of responsibility has concentrated on its moderating role over the magnitude of economic voting, the results of this paper indicate that a similar logic applies to the degree of association between partisanship and political evaluations. Furthermore, given the observed patterns in this paper, it is quite plausible to expect a strong moderating role of institutional clarity over levels of partisan voting, rates of opinion updating, and other behaviors that are at the core of the political behavior field. Institutional clarity might have a broad and systematic effect of over mass behavior that has not been entirely detected by comparative scholars.

Appendix I: List of ESS Surveys

Survey	Wave 1	Wave 2	Wave 3	Wave 4
Austria	2003	2005	2007	
Belgium	2002	2004	2006	2008
Bulgaria	2006			2009
Croatia				2009
Cyprus			2006	2008
Czech Republic	2002	2004		2009
Denmark	2002	2004	2006	2008
Estonia	2004		2007	2009
Finland	2002	2004	2006	2008
France	2003	2005	2006	2008
Germany	2003	2004	2006	2008
Great Britain	2002	2004	2006	2008
Greece	2003	2005		2009
Hungary	2002	2005	2006	2009
Iceland	2005			
Ireland	2003	2005	2007	2009
Israel	2002			2008
Italy	2003		2006	
Latvia			2007	2009
Lithuania				2009
Luxembourg	2003	2004		
Netherlands	2002	2004	2006	2008
Norway	2002	2004	2006	2008
Poland	2002	2004	2006	2008
Portugal	2002	2005	2007	2009
Romania		2006		2009
Slovakia		2004	2007	2008
Slovenia	2002	2004	2006	2008
Spain	2002	2004	2006	2008
Sweden	2002	2004	2006	2008
Switzerland	2002	2004	2006	2008
Turkey		2006		2009
Ukraine		2005	2006	2009

Appendix II: Question Wording of Survey Items

Dependent Variables

- Satisfaction with the economy: “On the whole how satisfied are you with the present state of the economy in [country]? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied.”
- Satisfaction with government: “Now thinking about the [country] government, how satisfied are you with the way it is doing its job? Still use this card.”

Independent Variables

- Interest in politics: “How interested would you say you are in politics are you... very interested, quite interested, hardly interested, or, not at all interested?”
- Left-right scale: “In politics people sometimes talk of ‘left’ and ‘right’. Using this card, where would you place yourself on this scale, where 0 means the left and 10 means the right? ”;
- Party identification
 - Screening question: “Is there a particular political party you feel closer to than all the other parties?”
 - Strength question: “How close do you feel to this party? Do you feel that you are... very close, quite close, not close, or, not at all close?”
- Media usage index: Constructed as the average to the following questions:
 - “And again on an average weekday, how much of your time watching television is spent watching news or programs about politics and current affairs?”
 - “And again on an average weekday, how much of your time listening to the radio is spent listening to news or programs about politics and current affairs?”
 - “And how much of this time is spent reading about politics and current affairs?”
Response categories are: No time at all; Less than 0,5 hour; 0,5 hour to 1 hour; More than 1 hour, up to 1,5 hours; More than 1,5 hours, up to 2 hours; More than 2 hours, up to 2,5 hours; More than 2,5 hours, up to 3 hours; and More than 3 hours.

CHAPTER IV

An Empirical Assessment of the Bayesian Unbiased Voter Hypothesis

4.1 Introduction

The incorporation of Bayesian updating mechanisms into models of opinion formation has become a new and rich area of research. While most applications in the field of political behavior have been developed in reference to party identification (see Achen, 1992, 2002; Gerber & Green, 1998; Green et al., 2002; Grynaviski, 2006; Bartels & Achen, 2006), scholars have been increasingly using this device as a theoretical mechanism to explain other types of political behavior. For example, Bartels (1993) employs it for media effects, Alvarez (1998) for campaign learning, and Achen (2006) for voter turnout. In fact, it can be safely argued today that it stands as a general model of opinion formation applicable to any type of attitudes or opinions (Bartels, 2002; Bartels & Achen, 2006; Kim et al., 2010).

In essence Bayesian updating models claim that voters update their political opinions by averaging their previous opinion and the information received from the political environment with each element weighted by their degree of precision (inverse of variance). While this may not seem particularly controversial, some key theoretical developments within the approach have become so. One such development is the argument, put forward by Gerber & Green (1998, 1999), Green et al. (2002) and Bullock (2009), that voters' opinions not only follow Bayes rule, but are also updated in an unbiased fashion.¹ In other words, individuals are presumed to interpret incoming political information independently of their own orientations and affiliations, and thus, to update their opinions at a similar pace.

This paper attempts to empirically evaluate this theoretical prediction for a multiplicity of

¹Some work of Achen also shares this assumption, particularly his formal model of voter turnout. Some of Achen's work also shares this assumption, particularly his formal model of voter turnout(see Achen, 2006). Specifically, he assumes that voters' experiences with each incumbent party may vary in time, but they are common for all voters within each time period.

political opinions that pertain to highly salient aspects of the 2008 American presidential election. While previous empirical efforts have been made in this direction (most notable, Bartels, 2002), the current paper takes a special perspective by focusing on the rate of change of voters' opinions. As will be discussed, below, the rate of change is the key element to assess whether or not partisans from different groups process information similarly. This paper also departs from previous empirical studies by incorporating into the discussion some recent theoretical developments, employing multi-wave panel data and a particularly flexible statistical framework—specifically, a dynamic random coefficient model—that can closely approximate the theoretical mechanisms underlying Bayesian updating. The results show that while holding constant prior opinion and allowing for unobserved heterogeneous prior influence, party identification systematically affects the rate of opinion change for most of the opinions considered in the study. I even find polarization trends for several of these opinions. Overall, the results seem to strongly support the incorporation of new elements into the Bayesian rational learning model that may help it capture heterogeneous patterns of opinion updating.

After reviewing the specific conditions under which the Bayesian rational learning model can and cannot account for opinion change, I proceed, in Section 3, to investigate the data and measurement used to test the unbiased information processing hypothesis. Section 4 discusses the statistical approach and empirical results. Section 5 summarizes the findings and concludes the paper.

4.2 The Unbiased Voter Hypothesis

Building on the work of Achen (1992), Gerber, Green and colleagues (Gerber & Green, 1998, 1999; Green et al., 2002) proposed what is arguably today's most sophisticated Bayesian updating model of opinion formation in the field of political behavior. This model, named the Bayesian rational learning model, contains several theoretical premises and empirical implications that have generated controversy. One such premise is the authors' claim that political opinions are not only updated following Bayes rule, but also in an unbiased fashion, that is, independently of voters' orientations and affiliations. This claim has generated considerable debate because it contradicts the more commonly accepted view that party identification is an exogenous factor that biases individuals' information processing in directions consistent with their political allegiances (Campbell et al., 1960; Markus & Converse, 1979; Conover & Feldman, 1986; Lodge & Hamill, 1986; Jacoby, 1988; Zaller, 1992; Miller & Shanks, 1996; Fischle, 2000; Bartels, 2000, 2002; Redlawsk, 2010; Goren, 2005; Carsey & Layman, 2006; Taber & Lodge, 2006; Lewis-Beck et al., 2008; Jerit & Barabas, 2010;

Nyhan & Reifler, 2010; Kim et al., 2010; Slothuus & de Vreese, 2010).² In the Bayesian rational learning model, voters' opinions may be associated with their partisan dispositions but not because they condition how voters process information, but through other mechanisms that are consistent with unbiased processing. I review these in the following section.

To fully understand the unbiased learning hypothesis, as well as its origins and empirical consequences, it is useful to conduct a detailed review of Gerber and Green's model of voter rational learning, as well as of Achen's original model, of which the former is an extension. To do this, I briefly describe the main elements of each model and reproduce some of the basic equations involved. An explicit description of these equations will prove valuable when I propose a statistical model able to capture some key mechanisms underlying Bayesian updating.

In the theoretical models proposed by Achen (1992), and Gerber & Green (1998, 1999), the development and evolution of party identification is framed as a rational learning process in which voters continuously update their identification in light of their past partisanship and external events. Mathematically, party identification is operationalized as the differential between the perception of benefits delivered by the two parties. At each period of time, voters combine their prior partisanship and what they observe to estimate the current party differential; the party is associated with a higher expected return is the one a voter identifies with. Up to this point both models seem alike. However, Gerber & Green (1998) incorporate several important additional features that extend and generalize Achen's model. Most importantly, they include a dynamic component by which the environmental conditions to which individuals are exposed might be evolving. On the basis of this component, static and dynamic learning models can be distinguished.³

Static Model

In the static model voters are continually exposed to a stream of information about a political issue or object represented by M_t . In Achen's (1992) article M_t represents the observed stream of information about the party differential, but the issue in question can be any relevant political phenomena such as the state of the economy, the quality of a candidate or the capacity of a political party. This flexibility attests how easily the model extends to any sort of political opinion or evaluation. The stream of information moves from one period to the next around its mean, such

²Furthermore, the unbiased learning hypothesis is not consistent either with the partisanship "revisionist" literature. Important works such as Jackson (1975), Page & Jones (1979), Fiorina (1981) and Franklin & Jackson (1983) does not claim that party identification has no effect on political opinions, but rather that the effects between these two are reciprocal.

³Readers unfamiliar with this literature are strongly encouraged to consult Achen (1992), Gerber & Green (1998), Gerber & Green (1999), Green et al. (2002), Bartels (2002) and Bullock (2009).

as:

$$(4.1) \quad M_t = \theta + \epsilon_t$$

where ϵ_t is considered some random fluctuation and is normally distributed ($\epsilon_t \sim N(0, \sigma_\epsilon^2)$). Notice that voters only observe M_t , although it is assumed that they know σ_ϵ^2 . Therefore, in order to develop their opinions about the issue in question, they have to estimate the true unobservable quantity θ . Achen (1992) argues that rational voters will try to minimize the difference between their own estimate $\hat{\theta}_i$ and the true θ , which translates mathematically as a weighted average between their prior opinion ($\hat{\theta}_{it-1}$) and the information they receive (M_t) in each period of time, with each element being weighted by their degree of precision.⁴ That is,

$$\hat{\theta}_{it} = \alpha_{it}\hat{\theta}_{it-1} + (1 - \alpha_{it})M_t$$

and

$$\alpha_{it} = \frac{\sigma_{\theta_{it-1}}^2}{\sigma_{\theta_{it-1}}^2 + \sigma_{M_t}^2}$$

where $\sigma_{\theta_{it-1}}^2$ corresponds to the variance of voter i 's prior opinion, and $\sigma_{M_t}^2$ is the variance of the distribution from which political message M_t is drawn. The degree of updating between two time periods is directly affected by how variable a voter's prior opinion is (alternatively, one might say how uncertain her opinion is), as well as by the degree of variability of the received information. These two equations—obtained through Bayes theorem—are equivalent to the Bayesian estimate of a normally distributed mean with known variance.

Notice that several publications that employ and extend this model (e.g. Achen, 1992; Bartels, 1993; Bartels & Achen, 2006) also include an individual level subscript for equation (4.1), such as: $M_{it} = \theta_i + \epsilon_{it}$. Dropping this subscript is a fundamental consequence of conceptualizing voters as unbiased information processors. Indeed, if voters update their opinions in an unbiased fashion, each new piece of information has a common meaning and interpretation for all voters, regardless of their own preferences and dispositions.

⁴The assumption that a rational voter will minimize the mean square error between $\hat{\theta}$ and θ can be understood as a drive for accuracy. In other words, individuals are expected to develop the most accurate representation they can of the true state of an issue. For example, individuals' evaluation of the economy is expected to reflect the "true" state of the economy, which they cannot observe directly, but must estimate.

Dynamic Model

In a series of important publications, Gerber & Green (1998, 1999); Green et al. (2002), and more recently Bullock (2009) extend Achen’s framework into a dynamic model in which the stream of political information does not deviate randomly around its mean, but changes systematically. This is represented as the following:

$$\begin{aligned} M_t &= \theta_t + \epsilon_t \\ \theta_t &= \gamma\theta_{t-1} + \omega_t \end{aligned}$$

where voters—as in the static model—can only observe M_t , but are exposed to a stream of information that evolves as described by the autoregressive parameter γ and is affected by random fluctuations (reflected by ω_t). The ϵ_t term reflects measurement error in the observed stream of information. The model assumes that both residuals are normally distributed ($\epsilon_t \sim N(0, \sigma_\epsilon^2)$ and $\omega_t \sim N(0, \sigma_\omega^2)$), and that parameters γ , σ_ω^2 and σ_ϵ^2 are common knowledge among the population. Within this scenario, voters’ optimal rule, also derived from Bayes theorem, takes a form that is somewhat similar to the above equations, albeit it has additional parameters and increased complexity. Specifically,

$$(4.2) \quad \hat{\theta}_{it} = (1 - K_{it})\gamma\hat{\theta}_{it-1} + K_{it}M_t$$

where

$$(4.3) \quad K_{it} = \frac{\gamma^2\sigma_{\hat{\theta}_{it-1}}^2 + \sigma_{\omega_t}^2}{\gamma^2\sigma_{\hat{\theta}_{it-1}}^2 + \sigma_\omega^2 + \sigma_{\epsilon_t}^2}$$

As can be seen in (4.2) the influence of prior opinion on current opinion ($[1 - K_{it}]\gamma$) is a joint function of several elements, namely, the variance parameters associated with the information stream (σ_ϵ^2 and σ_ω^2), autoregressive parameter γ , and the variance of voters’ prior opinion ($\sigma_{\hat{\theta}_{it-1}}^2$). Despite the increased complexity of this mathematical formulation, the only element that varies across voters in K_{it} is $\sigma_{\hat{\theta}_{it-1}}^2$. Indeed, for any given period of time $t = 1, 2, \dots, T$, parameters γ , σ_ω , and σ_ϵ are constant.⁵ Thus, even if political events move in a systematic direction (that is, $\gamma \neq 1$), the key element that accounts for heterogeneous influence of prior opinion on current opinion narrows down in both the static and dynamic model to the same factor, the variance of prior

⁵Although, as Bullock (2009) mentions these parameters could be set to evolve in time such as in a dynamic linear model context. However, in the rational learning model they remain fixed.

opinion. As I will detail in Section 4, this communality has direct implications for the specification of the statistical model used to test the unbiased voter hypothesis.

The Bayesian rational learning model also assumes common interpretation of the stream of information (notice the absence of a i subscript in M_t), and thus, it claims that voters update their opinion in an unbiased fashion. Although the notion may seem somewhat counterintuitive, Gerber & Green (1998, 1999) provide strong arguments in its favor. They claim that differences of opinion between partisans—even particularly strong ones—are insufficient evidence of bias. Differences between partisan groups can be attributed to other factors such as different prior opinions, usage of alternative evaluative criteria or other elements that do not bias information processing in favor of an underlying disposition. Green et al. (2002) provide several illustrative examples of this argument. For example, they argue that partisans’ disproportionate proclivity to favorably evaluate the performance of their own presidential candidate in a televised debate is not indicative of a partisan bias. On the contrary, they show that individuals’ assessments of presidential candidates before and after a televised debate followed a similar updating pattern across partisan groups. In other words, the initial differences between partisan groups may simply be due to ideological proximity between partisans and their candidate, not to partisanship itself or any psychological consequence of this disposition. In the authors’ words, If liberals and conservatives resonate to different policy proposals, their divergent impressions of who won may simply reflect their different ideological tastes. A more compelling test looks at how assessments change across successive debates, a design that holds constant their ideological appeal of the two candidates” (pp.132). Through additional examples that refer to government approval trends, partisan perception of political scandals, and perception of party performance, Green et al. (2002) show that partisans’ opinions tend to follow similar trends. Therefore, they conclude that although partisans’ starting points may be very different, their opinions, in the process of being updated, follow a parallel trajectory. This implies that all partisans, irrespective of type and color, update their opinions in a similar way. As Gerber and Green (1998) state: “. . . regardless of the value of the prior belief, the voter updates it in the direction of the new information. If the average of the new information is greater than the prior, the voter adjusts beliefs upward; if the average of the new information is less than the prior, the adjustment is in the opposite direction” (pp. 200). Moreover, assuming that all voters are exposed to the same information, beliefs and evaluations “. . . change to approximately the same degree among those with different political allegiances”. As long as scholars fail to account for individuals’ prior opinion and evaluative criteria, Gerber and Green argue, it is impossible to determine whether

individual and group differences are due to different information processing patterns.

An immediate empirical consequence of Gerber and Green’s (1998; 1999) insights is that to understand how individuals process information, we must study their opinions and judgments in a longitudinal setting (see Gaines et al., 2007 for a similar argument). By considering the evolution of their assessments of political objects, we can account for their priors, and at the same time assess the trajectory of their opinions, or more precisely, their rates of opinion change. Then, if individuals’ across different partisan groups share a similar rate of opinion change (i.e. opinion trends follow parallel trajectories), this would serve as favorable evidence for the unbiased voter hypothesis. In contrast, different rates of opinion change would indicate that partisan groups update information at different paces, implying that information is not interpreted similarly. Such a finding would falsify the unbiased voter hypothesis.

While a test of this sort would be simple and straightforward, it would not fully account for recent contributions to the theoretical debate on the Bayesian rational learning model. In a recent article, Bullock (2009) adds important insights to this perspective. He shows that the parallel trajectory of opinions implication derived by Gerber & Green (1998, 1999) and later criticized by Bartels (2002) applies only to a specific scenario, namely, when partisans of different groups are assumed to share equal prior opinion precision and the incoming information is ideologically moderate. While this situation may accurately describe common political debates, it is far from exhaustive. Bullock (2009) also shows that patterns of divergent opinions, and even polarization, can emerge among Bayesian unbiased voters as long as some specific conditions and prior opinion configurations take place. His formal analysis indicates that in a static environment divergent patterns can be observed when voters have different prior opinion precisions and the relevant messages are “extreme” in the sense that they are located outside the range of voters’ prior beliefs. In a dynamic environment, divergent opinions can be observed even if individuals have equal prior precisions (not necessarily equal priors), as long as the precisions are rather high, the autoregressive parameter (γ) tends to be larger than one, and the relevant message precision is low. In other words, the best scenario for opinion divergence is one in which voters’ opinions are held with high certainty and the political messages tend to be noisy, but are changing rapidly. Polarization of opinion across partisan groups cannot occur within a static context. It might occur within a dynamic one; however, the necessary conditions are rather unusual. Specifically, according to Bullock, polarization occurs only if the necessary conditions for divergence are already present and new information contradicts the expectations of one of the partisan groups.

In summary, heterogeneous rates of opinion change can emerge even if voter cognition is well reflected by the unbiased processing assumption. Therefore, to empirically estimate the rates of opinion change and consider them informative it is necessary to: a) specify explicitly all possible mechanisms of opinion change available in the Bayesian rational learning model, and b) derive a statistical model capable of accounting for the conditions of opinion change specified within the Bayesian rational learning model. If, after this, different rates of opinion change persist between partisan groups it can be claimed that the unbiased information hypothesis has been falsified. The next section details the first point.

4.2.1 Bayesian and Non-Bayesian Conditions for Heterogeneous Opinion Change

Previous theoretical work has shown that different rates of opinion updating across partisan groups is not a sufficient condition to claim biased opinion updating. Instead, heterogeneous updating opinion rates can emerge by alternative mechanisms other than biased assimilation of information. Some alternatives can be accounted for by the Bayesian rational learning model, while others are more difficult to capture within this framework. Among the first, and following Gerber & Green (1999), Bullock (2009) and Gerber & Huber (2010), one can distinguish the following possibilities:

Heterogeneous Prior Opinion Variance: The degree of opinion change between two periods of time is directly influenced by the degree of precision of a voter's prior. The stronger a prior opinion is (that is, as $\sigma_{\theta_{it-1}}^2 \rightarrow 0$) the less opinion updating there will be. This argument is similar to the findings of social psychological work, which show that strong attitudes are more resistant to counter-persuasion (Petty & Krosnick, 1995).

An important implication of this point for empirical analysis is that to evaluate the unbiased updating hypothesis it is necessary to account for the simple fact that the strength of individuals' beliefs and opinions varies across the population (notice the subscript i in $\sigma_{\theta_{it-1}}^2$). Unless this element is properly considered, even dramatically different rates of opinion change cannot be considered unambiguous evidence against the unbiased hypothesis. Interestingly enough, this has been one of the main omissions in previous empirical analysis. Up to this point, all empirical work estimates the influence of prior opinion on current opinion but constrains this influence to be equal across all survey respondents in a sample.

Heterogeneous Message Variance: If the assumption of common interpretation of information

is relaxed somewhat and implies only agreement on the “point estimate” of M_t ,⁶ but not necessarily on the degree of precision of the received information, then heterogeneous rates can emerge if voters attribute different variance to M_t .⁷ Similarly to the case of heterogeneous prior variance, individuals’ updating process is influenced by how “persuasive” the received information is. As this information becomes increasingly ambiguous and imprecise ($\sigma_\epsilon^2 \rightarrow \infty$) it will be weighted less during opinion updating.

Alternative Evaluative Criteria: This refers to the possibility that voters’ opinions might differ because they employ different evaluative criteria to the same evidence, and thus, different rates of opinion change may emerge. For example, if Democrats and Republicans have different priorities regarding the national economy, when asked about its current state, they may express different judgments because they have different aspects of the economy in mind. This is consistent with the unbiased Bayesian framework in that it does not contradict the basic assumption of common interpretation of M_t .

Heterogeneous rates of opinion change might also emerge from sources that imply biased information processing. These are considered inconsistent with unbiased processing to the extent that they imply that cognitive processing of events is affected by partisan dispositions. These conditions can be narrowed into the following:

Partisan Filtering: This refers to any form of information processing in which individuals’ interpretation and evaluation of political objects is directly conditioned by their partisan preference. The process has been represented in a variety of ways in the field of political behavior. Most famously, the American Voter authors (Campbell et al., 1960) claimed that party identification can be best described as a psychological-affective attachment to a political party that leads individuals to progressively favor the party’s issues and positions (and not the other way around). Thus, party identification raises a perceptual screen through which voters evaluate political objects, overweighting the elements that are more favorable towards their partisan orientation.

Theories of motivated reasoning provide another prominent conceptualization of partisan filtering. They argue that individuals are more willing to accept and positively evaluate information that is congruent with already existing priors (Kunda, 1990). In some recent experiments Taber & Lodge (2006) show that subjects with strongly held attachments to a party will engage in all sorts of mental exercises in order to maintain their existing prior opinions. For example, they find

⁶Or agreement about the average of a series of messages during several time periods ($\frac{1}{T} \sum M_t$ for $t = 1, 2, \dots, T$).

⁷To be precise, if voters have different perceptions of $\sigma_{M_t}^2$ in the static model and $\sigma_{\epsilon_t}^2$ in the dynamic model.

that information congruent with subjects' prior attitudes is evaluated as stronger than incongruent information, and that congruent information is accepted uncritically while incongruent information is subject to counter-arguments. They find attitude polarization patterns among some participants in their experimental study.

Another form of biased information processing can be represented by Zaller's (1992) notion of "partisan resistance". This refers to the fact that the rate of acceptance of incoming information is determined by individuals' underlying partisan predispositions. By regulating the acceptance or rejection of political messages, a partisan disposition helps to minimize the acceptance of inconsistent information and consequently reduces the probability of opinion change.⁸ Furthermore, having a partisan disposition can also affect the distribution of mental considerations, or what Zaller calls "inertial resistance". A voter who refuses to internalize inconsistent messages will, over time, accumulate a set of mental considerations that are skewed in the same direction as her partisan disposition. If, on some occasion, she accepts an inconsistent message, her opinion will not change much given the prominence of previously stored consistent considerations. Instead, if an individual with a balanced set of considerations (i.e. an independent that shares both liberal and conservative considerations on an issue) accepts an inconsistent message, she will readjust her opinion in a greater degree in the same direction as the message.

Yet another interesting conceptualization of partisan filtering has been proposed by Gaines et al. (2007b) with their notion of *incomplete updating processing*. They argue that any disconnection between empirical facts and beliefs, interpretation and opinions about those facts constitutes an incomplete updating process.⁹ For example, a disconnect between beliefs about an event and the interpretation of those beliefs leads to *meaning avoidance* in which case some partisans update the changes in the empirical reality but fail to incorporate them in their interpretation of the event. Another type of incomplete updating processing is what they call *opinion disconnect*, in which case, people register a change in reality and update their beliefs and interpretations accordingly, but fail to update their opinions. This process seems somewhat related to the notion of cheerful thinking (Gerber & Huber, 2010)), in which partisans maintain an overly optimistic perception of political objects regardless of political events.

⁸Of course, the degree of political knowledge of an individual will also play a significant role in this process. As long as the voter has the contextual knowledge to recognize the characteristics of the received information, she will be able to accept or reject it consistently with her partisan disposition.

⁹Instead, a complete updating process reflects the case in which a change in empirical reality leads to a relatively accurate change in beliefs, which leads to a change in interpretation in the corresponding direction, which, in turn, leads to a change in opinion consistent with the new interpretation. Arguably, this complete updating model is equivalent to the Bayesian rational learning model.

Selective Information Reception: This refers to the case in which partisans acquire different information given differential exposure and/or attention, and thus, break the common interpretation of events assumption. Most commonly, it is expected that individuals will acquire information that is consistent with their previous opinions, and consequently, end up reinforcing them. Gerber & Huber (2010) argue that selective exposure does not necessarily bias the cognitive process of learning itself, but only the reception of information. However, that emerges is why do partisans self-select themselves to information that, arguably, reinforces their previous beliefs. Following Gaines et al. (2007b) selective reception of information can be understood as another form of an incomplete updating process—particularly, what they call fact avoidance—in which information that might create mental discomfort is downgraded or ignored all together. Whether due to previous experience or some other factor, individuals may anticipate that certain coverage or description of events is untrustworthy or biased and decide to ignore it. In any case, whether selective information reception reflects biased information processing or not, it implies that the common interpretation assumption is empirically inadequate in the sense that it fails to capture the partisan motivated pattern of information reception.

An important limitation of the current study is its agnosticism regarding the origins or sources of any of these information processing biases. In other words, if they are at work they will be detected in the empirical results, but these results will be unable to provide any assertion as to which source of biases, or combinations of sources are at work.

4.3 Variables and Measurement

To test the Bayesian unbiased voter hypothesis I employ the ANES 2008-2009 multi-wave panel study (ANES, 2010). This longitudinal survey contains a rich set of variables that were measured repeatedly and cover many topics on political and electoral behavior. The study collected data from January 2008 through September 2009 through monthly surveys that panel members completed on the Internet. However, only ten waves of the study asked about political affairs (six of them before the November election).

In the current paper, I analyze only data collected up to the November 2008 wave given that this period overlaps with the 2008 presidential campaign. As many scholars have shown (Lazarsfeld et al., 1968; Gelman & King, 1993; Lodge et al., 1995; Alvarez, 1998, among others), electoral campaigns can be understood as collective learning experiences marked by an increase in overall levels of knowledge about political objects and the activation of latent orientations. The data gathered

during the presidential campaign period constitutes, in consequence, a particularly appropriate source for the purposes of modeling the dynamics of voter learning.

The empirical analysis is based on a set of questions about highly salient issues during the presidential campaign. The questions, as well as wave of application and coding, are summarized in Table 4.1.¹⁰ While my intention is not to claim that the findings from these variables extend to all other political opinions, the logic behind choosing them is that they presumably played an important role during the presidential campaign and exercised a significant influence over many voters' decision making. Some recent studies support this assertion. For example, Pasek et al. (2009) model presidential vote choice in the 2008 election and find significant effects for presidential approval, perception of the economy and candidate trait evaluations.¹¹ Jacoby (2009), on the other hand, finds that opinions on the Iraq war and evaluations of the national economy did not have a significant effect to predict the vote, but a simple glance at voters' perceptions of the most important issues during the election confirms the high saliency of these two issues. For example, in an ABC News/Washington Post Poll conducted between October 30- November 2 indicated that 50% of respondents mentioned "the economy" when asked "What was/is the single most important issue in your choice for president: the economy, the war in Iraq, terrorism, energy policy, health care, or something else?". The war in Iraq and health care were the second most mentioned responses with 10% each.¹²

Table 4.1: Dependent Variables

Variables	Waves	Predicted Response
1) Evaluation of Political Leaders :		
Like/Dislike Barack Obama (Candidate)	Jan, Feb, Jun, Sept, Oct	"Like"
Like/Dislike John McCain (Candidate)	Jan, Feb, Jun, Sept, Oct	"Like"
Like/Dislike George W. Bush (President)	Jan, Feb, Jun, Sept, Oct	"Dislike"
Approve of George W. Bush (President)	Jan, Feb, Sept, Oct	"Approve" + "Neither approve nor disapprove"
2) Opinions on Iraq War:		
Increase or decrease number of troops in Iraq	Jan, Feb, Oct, Nov	"Less troops"
Favor or oppose setting deadline for withdrawing US troops	Jan, Feb, Oct, Nov	"Favor"
3) Opinions on the Economy:		
Evaluation current national economy	Jan, Feb, Oct, Nov	"Worse"
Expectation future national economy	Jan, Feb, Oct, Nov	"Worse"

¹⁰Question wording of employed variables is available in the appendix.

¹¹Though the significance of results regarding the perception of the economy varies across alternative model specifications.

¹²Results from the poll can be find here: <http://www.ropercenter.uconn.edu/cgi-bin/hsrun.exe/roperweb/pom/pom.htx;start=ipollsearch?TopID=425>. The Roper Center contains many more survey results near the election that report similar findings.

A second, more technical, requirement to include any of the opinion variables available in the ANES study is that a variable must have been measured on at least four occasions. Indeed, as I will show in the following section, each of the estimated statistical models has four random parameters, which means that there must be at least four available responses for each survey respondent.¹³

The second and third columns of Table 4.1 detail the waves of the ANES survey during which the questions were asked, and the response category that is predicted in the statistical models. Notice that the original questions have ordinal response categories (which vary between 3 and 5 points), but I recoded them into binary responses in order to simplify estimation of the statistical models.¹⁴ For example, respondents could answer the political leader evaluation questions by selecting “like”, “dislike”, or “neither like nor dislike”, but the response “like” is coded as one, and all other options are coded as zero. Notice that for the approval question, both “Approve” and “Neither approve nor disapprove” were coded as one given the very low frequency of “Approve” response alone. A similar argument applies to the evaluation of Bush; given the low frequency of “Like” responses I modeled the response option “Dislike”.

The independent variables in the statistical models include the following: a) partisanship, measured through the common seven point scale with higher values representing stronger republican identification; b) a liberal-conservative self location scale measured through a seven point scale with higher values representing stronger conservative identification; c) a six-point political knowledge additive index (Cronbach’s $\alpha = 0.70.$); d) standard demographic control variables (gender, age, education and two indicator variables for Hispanic and Afro-American ethnicity); and e) a linear time trend variable, which sequentially enumerates the wave in which responses take place. Ideally, survey questions would have been asked with similar time intervals between each measurement occasion. Instead, on some occasions, questions were asked during two consecutive months, while for others, there are gaps of several months between each measurement. The analysis will simply have to omit any perturbations the varying amount of time might introduce.¹⁵

Importantly, all independent variables—with the exception of the political knowledge index and the time trend variable—were measured in the first wave of the study, and even though some of

¹³More specifically, the likelihood of a random coefficient model does not have a maximum if the cluster size (in this case, the number of observations per survey respondents) is less than the number of random coefficients (for details see: Skrondal & Rabe-Hesketh, 2009).

¹⁴As will be described in Section 4, the employed statistical model is quite complex and the addition of the threshold parameters involved in an ordinal logit/probit model is very difficult to implement. A common alternative would have been to employ a linear model with normally distributed errors. However, the distribution of several of the dependent variables (particularly those referring to Bush) are very skewed, which makes the normal assumption entirely unrealistic. Recoding the variables into binary responses entails, of course, some loss of information, but this seems associated with a lower cost than a normal error distribution assumption.

¹⁵See appendix for details on question wording.

them were measured repeatedly I employ only their value from the first wave of measurement. This is done to avoid possible simultaneous causation risks where perception of political events might influence partisan and ideological preferences - especially considering that the data is collected along a highly contested electoral campaign. The political knowledge index was measured during the second wave of the study.

4.4 Statistical Model

4.4.1 A dynamic random coefficient approach

To empirically test the unbiased information processing hypothesis, I employ a multivariate autoregressive random coefficient model. This statistical model has several advantages that make it especially suitable for the goal of the study. It is useful to review these advantages in detail.

In the first place, mimicking the formal models reviewed in Section 2, a random coefficient structure can allow for individual-level heterogeneity in the effect of prior opinion by estimating the autoregressive parameter as a random coefficient. This is an important property because it is not possible to directly measure the degree of variance of individuals' priors, at least with the available data. Instead, by allowing the lagged opinion regression parameter to vary across all individuals in the sample, the estimates of all other variables in the model will be calculated accounting for heterogeneous prior influence. The underlying assumption is that the strength of association between lagged and current opinion is a function of prior opinion precision, though it might be influenced by other factors as well.¹⁶ One restriction of the statistical analysis is that it cannot account for any individual level variability of prior influence across time. That is, each individual estimate reflects the average influence of prior opinion across the time period covered by the panel study.¹⁷

A second advantage is that the random coefficient model can estimate an individual level rate of opinion change. To estimate this rate, I include the linear time trend variable (*Time*) whose parameter captures the rate of change of individuals' opinions. Given the rather limited number of waves contained in the ANES panel survey, it is not possible to model the passage of time in a more sophisticated manner (i.e. including a quadratic variable), but fortunately, a simple linear

¹⁶The importance of this specification is critical. Any potential result regarding the impact of partisanship on rates of opinion change must account for varying levels of prior opinion strength; otherwise, any observable pattern may be due to the correlation between partisanship and prior opinion strength.

¹⁷This is possible, at least in theory, with more data points per survey respondents. However, with only 4 or 5 survey waves, it is not possible to allow some sort of dynamic movement (such as in a dynamic linear model context) in the evolution of the random autoregressive parameter.

trend variable does not terribly misrepresent the evolution of respondents' opinions considered in this study. Whatever fluctuation of individuals' opinion trends is not captured by the linear trend variable is considered measurement error. Assessing whether the variability of this parameter correlates with respondents' party identification is the chief objective of the empirical analysis.

Third, the specified statistical model can directly account for the initial conditions problem. As is well known, dynamic random effects models, particularly those with a small number of time points that do not account for the first observation (Y_{i1}), are prone to endogeneity problems (Heckman, 1981; Aitkin & Alfo, 1998; Fotouhi, 2005; Wooldridge, 2005). Indeed, not accounting for Y_{i1} implies assuming that the unobserved heterogeneity of individuals' opinions (or the variability of the random intercept in multilevel modeling parlance) is independent of Y_{i1} . In other words, it means assuming that an individual's average response to a repeated survey question is independent of her first response. This not only seems dubious from a conceptual point of view, but is clearly unsustainable given that, as will become clear from the empirical results, opinions tend to strongly correlate across panels. Fortunately, a few solutions have been proposed recently to deal with the initial conditions problem, particularly for dynamic binary data such as the one employed here. For example, Wooldridge (2005) demonstrated that consistent estimates can be obtained by simply conditioning the unobserved effects on Y_{i1} for a series of non-linear models such as probit, Tobit and Poisson regression. This solution is very easy to implement, but it still implies dropping the first observation for all respondents from the data set, and this is a costly option when the number of waves is limited. Another recent solution was proposed by Aitkin & Alfo (2003) who suggest to jointly model the responses from the first time period and the successive waves while keeping both models connected through the random coefficient structure. In this paper, I implement this latter option. This solution is specified in the next section which details the statistical equations.

Finally, the last advantage of the random coefficient model is that, like any type of regression technique, it can easily control for the effect of alternative variables. Through this route, although it is not ideal, I control for the other conditions of opinion change that can be accounted for by the Bayesian rational learning model. More specifically, I include a liberal-conservative self-location variable as a proxy for possible alternative evaluative criteria between partisan groups. Hence, any potential effect of partisanship on the rate of opinion change is estimated while controlling for individuals' ideological preferences. Similarly, to control for voters' perceived level of variation of M_t I include a political knowledge additive index into the statistical model. It is well known that voters' level of political knowledge is a strong predictor of their degree of awareness of political

events as well as their reception of news from the media (Zaller, 1992; Price & Zaller, 1993; Carpini & Keeter, 1996).

4.4.2 Statistical Equations

The statistical model I implement, which follows Aitkin & Alfo (2003), can be considered a variation of a standard two-level autoregressive hierarchical model with responses from wave t nested within respondents i . It deviates from a standard model by jointly estimating a separate equation for the first outcome ($Y_{i,t=1}$) and another for all other subsequent outcomes ($Y_{i,t \geq 2}$). To implement this, I construct an indicator variable (D_{it}) with values one for all measurement occasions $Time \geq 2$, and zero for $Time = 1$, and then interact D_{it} with all variables included in the statistical model. Accordingly, at the response level, Y_{it} is made a function of an intercept, the dummy D_{it} , the interaction between a lagged $t - 1$ dependent variable and D_{it} , and the linear trend variable interacted with D_{it} . Each of these four parameters varies across respondents of the sample. Formally, the equations are:

$$\begin{aligned} P(Y_{it} = 1) &= f(\beta_{0i} + \beta_{1i}D_{it} + \beta_{2i}Time_{it} * D_{it} + \gamma_i Y_{it-1} * D_{it}) \\ &= f([\beta_0 + \nu_{0i}] + [\beta_1 + \nu_{1i}]D_{it} + [\beta_2 + \nu_{2i}]Time_{it} * D_{it} + [\gamma + \mu_i]Y_{it-1} * D_{it}) \end{aligned}$$

where $f = \exp(\cdot)/(1 + \exp(\cdot))$. The linear predictor for the first measurement occasion (that is, when $D_{it} = 0$) is equal to $\eta_{it=1} = \beta_0 + \nu_{0i}$, while for subsequent occasions $\eta_{it \geq 2} = \beta_0 + \beta_1 + \beta_2 Time_{it} + \gamma Y_{it-1} + \nu_{0i} + \nu_{1i} + \nu_{2i} Time_{it} + \mu_i Y_{it-1}$. Importantly, while this specification estimates a separate equation for the first outcome and subsequent outcomes, it keeps them connected in that they share the same random coefficient covariance matrix. The variance of the initial responses ($\sigma_{\nu_{0i}}$) is also allowed to be different from the variance of the subsequent observations ($\sigma_{\nu_{1i}}$), but ν_{0i} and ν_{1i} (as well as ν_{2i} and μ_i) are all constrained to co-vary. In other words, the model assumes:

$$(4.4) \quad \begin{bmatrix} \nu_0 \\ \nu_1 \\ \nu_2 \\ \mu \end{bmatrix} \sim N \left(\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_{\nu_0}^2 & & & \\ \sigma_{\nu_0, \nu_1} & \sigma_{\nu_1}^2 & & \\ \sigma_{\nu_0, \nu_2} & \sigma_{\nu_1, \nu_2} & \sigma_{\nu_2}^2 & \\ \sigma_{\nu_0, \mu} & \sigma_{\nu_1, \mu} & \sigma_{\nu_2, \mu} & \sigma_{\mu}^2 \end{bmatrix} \right)$$

The next step is to incorporate survey respondent level variables that predict the variability of parameters β_{0i} , β_{1i} and β_{2i} . Given the absence of explicit theoretical expectations the variability

of the effect of the autoregressive parameters is left un-modeled. That is:

$$\begin{aligned}\beta_{0i} &= \phi_{00} + \phi_{01}PID_i + \phi_{02}LC_i + \phi_{03}PK_i + \sum_z \phi_{0z}X_i^C + \nu_{0i} \\ \beta_{1i} &= \phi_{10} + \phi_{11}PID_i + \phi_{12}LC_i + \phi_{13}PK_i + \sum_z \phi_{1z}X_i^C + \nu_{1i} \\ \beta_{2i} &= \phi_{20} + \phi_{21}PID_i + \phi_{22}LC_i + \phi_{23}PK_i + \sum_z \phi_{2z}X_i^C + \nu_{2i} \\ \gamma_i &= \phi_{20} + \mu_i\end{aligned}$$

where PID represents respondents' party identification in the first wave of the panel study (*Time* = 1), LC is self-placement on the liberal-conservative scale in the first wave (*Time* = 1), and PK is individuals' score of the political knowledge additive index in the second wave (*Time* = 2). The term X_i^C reflects demographic control variables which include age, gender, education, and two dummy variables for ethnicity.

Model parameters were estimated within an MLE framework using adaptive Gauss-Hermite numerical integration.¹⁸ Most models were estimated using five quadrature points, unless this involved some convergence issues, in which case I used three quadrature points. On two occasions¹⁹ the estimated covariance matrix of the random effects (equation 4.4) included a perfect correlation for the covariance term σ_{ν_1, ν_2} . While not ideal—given that it might denote convergence issues—all other components of the covariance matrix returned numerical quantities lower than one. Simplified versions of the model indicated that the estimated parameters converged.

4.4.3 Empirical Results

Results from the statistical models are shown in Table 4.2. All independent ordinal and continuous variables were mean centered, including the linear time trend variable (*Time*) and the lagged dependent variables. Mimicking the logic of mean centering, the D_{it} dummy variables were rescaled with code one recoded as 0.1, while code zero was not modified, and thereby constraining the sample mean to be closer to zero. It has been well established in the literature (see for example: Pinheiro & Bates, 2000; Raudenbush & Bryk, 2002), that mean centering the level one covariates can dramatically reduce the correlation among the random effects and thereby prevent the numerical optimization routine from not converging. In the present case, applying these linear transformations, particularly the recoding of the D_{it} dummy variable, proved critical given that

¹⁸Particularly through the R library `lme4` (Bates & Maechler, 2010).

¹⁹Specifically, for the question about favoring a deadline to withdraw from Iraq and Bush's presidential approval.

very high correlations and potential convergence problems were common.²⁰

While there are many interesting results across Table 4.2, I will focus mostly on those referring to the role of partisanship. This variable appears on three occasions; for the initial response equation (*Party ID*), the random intercept equation ($D \times \textit{Party ID}$), and the random trend equation ($D \times \textit{Time} \times \textit{Party ID}$). The $D \times \textit{Party ID}$ coefficient represents the effect of partisanship (measured at the first wave) over the repeatedly measured dependent variable for the second and subsequent occasions. This coefficient is statistically significant (with $p < 0.01$) in the equations predicting Like McCain, Dislike Bush, and Favor sending less troops. This means that the effect of partisanship over individuals' responses on measurement occasions two and after is significantly different from the effect of the first occasion. On the other hand, the $D \times \textit{Party ID}$ coefficient does not have a significant effect for the Like Obama, Approve Bush, Favor establishing a deadline withdrawing troops in Iraq or both national economy evaluation equations. In this case, the effect of partisanship for occasions two and after is not statistically distinguishable from the estimated coefficient in the initial response equation, which is indeed significant and very large for all models in Table 4.2.

However, more important than the direct effect of partisanship over the initial or subsequent occasions is the parameter of the $D \times \textit{Time} \times \textit{Party ID}$ term. This represents the effect of partisanship over the rate of opinion change of the survey respondents. As mentioned above, a significant effect of partisanship, holding all else constant, indicates that partisans from different groups update their opinions at different rates, which is indicative of biased information processing. Results from Table 4.2 provide quite extensive support for this possibility. Indeed, of the eight models shown in Table 4.2, six have significant effects at a $p < 0.001$ level, and one is close to significant at a 90% level of confidence (Favor deadline withdrawing model). Instead, only in the model predicting individuals' evaluation of the current economy does the $D \times \textit{Time} \times \textit{Party ID}$ term have a non-significant effect.²¹

²⁰More specifically, when models shown in Table 4.2 are estimated with the D_{it} dummy scaled with values one and zero the random effects covariance matrix of these models will be singular with perfect correlations between the random effects, which commonly denotes an ill-specified model or convergence problems. Instead, recoding the D_{it} value of 1 to 0.1 provides invertible random effects covariance matrices with no perfect correlations—with the exception of the two cases mentioned above—between random effects. In any case, the parameter estimates from both types of models are very similar, and provide the same substantial results.

²¹There are 73 and 74 respondents that did not respond the party identification and liberal conservative scale, respectively, during the first survey panel. These cases were excluded from the empirical analysis. If they are incorporated using midpoint replacement (that is, coding them as independents and moderates), the number of respondents would increase from 1482 to 1511. Models estimated with these cases included in the analysis lead to virtually the same results than in Table 4.2.

Table 4.2: Logistic Hierarchical Dynamic Models of Political Opinions

	Like McCain		Like Obama		Dislike Bush		Approve Bush		Favors sending less troops		Favors deadline for withdrawing		Future Economy will be Worse		Current Economy is Worse	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Intercept	0.44	0.20	-0.21	0.24	0.95	0.44	-0.77	0.24	-0.55	0.21	-1.63	0.23	-0.90	0.21	1.13	0.22
Gender	-0.30	0.12	0.18	0.15	-0.63	0.27	0.27	0.15	0.62	0.13	0.76	0.14	0.08	0.13	0.07	0.13
Age	0.02	0.00	-0.00	0.00	-0.02	0.01	-0.00	0.00	-0.02	0.00	-0.02	0.00	-0.01	0.00	0.01	0.00
Education	0.31	0.06	0.37	0.07	0.40	0.12	-0.38	0.07	0.00	0.06	-0.03	0.06	0.02	0.06	0.18	0.06
Lib-Con Scale	0.07	0.04	-0.26	0.05	-0.70	0.09	0.39	0.05	-0.20	0.04	-0.18	0.05	-0.07	0.04	-0.21	0.05
Party ID	0.19	0.04	-0.35	0.04	-1.24	0.08	0.60	0.04	-0.35	0.04	-0.42	0.04	-0.13	0.04	-0.19	0.04
Pol. Know	0.05	0.04	0.10	0.04	0.13	0.08	-0.07	0.05	0.27	0.04	0.16	0.04	0.01	0.04	-0.02	0.04
Black	-1.01	0.27	1.02	0.32	-1.56	0.43	-0.02	0.29	-0.09	0.25	0.24	0.25	-0.64	0.25	-0.48	0.26
Hispanic	-0.11	0.28	-0.53	0.32	0.03	0.61	-0.53	0.35	0.06	0.30	0.43	0.31	0.14	0.27	0.06	0.31
D	-8.66	2.43	-1.53	2.73	-8.62	3.98	-12.88	5.49	11.95	2.77	8.97	3.36	0.19	2.55	58.13	10.60
D × Time	-0.06	1.29	3.53	1.71	2.66	2.00	-9.05	7.94	1.03	1.84	-4.77	3.89	-6.42	1.78	14.12	12.02
D × Y _{it-1}	20.60	1.00	23.47	1.16	21.08	1.57	81.37	3.76	23.26	1.06	26.76	1.61	10.36	0.91	19.38	5.59
D × Gender	1.95	1.47	-1.50	1.66	3.85	2.44	3.80	3.21	-4.47	1.69	-5.83	2.01	-0.34	1.54	5.64	6.30
D × Age	-0.19	0.05	-0.09	0.06	0.13	0.08	-0.03	0.10	0.20	0.06	0.11	0.07	0.01	0.05	-0.01	0.20
D × Education	-1.93	0.70	-1.53	0.78	-1.68	1.10	2.35	1.48	1.51	0.79	2.54	0.92	-1.70	0.72	3.18	2.95
D × Lib-Con Scale	1.73	0.50	-0.78	0.56	1.78	0.78	-1.03	1.06	1.43	0.58	-1.39	0.66	1.28	0.52	-0.40	2.26
D × Party ID	1.00	0.43	-0.69	0.47	3.26	0.71	0.37	0.97	1.35	0.50	-0.67	0.57	0.27	0.45	-1.18	1.94
D × Pol. Know	0.91	0.45	1.46	0.51	3.52	0.73	1.24	0.90	-3.37	0.52	-3.47	0.61	-0.70	0.47	2.74	1.98
D × Black	-0.04	3.58	-0.22	3.59	3.96	3.90	4.31	6.50	1.63	3.48	0.42	3.71	0.85	3.06	-11.10	11.61
D × Hispanic	-3.95	3.46	4.18	3.60	5.50	5.52	10.07	6.90	4.12	4.06	5.30	4.49	-1.49	3.31	-2.67	14.79
D × Time × Gender	0.58	0.79	-1.68	1.04	-0.94	1.23	-2.50	4.67	-1.82	1.12	-0.67	2.31	0.87	1.07	-6.76	7.25
D × Time × Age	-0.03	0.03	0.00	0.03	0.01	0.04	-0.20	0.15	0.01	0.04	-0.02	0.08	0.03	0.04	0.20	0.23
D × Time × Education	-0.30	0.37	1.69	0.49	1.29	0.56	-2.22	2.18	-1.02	0.52	1.17	1.05	-0.50	0.50	1.16	3.44
D × Time × Lib-Con Scale	0.84	0.27	-1.67	0.35	-0.86	0.40	2.45	1.54	-0.64	0.39	-1.25	0.77	0.48	0.37	0.58	2.66
D × Time × Party ID	1.35	0.23	-1.56	0.29	-1.22	0.36	3.86	1.36	0.51	0.33	-3.40	0.65	0.91	0.32	0.50	2.31
D × Time × Pol. Know	-1.25	0.25	-1.22	0.31	-1.14	0.37	-2.28	1.39	0.72	0.34	-0.15	0.68	0.52	0.34	-0.55	2.22
D × Time × Black	0.74	2.07	1.30	2.25	-3.32	2.04	-2.94	9.83	-1.83	2.31	1.42	4.20	-0.10	2.31	10.42	14.26
D × Time × Hispanic	-1.56	1.98	4.50	2.22	3.61	2.98	-8.73	10.40	1.56	2.95	6.68	5.40	-2.91	2.53	0.17	16.64
N waves	5		5		5		4		4		4		4		4	
N observations	6957		6957		6957		5682		5431		5431		5431		5431	
N respondents	1482		1482		1482		1482		1482		1482		1482		1482	
$\sigma_{Intercept}$	0.73		1.25		2.69		0.66		0.73		1.01		0.79		0.66	
σ_D	2.86		0.09		6.54		5.18		9.58		5.03		5.86		50.95	
$\sigma_{D \times Time}$	3.01		6.90		5.42		35.53		4.28		18.65		3.78		53.85	
$\sigma_{D \times Y_{it-1}}$	17.48		17.49		20.51		68.39		19.27		25.86		12.88		65.00	

While these results are quite informative, they do not provide an intuitive representation of how different the rates of opinion change are across partisan groups. In order to assist interpretation I plot the predicted probabilities that a typical individual from the survey sample will respond affirmatively to the questions considered here (that is, $Pr(Y_{it} = 1)$) across time and for each partisan group; these plots are illustrated in Figure 4.1.²²

The probabilities are calculated with all ordinal and continuous variables set at their mean (which is zero given that they are mean centered), and with male gender and white race. A useful concept to guide the analysis of these patterns is to distinguish between convergence and polarization of opinion trends. Convergence can be defined as whenever the rate of opinion change between groups is different, but the difference between groups decreases with time. Polarization occurs whenever the signs of the rates of opinion change are opposite between partisan groups, and the difference between groups increases with time as well.

The results shown in Figure 4.1 are quite impressive in that they all indicate situations in which the rate of opinion change is different across partisan groups. The most remarkable cases are respondents probabilities of liking the current president Barak Obama, former republican presidential candidate John McCain, ex-president George W. Bush and of favoring a deadline for withdrawing troops from Iraq. Opinion trends on these four issues follow strong polarization trends. In all of them the slope of the opinion trend among strong democrats is of opposite sign than for strong republicans, and the distance between groups increases with time. The magnitude of these differences is quite dramatic. For example, in February 2008 there was a 21% and 39% difference in the probability of liking McCain and Obama between strong democrats and strong republicans, respectively. These differences increased to 68% and 81% in October 2008. An equally dramatic pattern can be found for individuals' opinions on withdrawing troops from Iraq.

Individuals' affective evaluation of Bush also follows a clear polarization pattern. The differences between the first and last wave are less pronounced than the ones observed for McCain or Obama, but it is quite remarkable that a polarization pattern can be observed at all. Indeed, given that by the time of the first survey both Democrats and Republicans had accumulated vast experience with ex-president Bush in office, it could have been assumed that respondents' opinions were closer to an equilibrium point at which further information would not have any effect. None the less, the

²²I say "typical" as to imply that the predicted probabilities refer to someone from the sample whose random effects were equal to zero. In other words, a respondent with average propensity to respond affirmatively, with average influence of prior opinion, and average rate of opinion change. All point estimates are plotted with their respective 95% confidence intervals. Following suggestions from Xu & Long (2005) and Skrondal & Rabe-Hesketh (2009), these were computed by first calculating the confidence intervals of the linear predictor and then transforming them into probability scale using the inverse of the logistic function. The procedure is called endpoint transformation by Xu & Long (2005).

results indicate a clear increase in the degree of dislike for Bush associated with the passage of time and a stronger democratic identification.

Convergence processes can be observed among the remaining opinion variables. Both respondents' perception of the future state of the economy and their opinion on sending less troops to Iraq shows a process of convergence in which the proportion of people responding affirmatively becomes increasingly similar across partisan groups, albeit at very different rates. For the Iraq question, the sign of the slope across the strongest Democratic and Republican group are opposite; that is, while strong Democrats become less sympathetic with this policy, strong Republicans become more supportive of it. The predicted opinion trends on the state of next year's economy shows that all groups tend to decrease the probability of negative responses, but again at different rates. Responses to Bush's presidential approval question also show a convergence pattern, but at dramatically different rates. While approval rates among Democrats were very close to the bottom by the February survey (and even lower after), Republicans resisted decreasing their approval. In fact, strong Republicans' linear trend is almost flat across the election year.

In summary, the results indicate that for most of the opinion variables considered in this study there are wide partisan differences in the rate of opinion updating. The employed panel data cannot provide clear indications regarding the source of these biases, but it is quite informative in terms of demonstrating their existence and importance. Also, there is a significant degree of heterogeneity in the magnitude of the partisan differences across the observed rates of opinion change. While in some cases opinion change is reflected through dramatic polarization tendencies, such in the evaluation of political leaders, in others more moderate asymmetric convergence process were observed.

Finally, there is another important result worth reviewing briefly. All models in Table 4.2 show that the dynamic parameter has a large magnitude. Without exception all models fit the data much better by including an autoregressive term. There also is a great degree of heterogeneity associated with the dynamic coefficient, meaning that the influence of Y_{it-1} over Y_{it} is highly variable across the population as well. Comparison of the parameter estimate of $D \times Y_{it-1}$ with the square root of its variance component, shows that in all cases this last term is almost of the same magnitude, or even larger (such as in the case of both evaluation of the economy models). In the next section I discuss some implications of these results.

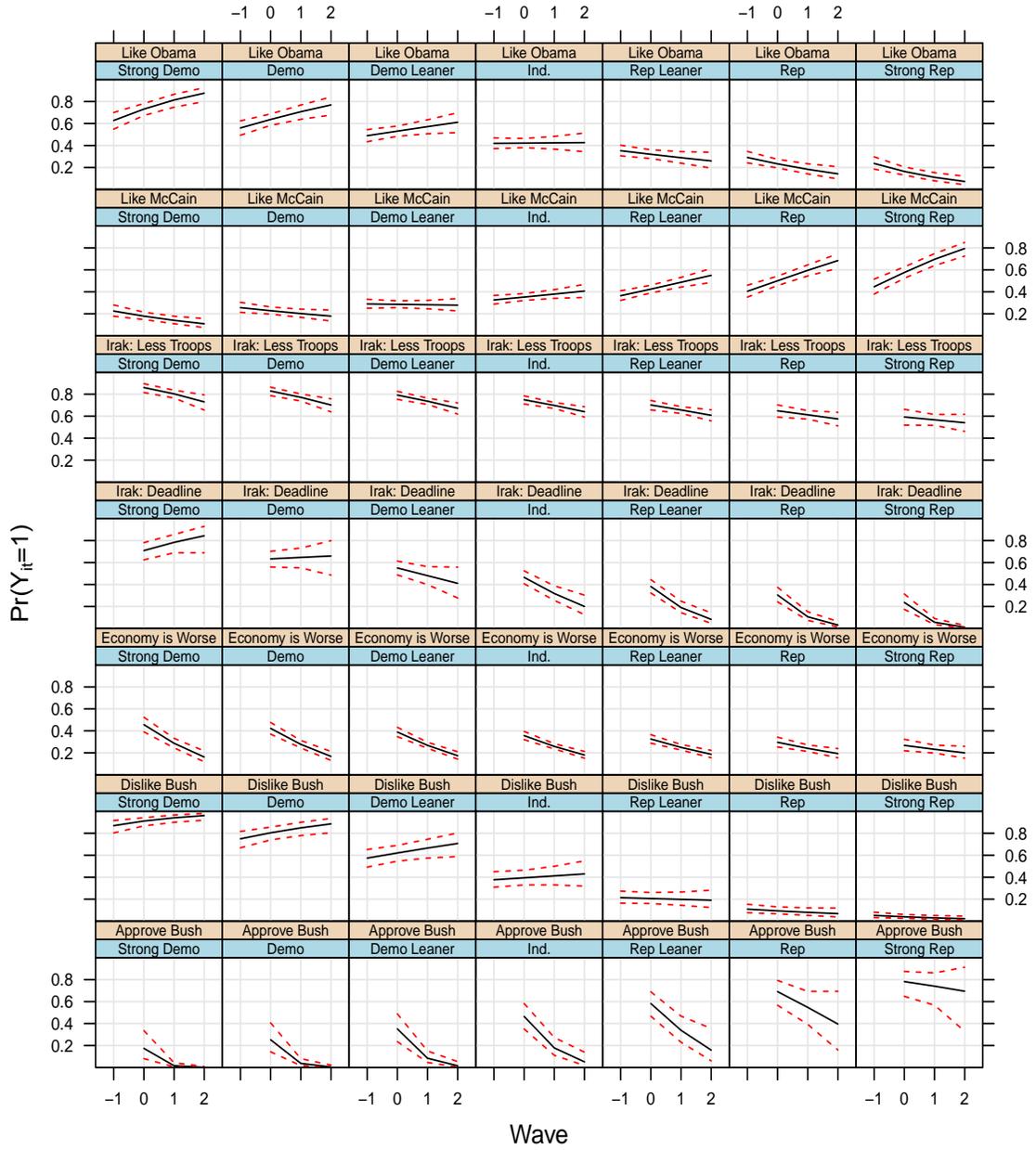


Figure 4.1: $\Pr(Y_{it}=1)$ by Study Wave and Party Identification with 95% Confidence Intervals.

4.4.4 Discussion

Among the estimated results the cases of polarization are particularly important. They reflect behavioral patterns that are very difficult to account for a Bayesian updating model with unbiased voters. As Bullock's (2009) analytical work indicates, polarization patterns cannot emerge within a static environment, and might emerge in a dynamic environment, but under very unusual conditions, namely, if divergence of opinion occurs, which is fostered by strong prior opinions, noisy information and changing environmental conditions, and the new information contradicts expectations for some group. Whether or not this scenario fits the existing political conditions observed during the 2008 campaign may be a matter of interpretation, but given the high saliency of the issues in question and their extremely partisan nature, it might seem difficult to characterize political messages regarding these issues as being drawn from distributions with high variances or where expectations were contradicted. As a consequence, it seems safe to conclude that the polarization patterns are clear manifestations of biased information processing.

Results from the questions about the future state of the economy, sending more troops to Iraq and Bush approval also seem at odds with the Bayesian rational learning model. While the convergence of opinions at different rates is a pattern consistent with the unbiased hypothesis, it is not clear whether these results can be attributed to different prior opinion precision. Given the structure of the statistical models that were estimated accounting for prior opinion, heterogeneous prior influence, ideological preferences and level of political knowledge, the observed patterns more likely reflect biased information processing in which different partisan groups have different levels of resistance to incoming messages. In the long run, the information might have been persuasive enough that everyone's opinions converge—particularly in the case of the economic crisis—but some partisan groups took longer to adjust their opinions than others.

Another mechanism that is not inconsistent with the Bayesian learning model and that can explain, at least partially, the observed results is the possibility that Democrats and Republicans employ different evaluative criteria. Could this be the case? To address this possibility, the statistical equations controlled for the liberal-conservative scale. Interestingly, this variable had an important effect over the rate of opinion updating on several issues, particularly for the affective evaluation of political leaders. This finding is even more important in light of the results of partisanship; even while holding constant the significant influence of the liberal-conservative scale, partisanship still exercises a tremendous influence over respondents' opinion updating rates. Of course, it can be argued that some other alternative evaluative criterion not well captured by the

liberal-conservative scale is at work. However, this seems a risky statement because it is not clear what other component systematically differentiates Democrats from Republicans other than different ideological preferences and, of course, their affective preference for one party over the other. Moreover, whatever that factor might be, its influence must: a) run across diverse political issues such as the ones considered here and b) have an effect that runs in the same direction as that of partisanship, but not be partisanship itself. Possible candidates that fit this characterization are not easy to imagine.

Finally, the following should be noted regarding the results from the lagged dependent variables. While the high mean and cross-sectional variance of the effect of $D \times Y_{it-1}$ may not seem tremendously shocking, they are important results because they are well reflected by some core assumptions of the Bayesian learning model. Indeed, contrary to other opinion formation models that emphasize the random nature of citizens' attitudes and opinions (Converse, 1964), the Bayesian learning model highlights the evolutionary nature and serial dependence of citizens' opinions. The highly variable effect of the autoregressive term is also well captured by the Bayesian rational learning framework given its premise that the influence of prior attitude on current attitude is variable across the population. In summary, while the results from the time trend equations are at odds with the unbiased voter hypothesis, this does not imply that the entire Bayesian framework does not count with some very powerful theoretical elements. On the contrary, both the emphasis on opinion serial dependence and prior opinion precision heterogeneity seem well reflected in the analyzed data.

4.5 Conclusions

In this paper, I empirically tested the unbiased information processing hypothesis proposed by Gerber & Green (1998, 1999); Green et al. (2002), and recently complemented by Bullock (2009). Based on recently available multi-wave panel data, statistical results derived by a dynamic random coefficient model indicated that survey respondents' (lagged) partisanship strongly affected their pace of opinion updating on several highly salient political issues. These results were obtained even after accounting for prior opinion, controlling for levels of political knowledge and ideological preferences, and allowing for unobserved heterogeneous prior influence. In some cases, the influence of partisanship, particularly on their assessments of political leaders and opinions regarding the Iraq war, was so pervasive that clear polarization trends could be observed across the waves of the ANES panel study.

The results provided here should not be considered irrefutable evidence against the Bayesian rational learning model. As I have detailed above, the empirical data, design and employed statistical models have their own limitations. However, I believe that the results of this study are solid enough as to strongly support the incorporation of new elements into the Bayesian rational learning model to help capture heterogeneous patterns of opinion updating. While the Bayesian updating apparatus has much to offer as a sophisticated and parsimonious formal model of opinion formation, it seems reasonable that future formal work should attempt to incorporate more fully important notions such as partisan filtering and resistance to new information. One obvious route is to drop the common interpretation of events assumption. While this may have consequences for the level of mathematical tractability of the model, it is worth adapting the framework in order to make it consistent with strong empirical regularities. This is one point where several behavioral theories such as Zaller's R-A-S model (1992) or motivated reasoning perspectives (Taber & Lodge, 2006) become very useful.

It should also be clear from the results presented above that one cannot infer that all political opinions are biased by individuals' partisanship. In addition to some strong cases of polarization, the results showed more moderate cases of asymmetric convergence. This heterogeneity across the different opinion variables raises the question of why are there different degrees of bias, and perhaps more importantly, what factors might have a systematic effect over the degree of bias in individuals' political updating. Responding to this question is beyond the scope of the current study, but a potential topic of future research is to consider the properties of the issue to which the opinions refer. In other words, while we cannot overlook the individual level attributes that might affect the degree of partisan bias, considerations of the novelty, valence, saliency, etc. of the issue may provide additional explanatory power. Undoubtedly, a more complete picture of voters' learning processes will be achieved once we have more systematic knowledge regarding the conditions that prompt or slow biased updating of political opinions. Advances in this direction would not only be interesting by themselves, but would potentially have important normative implications in terms of identifying specific conditions that encourage citizens to evaluate political issues with small deference to their political allegiances and give more weight to the merits of the arguments.

Appendix: Question Wording of Survey Items

Dependent Variables:

- *Presidential Candidates Evaluation*: a) “Do you like Barack Obama, dislike him, or neither like nor dislike him?”; b) “Do you like John McCain, dislike him, or neither like nor dislike him?”.
- *President Bush Evaluation*: a) “Do you like George W. Bush, dislike him, or neither like nor dislike him?”; b) “Do you approve, disapprove, or neither approve nor disapprove of the way George W. Bush is handling his job as president?”.
- *Opinions about Iraq War*: a) “Compared to the number of U.S. troops in Iraq now, should the number of troops in Iraq three months from now be more, less or about the same?”; b) “Do you favor, oppose, or neither favor nor oppose setting a deadline for withdrawing all U.S. troops from Iraq?”.
- *Evaluation of the National Economy*: a) “Now thinking about the economy in the country as a whole, would you say that as compared to one year ago, the nation’s economy is now better, about the same, or worse?”; b) “What about 12 months from now? Do you think the economy, in the country as a whole, will be better, about the same, or worse in 12 months?”

Independent Variables:

- *Political Knowledge Index*: The index was constructed using 6 items: a) “Do you happen to know how many times an individual can be elected President of the United States under current laws?”, b) “For how many years is a United States Senator elected that is, how many years are there in one full term of office for a U.S. Senator?”, c) “How many US senators are there from each state?”, d) “For how many years is a member of the United States House of Representatives elected that is, how many years are there in one full term of office for a U.S. House member?”, e) “According to federal law, if the President of the United States dies, is no longer willing or able to serve, or is removed from office by Congress, the Vice President would become the President. If the Vice President were unable or unwilling to serve, who would be eligible to become president next?”, and f) “What percentage vote of the House and the Senate is needed to override a Presidential veto?”. Correct responses were coded one, all others as zero.
- *Partisan Identification*: “Generally speaking, do you usually think of yourself as a Democrat, a Republican, an independent, or what?” [For those who mention a party]: “Would you call yourself a strong [Democrat/Republican] or a not very strong [Democrat/Republican]?” [For those who do not mention a party]: “Do you think of yourself as closer to the Republican Party or to the Democratic Party?”
- *Liberal-Conservative Ideological Scale*: “When it comes to politics, would you describe yourself as liberal, conservative, or neither liberal nor conservative?” [If respondent answers Liberal/Conservative]: “Would you call yourself very liberal/conservative or somewhat liberal/conservative?” [If respondent answers neither Liberal/Conservative]: “Do you think of yourself as closer to liberals, or conservatives, or neither of these?”

CHAPTER V

Conclusion

The three papers of this dissertation have provided important new insights about public opinion. Most notably, the first paper shows that the consistency of citizens' political opinions is affected by the complexity of their political environment. Institutional complexity not only modifies the average degree of consistency across a population, but also moderates the role that ideological dispositions and cognitive resources have over individuals' level of consistency. I show that as the environment becomes progressively complex, average levels on opinion consistency decrease, while the positive influence of ideological dispositions and cognitive resources increase. The second paper demonstrates that there is a considerable cross-national variation in the level of association between individuals' party identification and their evaluations of the national economy and performance of government. Furthermore, this variation is highly responsive to the the degree of fragmentation of government. Under highly fragmented governments, such as when multiple parties form the government, the association with partisanship is negligible, but it increases dramatically as authority becomes exercised by single party governments. In this last scenario, political evaluations are highly partisan, even after controlling for numerous economic and political variables. Lastly, the third paper of this dissertation uses panel data to show that party identification systematically affects the rate of change at which citizens update their political opinions. I even find polarization trends for the questions asking survey respondents to evaluate political leaders during the 2008 American presidential election. These results are obtained holding constant respondents' prior opinion and allowing for unobserved heterogeneous prior opinion influence. Consequently, the biased rate of opinion updating cannot be explained by any of the mechanisms that the Bayesian rational learning model has to account for heterogeneous patterns of opinion updating.

These results represent important empirical patterns unaccounted for by previous scholarship. They deepen our understanding of mass opinion by highlighting how certain aspects of citizens' opinion formation that are regularly considered to be widespread, are indeed highly variable cross-

nationally and responsive to the institutional setting and dynamics of electoral competition within each polity.

The contribution of these papers centers not only on the identification of new empirical patterns, but also on the development of broad and rich theoretical frameworks that can account simultaneously for diverse aspects of mass opinion. This is an important goal given the prominence in the field of theories that can account mostly for narrow problems. Whether it by proposing a new conceptual framework, or by extending the study of an important concept to new research areas, or by identifying key aspects to improve of previous theoretical models, this dissertation seeks to develop broad theoretical frameworks that can organize multiple empirical findings with a more unified perspective.

These papers also have important consequences about how we think about political institutions in general. Taken all together, the papers indicate that political regimes that provide their citizens with abundant cues and easy-to-process political information facilitate the organization of political opinions, attitudes and beliefs. Under the assumption that having more citizens with well crystallized preferences is desirable, it follows from this dissertation that when we think about designing political institutions we should not only consider the incentives for political participation or involvement, but also the type of information to which citizens will be exposed given the rules and norms that regulate electoral competition and the exercise of power. Providing an accessible portrait of what options citizens have might not only be efficient for the segment of the electorate involved in political affairs, but might also help to engage a portion of the electorate which would otherwise simply not care about politics.

Despite their contributions and relevance, the papers also leave some issues unresolved. In this last section, I discuss the most critical issues and propose some solutions for their future improvement. Subsequently, I argue in favor of two future productive areas of research that can be derived from this dissertation.

5.1 Some Wrinkles to Iron Out

Among the many empirical results contained in my first paper (“Opinion Consistency and Context Complexity”), there are a few that do not fit expectations particularly well. The most important case is the marginal effect of education and political engagement in politics among the segment of the population that did not express any ideological position on the left-right scale. Contrary to theoretical expectations, the effect of these two variables was increasingly positive as

the political environment becomes less complex.¹ As argued in the paper, with some adjustments these patterns may be reconciled with the theoretical framework. However, more work is in order here to clarify the origins of the discrepancy. Some empirical explorations suggest that the causes underlying these results might be some unaccounted curvilinear patterns. But this is still a tentative hypothesis. More generally, it is not clear at this point whether these departures are a simple empirical deviation from the general theory or require a modification of the proposed theory.

My second paper (“When Do Political Evaluations Become Partisan Judgments?”), needs to address more carefully the possible impact of endogeneity between political evaluations and party identification. Given the cross-sectional nature of the employed data, the paper avoids making strong claims about the casual relationship between these two variables. However, this strategy does not resolve the issue, and neither does it clarify its possible consequences over the estimates of the contextual variables. Two potential routes can help address this difficulty. The first one is to exploit the hierarchical nature of the data set. As mentioned in the paper, incorporating some specific assumptions about the distribution of the bias might lead to unbiased estimates of the contextual effects, even in the presence of endogeneity between partisanship and political evaluations. For example, if one can assume that the endogeneity bias is additive and constant across all surveys, the estimated effects of the contextual variables would be uncontaminated given that the survey level variability of the random coefficients would be estimated correctly. More generally, if reasonable assumptions about the distribution of the endogeneity bias can be developed and justified we could obtain unbiased parameter estimates for the contextual effects. This, of course would not only reinforce our confidence in the results from this paper, but would represent a general alternative for increasing our confidence in the results from observational studies. Now, developing reasonable assumptions about the distribution of the endogeneity bias constitutes a very difficult task given that the bias itself is not observable. The development and specification of this type of assumption might be a worthy enterprise for future methodological research.

A second, perhaps more plausible, alternative for improving my second paper is to complement the current empirical analysis with additional dependent variables that are, arguably, less prone to endogeneity biases. For example, preliminary data analysis revealed similar results to the ones presented in the paper when predicting less easily politicized variables such as respondents’ satisfaction with the state of the education, health services and democracy of their country. Following Fiorina (1981), it is difficult to argue in favor of the exogeneity of partisanship with respect to the

¹More precisely, the effect of education becomes increasingly positive as Clarity of Responsibility and the Party System Instructiveness index increases. The effect of engagement in politics also becomes increasingly positive as the Party System Instructiveness index increases, but it follows theoretical expectations with clarity of responsibility.

evaluation of government performance or the state of the national economy, but it could be done more easily with respect to these other types of issues. Indeed, while the actions of incumbents might have direct consequences over individuals' perception of how government is performing or the the state of the economy, issues such as the state of the educational and health system, and particularly the state of the democracy of respondents' country represent issues that are, presumably, less prone to being framed in partisan terms, and therefore should be less likely to affect individuals' partisanship. Particularly interesting is the case of the quality of democracy which is arguably an issue that is orthogonal to partisan politics. The challenging part of this alternative is to incorporate within the empirical model appropriate contextual control variables that can capture the objective conditions of the educational and health system of each country during the period of the survey. Otherwise, the results will be prone to omitted variable bias.

Lastly, my third paper also has some important potential weaknesses. The most consequential is the idiosyncratic nature of the empirical source, which corresponds to the 2008-2009 ANES panel study. On one hand, this panel survey is unprecedented by collecting monthly interviews during the presidential campaign of 2008. This did not only enable collecting a great number of variables about all sorts of issues, but interviewing panel respondents much more frequently than previous studies. On the other hand, 2008 was a unique election characterized by the presence of a competitive African-American candidate and taking place in the middle of a major financial meltdown. These particularities call into question whether the behavior and voter learning dynamic during this election year are representative of any other type of electoral period. Following work on emotions (Marcus et al., 1995; Brader, 2005) it is likely that the financial meltdown decreased the influence of partisan dispositions by prompting anxiety levels across the voting population. If so, the results shown in the paper should be even more accentuated in other electoral contests. This implies that a necessary step is to expand the analysis to other electoral contest for which panel data is available. Unfortunately, the statistical model is particularly data demanding, and as explained in the paper, requires at least four waves of interviews.

5.2 Future Lines of Research

Given the results from the first two papers, expanding our knowledge of the relationship between mass behavior and the degree of clarity of responsibility of the institutional setting seems a promising path for future exploration. Both of these papers show explicit connections between pattern of mass opinion and clarity of responsibility, and the concept is already a well-known moderator of the

importance of economic voting. Therefore, institutional clarity might have a broad and systematic effects over mass behavior that have not been entirely detected by comparative scholars. More empirical research will be necessary to determine what other factors might be affected by clarity, but given the strong and diverse precedent it has, it appears to be a field with high potential returns. However, we need to understand better what is it about clarity of responsibility that exercises its influence. Is it the fact that higher concentration of power leads to more recognizable unitary actors or that it encourages bimodal information flows where opposition and incumbents parties compete as opposed to cooperate (like in consensual democracies)? Could it be a combination of these two elements? The very fact that this concept is not measured in a standardized way is indicative of the lack of a precise understanding of how its effects take place.² A promising route to better grasp this gap of knowledge is through a experimental research design. Indeed, studying individuals' opinions and evaluations after being exposed to information that manipulates alternative conditions of responsibility and degrees of dispersion of authority can probably help us understand better what specific elements are prompting differences of opinions. These kind of information manipulations could be simple enough to be implemented in national surveys. For example, before being asked to evaluate a certain political outcome (i.e. like the state of the economy) two treatment groups would receive a piece of information in which the political outcome in question is related either to the actions of a single actor (i.e. government) or to a multiplicity of actors (i.e. parties in a coalition). It could hypothesized that those exposed to a single actor information frame will be more likely to express an evaluation consistent with his or her partisan dispositions, as opposed to the treatment group that received the multiplicity of actors treatment. If this hypothesis is confirmed, there would be clear evidence indicating that the ability to identify a unitary actor is one of the key mechanisms through which clarity of responsibility operates.

A second interesting route of future research is to study patterns of opinion updating considering sources of variability other than those stemming from the individual. Two interesting candidates are variations in the type of political issue in question and variation in the environmental conditions. I briefly discuss these two possibilities.

The results of the third paper of this dissertation indicate that the patterns of opinion updating are not equal across all opinion questions. While clear polarization trends can be observed for the evaluations of political leaders and for one of the Iraq war questions, more moderate divergence

²Section 2.3 of my paper "Opinion Consistency and Contextual Complexity" has a detailed discussion about how some of the most well known work measures Clarity of Responsibility. As the discussion shows, there are some variables that are used more frequently than others, but there also is an important lack of common practices and procedures on how to measure this concept.

or asymmetric convergence patterns apply for the other issues in the analysis. This heterogeneity across the different opinion variables raises the possibility that there are different degrees of bias across different type of issues. The interesting research question that derives from this observation is, of course, what characteristics make a political issue more or less prone to being processed with a high level of partisan bias? One potential hypothesis would consider distinguishing the novelty of the issue to which individuals' opinions refer. Political objects that have been extensively debated leave little room for new learning, and as a consequence, opinion trends across partisan groups might not diverge or polarize any further, but instead resemble parallel trajectories. Indeed, if individuals' opinions about a certain political object reached a certain equilibrium at which there is not much more space for further learning, the differences in the evolution of opinions about this issue across partisan groups would remain relatively stable, unless some significant change occurs in how the issue is discussed publicly. Possible examples could be political issues that have divided political parties for long periods of time such as welfare, regulation of the economy and general moral issues. Instead, new issues that voters haven't been exposed to previously leave the most space for change and progressive adjustment in accordance to partisan dispositions. Political issues about new legislation and foreign affairs are two likely examples of the type of issues that would prompt a stronger degree of partisan bias. Transforming these theoretical speculations into concrete empirical analysis is not particularly difficult. All that is needed is panel survey data with a rich battery of questions about political issues. These questions would have to be coded in terms of their degree of novelty, and then introduced into equations just like the ones specified in the third paper of this dissertation.

As mentioned above a second interesting source of variation could be introduced through contextual heterogeneity. This could easily be accomplished with cross-national panel data. Similarly to the first two papers of this dissertation, it could be studied whether patterns of opinion updating vary as a function of changing environmental conditions, and in particular as a function of specific elements like the degree of contextual complexity. Following the logic from the conceptual model of the first paper, it could be hypothesized that as the environment become more complex, and thus the cost of processing information increases, individuals' opinions and attitudes become more stable among the more politically aware segment of the population while rates of non-response and temporal variation increase among the segment of less-aware individuals. In other words, rising levels of environmental complexity would increase the differences in the pattern of updating between the population of politically aware and non-aware citizens. This result would be equivalent to what was

observed with respect to the degree of consistency of opinions. Unfortunately, testing this idea is fairly difficult given the limited amount of cross-national panel data. There is some data available that would allow exploring updating patterns across a limited, but diverse set of political contexts (between 5 and 10 countries following work cited below). What is worse is that the available panel studies (which mostly come from advanced industrialized democracies, though there are some studies from Russia and Mexico) are country specific, and thus, have a high degree of variation in terms of variables included in the study and different measurement strategies. Despite the difficulties some scholars have begun to employ these data sources already (for example see, Green et al., 2002; Prior, 2010). Fortunately, new technologies like web-based surveys and an increasing awareness of the benefits of panel data seem to be leading scholars to collect longitudinal data more frequently.³

³A particularly interesting example is the Making Electoral Democracy Work project (<http://electoraldemocracy.com/>).

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