

EMERGENCE OF POLITICAL PARTIES DURING DEMOCRATIC TRANSITIONS:
AN AGENT-BASED APPROACH

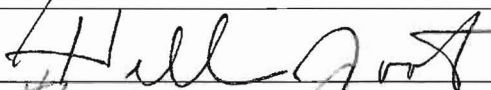
by

Sherzod Abdukadirov
A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Public Policy

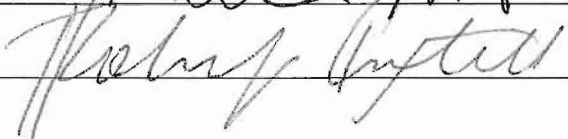
Committee:



Jack Goldstone, Chair


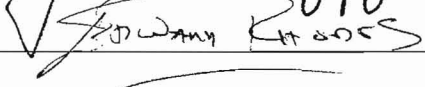


Hilton Root



Robert Axtell

Scott de Marchi, External Reader

James P. Pfiffner, Program Director

Edward Rhodes, Dean

Date: 4/12/2011

Spring Semester 2011
George Mason University
Fairfax, VA

Emergence of Political Parties During Democratic Transitions:
An Agent-based Approach

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at George Mason University

By

Sherzod Abdukadirov
Master of Public Policy
George Mason University, 2005
Bachelor of Science in Information Technology
Rochester Institute of Technology, 1998

Dissertation Director: Jack Goldstone, Professor
School of Public Policy

Spring Semester 2011
George Mason University
Fairfax, VA

Copyright: 2011 Sherzod Abdukadirov
All Rights Reserved

DEDICATION

This is dedicated to the loving memory of my grandfather Abdurauf for being the first and being the constant source of inspiration.

ACKNOWLEDGEMENTS

First and foremost, I owe an infinite debt of gratitude to my wife and colleague Emilia Istrate for always challenging me to achieve my best and not letting me give up, as well as for her unwavering support and endless patience throughout this process. I heartily thank the members of my dissertation committee: Dr. Jack Goldstone, Dr. Hilton Root, both of the School of Public Policy, Dr. Rob Axtell of the Center for Social Complexity, and Dr. Scott de Marchi of Duke University for their invaluable help and guidance in the course of my dissertation. I would like to thank Dr. A. Lee Fritschler and Dr. Catherine Rudder of the School of Public Policy for their mentorship and support throughout my tenure at George Mason University. I would also like to thank the School of Public Policy community for being a great place to explore, experiment, and grow intellectually. Finally, I would like to thank the Institute for Humane Studies for their generous support of my dissertation research.

TABLE OF CONTENTS

	Page
List of Tables	vii
List of Figures	viii
Abstract	x
 CHAPTER 1: RESEARCH FRAMEWORK	 1
1.1 Research Questions	3
1.2 Significance of Research.....	3
1.3 Theoretical Background.....	4
1.4 Agent-based Modeling.....	18
 CHAPTER 2. BASE MODEL OF PARTY FORMATION.....	 20
2.1 Agents	26
2.1.1Factions	26
2.1.2 Voters	31
2.1.3 Parties.....	32
2.2 Electoral Districts.....	33
2.3 Elections.....	34
2.4 Model Calibration and Validation	46
 CHAPTER 3. SENSITIVITY ANALYSIS	 61
 CHAPTER 4. THE IMPACT OF ETHNO-LINGUISTIC FRACTIONALIZATION	 84
4.1 Ethno-linguistic Polarization	84
4.2 Model Setup and Results	88
4.2.1 Ethno-linguistic Minority Scenario.....	91
4.2.2 Fractionalized Polity Scenario	94
4.3 Empirical Validation	96
4.3.1 Ethno-linguistic Minority Scenario.....	97
4.3.2 Fractionalized Polity Scenario	109
4.4 Discussion	119
 CHAPTER 5. APPLICATIONS OF THE MODEL.....	 122
5.1 Coalition Building.....	122
5.2 Electoral Volatility.....	126
5.3 Party Fragmentation.....	134
5.3 Discussion	143

CHAPTER 6. POLICY IMPLICATIONS	145
6.1 Party System Criteria	145
6.1.1 Party System Characteristics.....	146
6.1.2 Party Policy Preferences	148
6.2 Model Outcomes	149
6.2.1 Ethno-linguistic Minority Scenario.....	150
6.2.2 Fractionalized Polity Scenario	157
6.3 Policy Implications	162
CONCLUSIONS	166
Appendix A.....	173
Appendix B.....	175
References.....	176

LIST OF TABLES

Table	Page
Table 2.1 Model Run Values	46
Table 2.2 Output Variables under Same and New Faction Initialization Scenarios	50
Table 2.3 Party Strategy Thresholds	56
Table 3.1 Default Model Values	61
Table 4.1 Weight of Ethno-linguistic Polarization	87
Table 4.2 Model Setup	90
Table 4.3 Ethno-linguistic Minority Dataset	101
Table 4.4 Fractionalized Polity Dataset	111

LIST OF FIGURES

Figure	Page
Figure 2.1 Model Agents	26
Figure 2.2 Impact of Faction Preferences on Budget Distribution	30
Figure 2.3 Distribution of Voter Incomes	31
Figure 2.4 Distribution of Voters by Economic Sector	32
Figure 2.5 Elections Process	36
Figure 2.6 Voter Preferences Based on Income.....	39
Figure 2.7 Histograms of Output Variables in PR Systems (Different Initialization).....	51
Figure 2.8 Histograms of Output Variables in SMD Systems (Different Initialization) ..	52
Figure 2.9 Distribution of Seats by Winning Strategy (PR)	57
Figure 2.10 Distribution of Seats by Winning Strategy (SMD)	57
Figure 2.11 Distribution of Seats of Programmatic Parties by Strategy	58
Figure 2.12 Distribution of Seats by Economic Sector.....	59
Figure 3.1 Sensitivity to Number of Voters in PR Systems	63
Figure 3.2 Sensitivity to Number of Voters in SMD systems	63
Figure 3.3 Sensitivity of Total Number of Parties to Number of Factions	65
Figure 3.4 Sensitivity of Number of National Parties to Number of Factions	66
Figure 3.5 Deadweight of Factions in PR Systems.....	68
Figure 3.6 Deadweight of Factions in SMD Systems.....	68
Figure 3.7 Total Number of Parties vs. Rent Preferences.....	70
Figure 3.8 Number of National Parties vs. Rent Preferences	72
Figure 3.9 Total Number of Parties vs. National and Rent-seeking Capital Ratios	74
Figure 3.10 Number of National Parties vs. National and Rent-seeking Capital Ratios ..	75
Figure 3.11 Total Number of Parties vs. Pork Preferences.....	77
Figure 3.12 Number of National Parties vs. Pork Preferences	78
Figure 3.13 Total Number of Parties vs. Income and Campaign Spending	80
Figure 3.14 Number of National Parties vs. Income and Campaign Spending	81
Figure 3.15 Number of National Parties vs. Urban/Rural Income Disparity.....	82
Figure 4.1 Total Number of Parties vs. Size of Majority.....	92
Figure 4.2 Average Party Size vs. Size of Majority	93
Figure 4.3 Ratio of Seats Held by Minority Affiliated Parties	94
Figure 4.4 Total Number of Parties vs. Ethno-linguistic Fractionalization.....	95
Figure 4.5 Average Party Size vs. Ethno-linguistic Fractionalization.....	96
Figure 4.6 Distribution of Seats by Party Type in PR Systems	107
Figure 4.7 Distribution of Seats by Party Type in SMD Systems	109
Figure 4.8 Ratio of Ethnic Parties vs. Ethno-linguistic Fractionalization (empirical)....	114
Figure 4.9 Ratio of Ethnic Parties vs. Ethno-linguistic Fractionalization (model).....	114

Figure 4.10 Electoral Volatility Ethno-linguistic Fractionalization (empirical).....	116
Figure 4.11 Electoral Volatility Ethno-linguistic Fractionalization (model).....	117
Figure 4.12 Ratio of Minor Parties Ethno-linguistic Fractionalization (empirical).....	118
Figure 4.13 Ratio of Minor Parties Ethno-linguistic Fractionalization (model).....	119
Figure 5.1 Ratio of Seats Held by Ethnic Parties (Ethno-linguistic Minority).....	124
Figure 5.2 Ratio of Seats Held by Ethnic Parties (Fractionalized Polity)	126
Figure 5.3 Electoral Volatility of Minority Parties (Ethno-linguistic Minority)	129
Figure 5.4 Electoral Volatility within Legislature (Ethno-linguistic Minority)	131
Figure 5.5 Electoral Volatility of Parties in Legislature (Fractionalized Polity)	133
Figure 5.6 Number of Parties in Legislature.....	136
Figure 5.7 Ratio of Seats Held by Rent-seeking Parties	140
Figure 5.8 Average Rent Preference of Parties in Legislature.....	140
Figure 5.9 Ratio of Seats Held by Minor Parties	141
Figure 5.10 Average Size of Parties in Legislature	142
Figure 6.1 Number of Major Parties in Legislature.....	150
Figure 6.2 Ratio of Seats Held by the Largest Party.....	151
Figure 6.3 Ratio of Seats Held by Minor Parties	152
Figure 6.4 Ratio of Seats Held by Minority Parties.....	154
Figure 6.5 Ratio of Minority Factions Joining Majority Parties.....	154
Figure 6.6 Distribution of Seats by Electoral Strategy (Minority 45%)	156
Figure 6.7 Distribution of Seats by Electoral Strategy (Minority 25%)	156
Figure 6.8 Distribution of Seats by Electoral Strategy (Minority 5%)	157
Figure 6.9 Number of Major Parties in Legislature.....	158
Figure 6.10 Ratio of Seats Held by the Largest Party.....	159
Figure 6.11 Ratio of Seats Held by Minor Parties	159
Figure 6.12 Distribution of Seats by Electoral Strategy (3 Groups).....	161
Figure 6.13 Distribution of Seats by Electoral Strategy (7 Groups).....	161
Figure 6.14 Distribution of Seats by Electoral Strategy (11 Groups).....	162

ABSTRACT

EMERGENCE OF POLITICAL PARTIES DURING DEMOCRATIC TRANSITIONS: AN AGENT-BASED APPROACH

Sherzod Abdukadirov, Ph.D.

George Mason University, 2011

Dissertation Director: Dr. Jack Goldstone

In order to model possible scenarios of political liberalization it is important to explore what political parties are likely to emerge in the case of transition. The impact of the institutional design and underlying social structure on the emerging party system is particularly crucial. Therefore, this research focuses on the following broad questions: (1) the types of parties likely to emerge in a given society under different institutional designs; (2) probability of a fundamentalist party coming to power; (3) the level of volatility of the party system. The research utilizes agent-based modeling approach.

CHAPTER 1: RESEARCH FRAMEWORK

Democratic transitions are often told as happy-end stories. In most models, autocratic elites bow to the pressure from the population to allow free and fair elections. After the elections, the country is no longer autocratic and is, therefore, passed over into a different set of literature, which deals with electoral competition in democracies. Yet, as many new democracies slide back into authoritarianism and in many others democratic elections bring neither accountability nor public mindedness on the part of the governments, scholars begin to argue that free and fair elections alone are insufficient for a democratic transition (Carothers 2006).

What models of democratization miss is the importance of political parties. Provision of collective goods requires strong cohesive parties (Shugart 1999). Furthermore, strong political parties are crucial to the consolidation of democracy (Diamond 1999; Huntington 1991). As Aldrich (1995) pointed out “democracy is unworkable save in terms of parties” (p.3). Yet, in most new democracies cohesive political parties do not exist. Suppression of any type of popular mobilization is one of the distinctive characteristics of autocracies. Thus, countries emerging out of autocracy are faced with a daunting task of forming a viable party system often under highly unfavorable circumstances.

Another assumption that is common in the democratic transition literature is that political liberalization will necessarily lead to democracy. This is not surprising, as the literature concentrates on the cases that have eventually led to democracy. Yet, not all regime changes have resulted in democratization. Throughout the twentieth century Marxist opposition in a number of countries fought to overthrow the autocratic ruling elites (Markoff 1996). Their final goal was not the establishment of democracy, but rather a shift to a different type of autocracy. Similarly, fascist movements in Italy and Germany in the beginning of the twentieth century used the establishment of democracy as an opportunity to seize power and turn towards dictatorship.

Examples in the Middle East and Central Asia, the two most autocratic regions in the world today, are not encouraging. In Iran, a popular revolt against the monarch in 1979 brought religious fundamentalists to power, leading to the establishment of a theocratic state (Kurzman 2004). In Afghanistan, the main opposition to the puppet communist regime established in 1979 was primarily religious (Dorronsoro 2005). The state that emerged out of the chaos of the civil war under Taliban espoused fundamentalist religious ideology. In other parts of the Middle East and Central Asia the strongest opposition groups are often religious fundamentalists. While they commonly call for political liberalization, their end goal may or may not be a functioning democracy (Schwedler 2006, Coffman Wittes 2008). In fact, many autocrats in that region use this as an excuse for their repressive policies.

1.1 Research Questions

In order to model possible scenarios of political liberalization in the remaining authoritarian regimes, it is important to explore what political parties are likely to emerge in the case of transition. The impact of the institutional design and underlying social structure of a society on the emerging party system is particularly crucial. Therefore, this research focuses on the following broad questions:

1. What types of parties are likely to emerge in a society under different institutional designs?
2. Which parties are likely to win elections? In particular, what are the chances of an extremist party coming to power in a given society?
3. What level of volatility will be present in the system?

1.2 Significance of Research

This study addresses the gap in the current literature on democratic transitions by concentrating on political parties as the main actors. It examines the effects of emergence of political parties and their internal dynamics on the electoral outcomes. Unlike many previous studies, which use game theoretic approach, the study utilizes agent-based modeling. Thus, it examines the complexity of interaction on both individual and organizational level. Aggregate level outcomes emerge out of interactions of individual actors rather than follow from the predefined rules of the game.

This study adds to our understanding of the dynamics of transition in countries seeking political liberalization. Each country follows a different trajectory as it operates

under a different set of constraints and initial conditions. This makes extrapolating the outcomes for a specific case from other cases particularly difficult. Given the high level of uncertainty that most transitions involve, predicting the outcomes of particular policies is challenging. Consequently, it is difficult to compare and choose among different policies. This research allows policy analysts to infer the impact of various institutional designs on a given social structure. It allows them to assess possible political outcomes in transitioning countries, concentrating in particular on the chances of radical political parties ascending to power. Thus, it can aid policy analysts in formulating better policies to deal with existing authoritarian regimes and facilitate consolidation of democracy.

One of the advantages of agent-based modeling is that it allows analysts to create a virtual lab in which they can test the effects of various policies. Models are particularly useful when testing policies in the real world is either too costly or impractical. They further allow analysts to test the causal relationships between implemented policies and resulting outcomes. Thus, they provide counterfactual examples to the historical cases. Unlike game theoretic models, they allow analysts to infer general patterns of behavior of the system even if it does not reach a steady state. Therefore, agent-based models not only generate predictions but also describe the mechanism that generates the outcomes.

1.3 Theoretical Background

1.3.1 Models of Democratic Transitions

In the course of studies of democratic transitions two approaches have emerged as dominant strategies of research in the field. The first, structural or quantitative approach

takes a cross-national view of the subject and concentrates on particular variables that influence the likelihood of democratization. The second, strategic or qualitative approach concentrates on specific choices and interactions of political actors in each country. Usage of game theories to model the choices of political actors has emerged in recent years as a subfield under the strategic approach. Furthermore, a number of scholars have tried to incorporate both approaches in their work.

Perhaps the best known causal link between the level of economic development and democratization, often referred to as modernization theory, was first postulated by Lipset in 1959. Since then, this relationship has been criticized, contested, reexamined and reaffirmed by numerous scholars (see Boix and Stokes 2003; Epstein et al. 2006; Przeworski et al. 2000; Przeworski and Limongi 1997). By now, there is a general consensus in the literature that this relationship is significant if not always straightforward (Bunce 2000; Geddes 1999). The theory states that as countries pass a certain threshold in economic development, normally measured in GDP per capita, they become more likely to transition to democracy and remain democratic.

Critics of this theory point out that many democratic transitions did not result simply from economic growth but were precipitated by other events such as wars (Rustow 1970). Furthermore, while the relationship between development and democratization is robust, it fails to address the wide variation in the development levels of countries at the time of transition. And in general, the theory only gives a probability of transition but does not explain how economic growth leads to democratization.

Another structural variable that is widely accepted as a more immediate cause of regime breakdowns, both authoritarian and democratic, is the presence of economic shocks (Bunce 2000; Geddes 1999). In the strategic choice literature that incorporates structural constraints, economic shocks are cited as one of the most common causes of pressure on elites to initiate a transition (Acemoglu and Robinson 2005; Haggard and Kaufman 1995; Huntington 1991; Zak and Feng 2003). However, this causal link is not universal. As Haggard and Kaufman (1995) point out, in a number of cases, e.g. Chile and South Korea, autocratic regimes persevered through the shocks and withdrew at a time of economic growth.

A number of other variables are commonly identified as significant in causing democratization, but there is less agreement among scholars over their importance. These variables include regime legitimacy (Lipset 1959; Huntington 1991; O'Donnell and Schmitter 1986), major changes in the international environment (Huntington 1991; Rueschemeyer, Stephens, and Stephens 1992), demonstration effect (Axelrod 1997; Bueno de Mesquita 2002), and the type of authoritarian regime (Huntington 1991; Geddes 1999).

While the structural approach offers a theory that is easily testable, it has a number of shortcomings. As O'Donnell (1973) points out, a quantitative cross-national study provides only a snapshot of the current state. While snapshots may be useful for inferring some facts, they present all the actors in the system at one particular point, saying nothing of how they got there and which direction they might go next. Furthermore, such studies make inferences about causation and tendencies over time in

one country based on the correlations in a cross-national dataset taken at one point in time.

The strategic choice approach originally concentrated on explaining transitions, often explicitly claiming to lack any theory (e.g. O'Donnell and Schmitter 1986). However, within this approach game theoretic modeling arose as a way to both present a formal theory and attempt to predict the probability of transition. At first, the strategic choice approach concentrated exclusively on the choices of the elites (e.g. O'Donnell and Schmitter 1986; Rustow 1970; Przeworski 1991). While some scholars explicitly claimed that their approach lacked any rigorous theory, they nonetheless made several generalizations. They claimed that all transitions started with a split among the ruling elites into reformer and hard-liner camps. The transition then followed if the reformers made a decision to ally with the opposition against the hard-liners in order to push through the reforms. Yet, empirical evidence of elite pacts is rather mixed, showing up as important in some regions but not others (Bunce 2000; Geddes 1999).

Acknowledging the importance of the choices of the elites, many scholars have pointed out that the elites are nonetheless constrained by structural variables (Acemoglu and Robinson 2005; Rueschemeyer, Stephens, and Stephens 1992). Some scholars further argue that an exclusive emphasis on the elites overlooks the importance on non-elite actors. In some models their preferences act as constraints on the choices of the elites (e.g. Field and Higley 1980). In others, they are present as crucial actors in their own right (e.g. Acemoglu and Robinson 2005; Rueschemeyer, Stephens, and Stephens 1992). Scholars also point out that strategic choice approach is weakened by considering too

many variables with too few cases as well as by case selection bias (Rueschemeyer, Stephens, and Stephens 1992). It lacks the rigorous testing of theories as the outcomes are normally known in advance.

In response to this criticism, many later models sought to combine the two approaches. The resulting set of richer and more sophisticated models allowed not only to trace the historical sequence of actions but also to understand why specific structural variables impact the probability of democratic transitions. While some of these models still use the case study approach, most of them are formal game theoretic models (e.g. Acemoglu and Robinson 2005; Bourguignon and Verdier 2000; Bueno de Mesquita et al. 2005; Colomer 2000; Przeworski 1991; Rosendorff 2001; Zak and Feng 2003). They differ considerably in the way they are defined. Consequently, they often lead to conflicting predictions. The key components on which these models often disagree are the definition of actors, the payoff structure and the rules of the game, which can also be thought of as structural constraints.

The main advantage of game theoretic approach is that it presents a formal theory (Gates and Humes 1997; Munck 2001). Since all actors and rules have to be defined upfront, this approach imposes theoretical rigor on the analysis. All assumptions and the logic of the game are explicit and unambiguous. Given that it is a formal theory, it can be empirically tested. On the other hand, assumption of perfect rationality, which underlines the strategic choices of the actors, is often unrealistic. Furthermore, the models rely on the ability to generate unique equilibrium, which cannot always be attained in social phenomena.

1.3.2 Gaps in the Literature on Democratic Transitions

The earliest models of democratization predicted the likelihood of transition based on specific structural variables such as per capita income, level of inequality, or economic shocks. While the theory was based on empirical evidence and could be tested, it did little to explain how and why these structural variables affected the societies leading to democratization. In a sense, it was a deterministic view that assumed that, given the appropriate levels of structural variables, a democratic transition would ensue regardless of anyone's actions.

The next set of models sought to rectify the disregard of unique political dynamic within each country by concentrating exclusively on the actions of political elites. Focusing on the choices of specific actors in detailed case studies, they presented a clearer picture of the actual process of transition. Yet, being country specific, they were mostly descriptive, failing to present a formalized theory that could be empirically tested or used to predict transitions in other countries.

The third set of models evolved out the previous two by combining both approaches. Focusing on the actions of various actors, these models were better able to explain the exact nature of the impact of structural variables on the likelihood of transitions. On the other hand, by including the structural variables, these models were able to explore the changes in incentives and constraints influencing the choices of various actors. Furthermore, these models typically included the entire population and not just the elites. Yet, even this approach has a number of limitations.

Even though the models differ widely in the way they define actors, each actor in these models represents an entire category. Thus, the models assume that all people within the same category are identical in terms of their preferences and actions. This assumption masks two underlying dynamics. First, within each category there will always be a considerable variation in preferences among actors. Second, in order to act cohesively, actors within each category have to overcome collective action problems. Both of these dynamics can significantly alter the preferences and actions of a representative actor.

A representative actor, however, is not equivalent to a political party. Categories of actors defined in these models are rather generic based on class, status or organizational affiliation. Parties, on the other hand, normally cut across various categories bringing together actors with rather different interests. While they do have a propensity to represent a specific set of interests, they nonetheless adapt to maximize their votes rather than sticking to a rigid set of policies. Yet, it is the parties rather than abstract representative actors that bring together various individuals and pursue specific actions.

Most of the literature on transitions takes the existence or formation of well-functioning political parties for granted. Some scholars (Diamond 1999; O'Donnell and Schmitter 1986; Rueschemeyer, Stephens, and Stephens 1992) do point to the significance of political parties for consolidation of democracies, but this is not reflected in the transition models. While this may have been a reasonable assumption for the transitions in Southern Europe and Latin America, which had previous experience with

democratic governance, it certainly did not apply to the transitions in the former communist regimes in Eastern Europe. Similarly, the countries that currently remain authoritarian generally have no previous democratic experience. Thus, the dynamic of consolidation of various interests into political parties will have a strong impact on the path of transition in these countries in case of political liberalization.

1.3.3 Political Parties

There are two main approaches to defining political parties (McDonald 1967). The first, rather common approach views parties in terms of their structural characteristics. Some scholars view political parties as diverse coalitions or groups (Key 1958). Parties in this view are umbrella-like organizations that appeal to the majority of citizens. Other scholars concentrate on the unique combination of characteristics that differentiates political parties from other types of organizations (Schlesinger 1991). Political parties differ from businesses in the fact that they produce collective goods. They differ from interest groups by distributing key resources through a market exchange, i.e. they produce policies in exchange for votes. Finally, they differ from bureaucracies since, for the most part, they are compensated indirectly. None of these distinctions are absolute. It is the unique combination of all three characteristics that makes an organization a political party.

The second approach views political parties in terms of functions they perform. In the responsible party view, parties are supposed to stand for distinct sets of policies and appeal to voters primarily on policy grounds. (Panbianco 1988; Ranney 1975). In such

view of parties ideology dominates and parties manifest characteristics of social movements. They pursue specific policies and attempt to dominate their environment. In rational-efficient perspective, parties are viewed primarily as mechanisms for electoral competition or general organizational survival. Many theoretical models of electoral competition belong in this tradition. In this view, parties care primarily about winning the elections. They choose to adapt to their environment rather than promote particular ideologies. Political candidates derive utility primarily from perks and power that come with winning an office rather than implementation of particular policies. Thus, participation in such parties is more professionalized.

There is a large body of literature devoted to classification of political parties (e.g. Duverger 1954; McDonald 1967; Krouwel 2006; Panebianco 1988). Most commonly, scholars identify four types of parties based on the level of inclusiveness and emphasis on ideology. Mass based parties tend to be highly ideological yet rather inclusive. Elitist or cadre parties are also ideological but have more exclusive pattern of recruitment. On the other hand, both catch-all and business parties care primarily about winning the elections. However, the catch-all parties generally have an inclusive recruitment pattern, whereas membership in business parties tends to be limited to a privileged circle of people.

In terms of organization, mass based and catch-all parties have more democratic horizontal structure. Elitist and business parties, on the other hand, are more hierarchical and authoritarian. Furthermore, the membership in catch-all and business parties, which emphasize winning the elections, tends to be more professionalized. These types of parties correspond to the rational-efficient view of political parties. In contrast, the

membership in ideological mass based and elitist parties is more amateur, in line with the responsible conception of political parties.

Different stages of party operation offer different incentives for formation of parties. During the elections stage, candidates choose to aggregate into parties as the latter help them win elections. Yet, scholars point to different mechanisms through which parties help candidates achieve their goals. In Schlesinger's (1991) view of parties as multinuclear organizations, the process of primary elections promotes the emergence of political parties. Since parties control the nomination process, they decrease the costs of elections by ensuring that only one candidate from their ranks is advanced for particular office elections. It is important to note that this argument applies only to single-member districts. However, the argument can be extended to multi-member districts with party lists, in which parties also control the nomination process.

Aldrich (1995) takes a different approach to this issue by concentrating on the electorate. He argues that parties are formed for the purpose of electoral mobilization. An average voter chooses to vote if the benefit of electing a preferred candidate, discounted by the probability that the vote will have an impact, outweighs the cost of voting. Thus, in order to induce citizens to vote, the candidate must convince them that the benefit of his or her victory is sufficiently large. The candidate can also reduce the cost of voting by reducing the cost of collecting information about the candidate. Both actions imply campaigning, which may be costly. Parties reduce such costs in two ways. First, they allow candidates to pool resources. Second, parties provide a brand name, reducing the cost of information gathering for the voters (Osborne and Tourki 2007). Furthermore,

parties act as a screening mechanism to ensure the common policy positions of candidates within a party (Snyder and Ting 2002).

A different set of incentives to form a political party exists in legislature. In this case, legislators must work together in order to pass favorable legislation. Parties are considered to be a solution to collective action and social choice problems. Collective action problem refers to the common need for the legislators to form coalitions to pass favorable legislation. Since no formal mechanisms of enforcing contracts exist in legislature, there is a strong incentive for the legislators to coalesce into parties (Aldrich 1995). Another issue that arises during voting is the problem of social choice. First postulated by Arrow (1951) in the general possibility theorem, the social choice refers to cases when no single solution dominates others. Since no bill dominates the others, paired voting will continue in cyclical fashion with no solution. While such cyclical preferences are not always the case, they can never be ruled out.

Political scientists adopted two approaches to deal with the social choice problem. In the first approach, scholars assume that preferences can be placed along a single dimension and are single peaked. In this case, equilibrium is reached at the preference position of a median voter. This approach is taken in many spatial voting models that rely on median voter theorem for equilibrium condition (e.g. Black 1958; Downs 1957). The assumptions of this approach, however, have been called into question as too restrictive and unrealistic (Riker 1980). The second approach is to look at structure-induced equilibria (Shepsle and Weingast 1987, 1981). If legislators form coalitions, the cyclical

voting can be avoided. Thus, social choice problem in policymaking creates another incentive to form a political party.

Finally, rules that give party leadership control over the distribution of cabinet and committee positions give a strong impetus for emergence of a party (Schlesinger 1991). This point highlights the difference between presidential and parliamentary systems. Since in a parliamentary system a party with the majority of seats has the right to form a government (Shugart and Carey 1992), it creates an additional incentive to form political parties. If no party receives the majority of seats, than a number of parties have to form a coalition. Similar to the spatial voting literature, an extensive literature on formation of coalitions in government concentrates primarily on systems with established political parties (Riker 1962). Yet, many of the same principles can be applied to the formation of political parties. Legislators can be viewed as single member parties, which form permanent coalitions once in parliament (c.f. Riviere 1999).

Parliamentary elections are crucial to the formation of the political parties as parliaments exist in both parliamentary and presidential systems. Presidential elections are meaningful only in the presidential systems. Therefore, they impact political parties in presidential systems in addition to the parliamentary electoral rules. Political candidates face one of three types of elections: (1) parliamentary district elections under proportional representation (PR) rules, (2) parliamentary district elections under single member district (SMD) rules, and (3) presidential elections. Parties face a combination of parliamentary (SMD or PR) elections and, if exist, presidential elections.

Institutional design can determine which parties will be more successful than others. The size of the winning coalition, i.e. the number of votes required to win, determines the type of goods that candidates provide in return for votes (Bueno de Mesquita et al. 2005). If the winning coalition is sufficiently small, candidates are more likely to depend on private good provision (elitist and business parties). If the winning coalition is large, candidates will have to provide primarily public goods (mass and catch-all parties). Different electoral rules require different amount of votes in order to secure victory. As PR districts elect more candidates than majoritarian ones, they require smaller winning coalitions. However, the number of total votes that a party needs in order to form the government is smaller under majoritarian systems. The winning coalition required to form the government is the largest in the presidential systems.

The ability of parties to form winning coalitions may be hampered by ethno-linguistic fractionalization. Higher level of fractionalization can lead to higher party fragmentation as parties appeal to different segments of the society (Neto and Cox 1997; Ordeshook and Shvetsova 1994). Yet, district magnitude limits the number of parties even in highly fractionalized societies (Mozaffar, Scarritt, and Galaich 2003; Ordeshook and Shvetsova 1994). On the other hand, ethnic fractionalization increases the stability of voting patterns and reduces the number of political parties (Birbir 2007). In cases of high uncertainty of policy preferences of various parties, their ethnic affiliation often provides voters with an informational shortcut.

The impact of ethnicity on voting decisions may be moderated by the presence of cross-cutting cleavages, i.e. policy dimensions along which members of the same ethnic

group may have different preferences (Lipset and Rokkan 1957; Dahl 1982, Chandra 2005). Voters may be divided along religious lines but belong to the same linguistic group. In such cases, natural bridges between groups often moderate their differences. Inter-ethnic civic associations may similarly reduce ethnic tensions (Varshney 2002)

On the other hand, ethnic divisions may be compounded by class divisions. If socio-economic status is strongly associated with ethnic background, ethnic groups are ranked in a hierarchical order (Horowitz 1985). Stratification in ranked systems coincides with ethnic identity, and social mobility tends to be restricted. Conflicts in such systems tend to be most explosive. In contrast, if all ethnicities are equally represented across the various socio-economic groups, ethnic groups are unranked and their relations have a horizontal structure. The latter systems are less volatile, since grievances are not compounded.

Strategies to correct for the adverse impact of ethnic voting on the emerging political system generally fall into one of three categories. The first category includes various forms of institutional engineering forcing politicians to form inclusive multi-ethnic parties. These goals are often achieved through electoral laws or specific political arrangements that ensure power sharing among ethnic groups (Horowitz 1991, Lijphart 1977). In the second category are the policies that aim to counter ethnic bias through various affirmative action policies (Horowitz 1985). Finally, the third category focuses on civil society institutions promoting integration (Varshney 2002). Given the scope limitations, this study focuses only on the institutional strategies.

1.4 Agent-based Modeling

This study implements the theoretical model using an agent-based method. Agent-based modeling is a computational method that approaches social and physical phenomena from the bottom up (Axtell 2000). Individual agents are defined in the model and then allowed to interact with each other. The aggregate level patterns emerge out of the complex interaction of heterogeneous agents. Each agent is endowed with preferences and rules of behavior. The population of agents is initialized with a set of heterogeneous preferences before the execution of the model. When the model is run, agents interact with each other based on their preferences. The model may reach equilibrium, but that is not strictly necessary. Aggregate patterns of behavior may still be observed even if the model does not reach a steady state.

As a method, agent-based modeling differs from both deduction and induction (Axelrod 2003). Similar to the deductive method, agent-based models start out with a set of explicit assumptions. Yet, unlike the deductive method, they do not prove theories but rather generate data, which can later be analyzed. On the other hand, the data generated through agent-based models do not come from the real world measurements, which differentiate them from the inductive method.

There are a number of advantages in employing agent-based modeling in this study. Unlike game theoretic models commonly used in electoral competition literature, agent-based modeling does not depend on assumptions of perfect rationality or homogeneity of individual preferences. Further, it facilitates analysis of the complexity of interaction at both the individual and the organizational level. Outcomes at the aggregate

level are not predefined by the rules of the game but rather emerge from the interactions of individual actors. Finally, it allows for a computational solution to a problem that would be extremely difficult to solve mathematically.

1.5 Organization of Dissertation

The organization of the dissertation is as follows. The following chapter outlines the basic model of party competition. In this chapter, the parties are formed along two main cleavage lines: industry and income. The sensitivity analysis of the basic model is presented in chapter 3. The model is extended in chapter 4 to account for ethno-linguistic cleavages. The chapter further includes a simple empirical validation of the extended model. Some applications of the model are tested in chapter 5. The policy implications of the model are described in chapter 6. The dissertation summarizes the finding of the study and outlines further research directions in the conclusions section.

CHAPTER 2. BASE MODEL OF PARTY FORMATION

In this chapter I construct the base model of party formation (see Appendix A for pseudo-code). The model assumes that no parties exist at the beginning of the model.

Consequently, all parties emerge from within the model. The model is limited to parliamentary systems and considers only one (economic) dimension of voter and party preferences. Ethno-linguistic dimension will be considered in the following chapters.

As mentioned in the previous chapter, most of the formal models of party competition in political science are derived from the Downsian model. In that model, voter preferences are placed across the left-right ideological spectrum with majority preferences situated somewhere in the middle. Voters cast their votes for the parties whose preferences are the closest to their own. Consequently, the party whose preferences coincide with the preferences of the median voter wins. The pattern of party competition in this model is largely determined by the landscape of voter preferences. The latter is varied by modelers in order to generate differences in party systems. Variations include multiple peaks and ideological dimensions, as well as intensity of voter preferences.

While the Downsian framework works reasonably well for well-established democracies, it has a number of shortcomings when applied to transitioning countries. First of all, models within this framework rarely account for the emergence of new

political parties. They assume that parties already exist in the system. The few models that do generate political parties conceptualize parties as more or less permanent coalitions of political candidates. Candidates join such coalition whether out of convenience, e.g. to pool campaign resources, or political convictions, e.g. to connect with likeminded candidates. Little explanation is given, however, as to who these candidates are, where they come from and what determines their preferences. If candidates in the model have strong ideological preferences, such preferences are often arbitrarily assigned. They are not tied to any existing economic or social interests. Office-seeking candidates, on the other hand, do not have strong attachment to a particular policy position. Instead, they search the landscape of voter preferences to arrive at the vote maximizing position. Consequently, their policy positions reflect nothing more than a simple aggregation of voter preferences.

There are several problems with this approach to policy preferences. In models with policy oriented candidates, the source of the landscape of candidate preferences is unclear, as it is not tied to the underlying socioeconomic structure. Models with office-seeking candidates assume that voter preferences are the sole factor that impacts elections. They ignore the impact of campaign financing or various level of mobilization of different groups. Furthermore, they assume that candidates are reactive and simply follow the voters. Yet, in most political systems candidates actively shape the preferences of the electorate. They lead rather than follow. In such case, the source of their preferences is unclear. Finally, these models assume that voters can easily place their ideological preferences on the left-right continuum. For countries that are only emerging

out of decades of political repression such assumption may be unrealistic. It may take years for voters to learn the differences between political ideologies and develop their own ideological preferences.

In order to avoid the shortcomings of the Downsian framework, this study employs a different framework of party competition developed by Robert Dahl in his seminal work “A Preface to Democratic Theory” (1956). In this work, Dahl rejects the traditional view of democracy as a rule by majority as unrealistic, especially given relatively low levels of civic participation in most modern democracies. He notes that smaller mobilized groups of citizens hold considerable sway in the political process in democracies. Responsiveness of the political system to the preferences of the population is achieved by increasing the number and size of these mobilized groups. Consequently, the difference between autocracy and democracy in Dahl’s view is not the clear cut distinction between government by a minority and government by a majority but rather a distinction between government by a minority and government by minorities. He termed such system “polyarchy” in order to distinguish it from the traditional notion of democracy.

Following Dahl’s polyarchy framework, this study focuses on factions as the primary actors within the model. This study defines factions as groups of people mobilized around a particular set of social or economic interests. In many ways this definition of factions is similar to what political science literature refers to as interest or pressure groups. However, factions in this study may have a broader meaning. In addition

to traditional interest groups, they may include mobilized groups of government officials or military officers.

One advantage of using factions in the model is their relative persistence. Individual candidates may enter and exit politics, change alliances or shift preferences in response to personal events. Their behavior fluctuates considerably, which makes their actions harder to anticipate and model. Economic interests, on the other hand, are relatively permanent. The interests of an investment bank or an oil company remain the same regardless of who owns or controls it at a given moment. Their behavior is considerably more stable and predictable. Furthermore, the preferences of factions are easier to discern than the preferences of individual candidates. Rather than decide arbitrarily on the landscape of preferences of political candidates, the model ties the factions to the economic structure of a country. For example, countries with a substantial manufacturing sector are likely to have strong labor unions as well as protectionist interests. Given that the data on economic sectors is readily available for most countries, preferences of factions are much easier to approximate.

Finally, the focus on factions addresses the issue of collective action that arises in electoral competition. Collective action problem refers to the inability of large unorganized groups to act in pursuit of common interest. People within large groups have strong incentives to free-ride, i.e. let the others carry the costs of the collective action, since no one can be excluded from the benefits. Furthermore, the impact of each individual's action on the overall outcome in large groups is so small that it would make little sense for him or her to act. In contrast, small groups can mobilize for action rather

easily. They are small enough to detect and punish free-riders, and actions of each member of the group have discernible impact on the overall outcome. Consequently, they have a significant advantage over the large groups in pursuing their interests.

As a large group, voters will have only a limited impact on the preferences of political candidates. While many voters feel compelled enough to cast their votes, few will actively attempt to influence their political representatives. In contrast, factions as small groups have every incentive to be proactive in shaping the preferences of candidates. Their impact on the positions of candidates is likely to be much stronger. Consequently, candidate preferences are unlikely to be simple aggregates of voter preferences. They will be strongly skewed by the influence of factions.

In another departure from the Downsian framework of party competition, the model does not place either factions or voters along one- or multi-dimensional policy continuum. As mentioned above, voters in well-established democracies often have policy preference that can be placed along the left-right continuum. Such political divisions may not be applicable to transitioning countries. Instead, the study follows Bueno de Mesquita et al. (2003) in conceptualizing electoral process as a competition between political actors in constructing voter coalitions.

In their classic work “The Logic of Political Survival,” Bueno de Mesquita and others create a framework of political competition that encompasses both autocratic and democratic regimes. First, they define selectorate as a portion of population that is eligible to participate in the process of selecting the leader (or leaders). In democracies, selectorate generally corresponds to the entire voting population. In autocracies, on the

other hand, selectorate is limited to the ruling elites. In order to win under either system, however, each political candidate constructs a coalition of supporters. The goal for each candidate is to construct a winning coalition, i.e. the strongest out of all competing coalitions. The strength of the coalitions in democracies is measured in votes. In autocracies, coalitions might be measured differently, e.g. in terms of economic or military clout of elite factions within the selectorate.

The critical aspect of the winning coalition framework, one that is adopted by this study as well, is the mechanism of creating coalitions. At the core of coalition forming process is economic exchange. Members of the selectorate provide support to a political candidate only in exchange for goods. These goods can be private, if a selectorate is relatively small, or public in case of a large selectorate. It is not the adherence to a particular ideology but rather the ability to deliver goods to their constituents that defines the success of candidates in this framework. Thus, the emphasis is not on what the candidates' policies are but on who they benefit. This contrasts with the Downsian framework, in which voters support political candidates based on the proximity of ideological positions.

The advantage of the winning coalition framework is that it shifts the focus from abstract policies and ideologies towards specific groups that espouse them. In the end, it is not the policies and ideologies that clash in the political arena. Rather, it is the factions who compete for power by appealing to various segments of the voting population. And by focusing on factions, this approach also complements the pluralistic framework

adopted in this study. The model combining both frameworks is described in the following sections.

2.1 Agents

The world of the model is populated by three types of agents: voters, factions and parties. Of these, voters and factions are initialized at the beginning of the model. Parties emerge as coalitions of factions during the execution of the model.

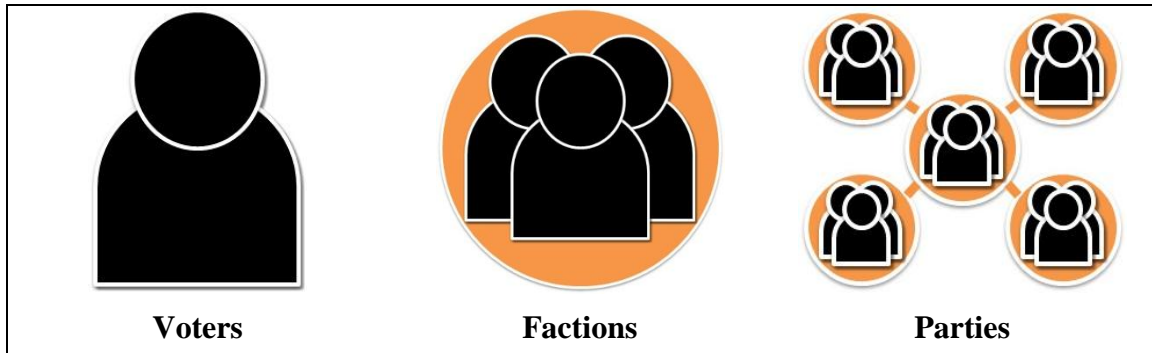


Figure 2.1 Model Agents

2.1.1 Factions

Factions represent groups of agents mobilized around a particular set of economic or social interests. For simplicity, the model does not consider the internal structure of factions, i.e. their size, cohesion or power relations among their members. A faction is assumed to be a small ideologically cohesive group consisting only of member actively contributing time and resources.

Factions differ based on their preferences, capital, and geographic spread. Faction preferences indicate the interests that factions pursue. Capital, on the other hands, points to the resources available to factions in order to pursue their interests. The study defines capital as a combination of financial and organizational resources. Thus, the capital of large well organized factions is as high as that of small but wealthy factions. The model does not differentiate between two types of capital. Consequently, capital acts as a proxy for a faction's size as well as financial and organizational capacity. Finally, geographic spread indicates whether factions are local or national. Local factions run only in the district in which they reside. National factions run in all districts. In general, local factions considerably outnumber the national ones but have lower capital.

Each faction belongs to a particular sector of economy. While an average economy has many sectors, the model combines them into three: agriculture, industry and services. The sector to which a faction belongs determines its preferred tax rate. Here the tax rate refers to the total burden of government on the economy, combining not only various types of taxes but also tariffs and regulation costs. On the other hand, the tax rate also determines the size of state budget. The model assumes that state money is used to create public goods. Consequently, the tax rate also determines the amount of public goods produced in a country.

Factions in the services sector generally favor more open markets and less government regulation. As services tend to be provided locally and cannot be easily imported, factions in this sector have little to fear from foreign competition. Thus, they prefer lower tax rates. Factions in the industrial sector commonly favor protectionist

policies. This is especially true of labor-intensive manufacturing industries, less so for extractive industries. On average, they prefer higher tax rates. Factions in the agricultural sector are mildly protectionists. While generally they do not advocate for high taxes or tariffs, agricultural factions often receive substantial state-subsidies. Thus, they favor average tax rates. Note that economic sectors in this model provide only a generic example. These can be easily adjusted for each specific case. For example, services sector could be further broken down into financial, tourism, merchant and other sectors if they are sufficiently distinct in their interests.

In addition to the three economic sectors, factions may also belong to the public sector. For the purposes of the model, the definition of the public sector includes only the organizations that provide public goods and do not create commercial value, e.g. military, social services, public education and in some cases healthcare. This definition does not include state-owned enterprises. Since the public sector is primarily funded through taxation, factions in this sector prefer the highest tax rates.

Factions in each sector also differ in the level of economic polarization. Polarization determines how narrowly a faction defines its interests. More polarized factions push more narrowly for the interests of their economic sector. Less polarized factions push for policies that benefit the economy at large. For example, a highly polarized industrial faction will push exclusively for protectionist measures. Less polarized faction may pursue higher level of social services for the entire population. In practical terms, polarization level indicates if public goods provided by the government are targeted towards a specific economic sector or the public at large. In this sense,

economic polarization is quite similar to pork barrel. The main difference is that benefits accrue to an economic sector rather than an electoral district. It differs from rent-seeking since the benefits accrue to everyone in that sector and not exclusively to the faction itself. But it comes at the expense of factions and voters in the other sectors. For simplicity, the study will refer to this type of goods as pork, in order to distinguish them from public goods and rents.

Finally, factions are divided into rent-seeking and programmatic factions. Rent-seeking factions, as their name suggests, have a higher rent rate preference. The model defines rent as the portion of collected taxes that a faction distributes as private benefits to its members instead of spending it on public goods or pork. Consequently, rent-seeking factions are more interested in appropriating public monies for their private benefit, while programmatic factions are more interested in producing public goods or pork. In addition to having higher rent preferences, rent-seeking factions also have substantially higher capital. Thus, rent-seeking factions rely primarily on their capital in order to compete in elections. Programmatic factions, on the other hand, have to rely on distributing more public goods to appeal to voters since they have lower capital. The impact of faction preferences on the distribution of public funds is shown in Figure 2.2.

The rent-seeking and pork preferences define a faction's approach to constructing its coalition. A faction's rent-seeking preference indicates what portion of state resources the faction plans to distribute to its coalition in exchange for their support. A faction's pork preference indicates how widely or narrowly the faction wants to construct its coalition. High pork preference indicates that the faction's policies will benefit almost

exclusively its economic sector. Thus, the coalition that the faction constructs is mostly limited to the voters within that sector. In contrast, low pork preference indicates that the faction's policies target a larger voter base. Based on the faction's tax preferences, such policies will be either redistributive or pro-market. Consequently, the coalition that the faction constructs will consist of either lower income or higher income voters regardless of their economic sector.

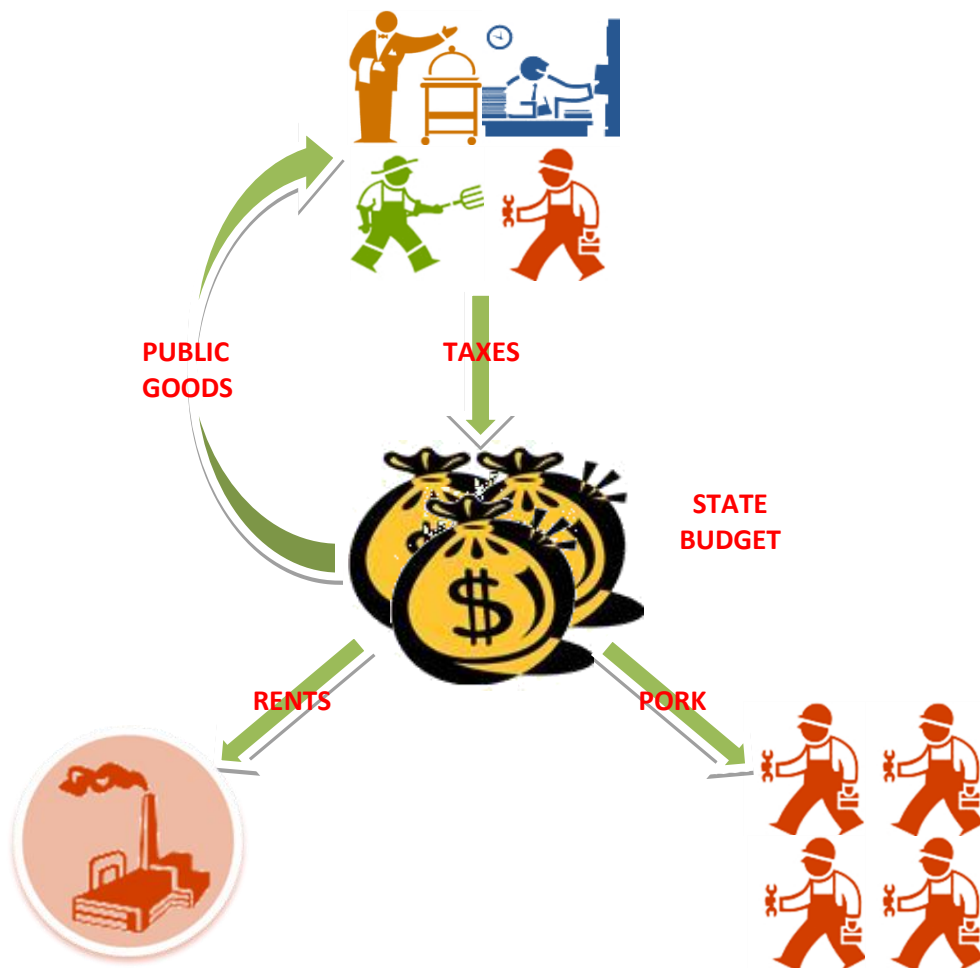


Figure 2.2 Impact of Faction Preferences on Budget Distribution

2.1.2 Voters

Voters have only one function in this model: as their name suggests, they cast their votes for parties based on expected utility. Each voter represents a single vote-eligible person. Each voter is endowed an annual income, which is held constant over time, i.e. voters do not grow richer or poorer in the course of the simulation. It is drawn from a Pareto distribution, which means that wealth is highly concentrated (see Figure 2.3). A handful of individuals hold most of the wealth, while a larger population is considerably poorer and has relatively similar incomes.

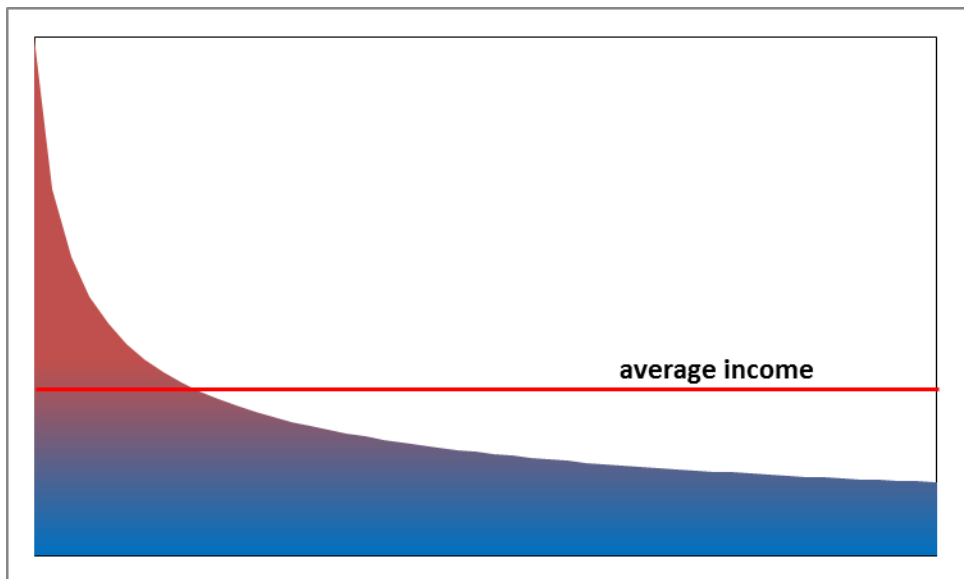


Figure 2.3 Distribution of Voter Incomes

Voters can reside in either rural or urban districts. The average income of voters in urban districts is higher than in rural ones. Each voter is employed in a specific economic sector. Here, economic sectors are identical to the ones for factions. In general, voters

will favor factions that promote the interests of their sector. Consequently, the distribution of voters by sector acts as a constraint on the choices of factions. A typical distribution of voters by sector is shown in Figure 2.4. Voter distribution by economic sector and income disparity between rural and urban voters can be easily adjusted to reflect the distribution of a given country.

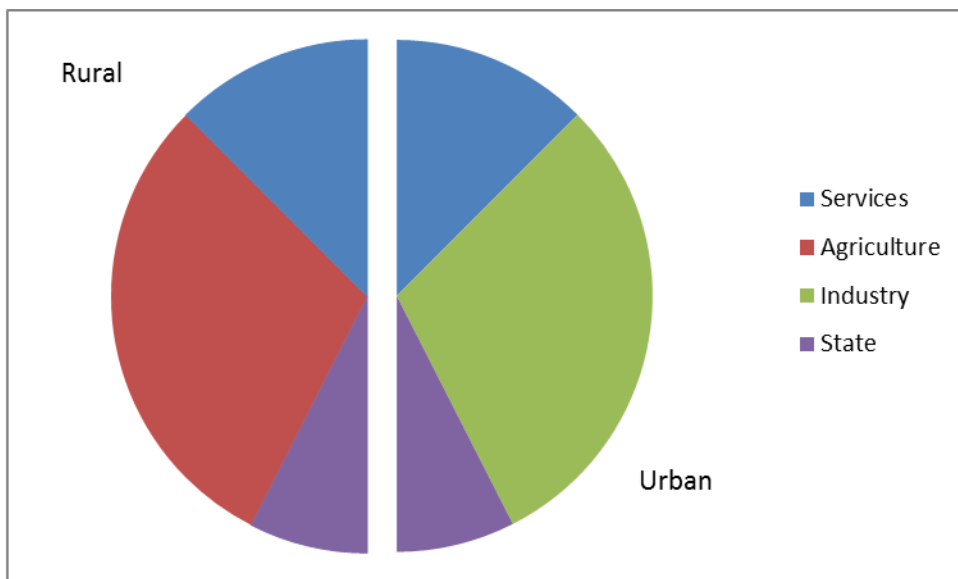


Figure 2.4 Distribution of Voters by Economic Sector

2.1.3 Parties

Political parties are composite agents consisting of one or more factions. Their tax and rent rate preference are determined as a weighted average of the preferences of constituent factions. If more than half of the factions within a party belong to the same economic sector, then the party belongs to that sector as well. Its polarization level is determined as an average of the polarization of factions belonging to the party's sector. If

no economic sector dominates in the party, its polarization level equals zero. The composition of parties, and consequently their preferences and capital, change over time based on the choices of constituent factions.

Each faction can form its own party or join an existing one. Local factions can join national factions or other local factions within the same district. National factions can merge with other national factions. Local factions spend their entire capital in their own district during electoral campaigns. National parties split their capital evenly across all districts. Electoral campaign fund of a party in a given district is a sum of capital of all local factions in that district and the district's share of a national faction's capital.

Consequently, the model produces two types of parties. Local parties consist of only local factions and contest seats in only one district. In many ways they are equivalent to independent candidates that represent local interests. National parties consist of national and local factions. They are more in line with the traditional view of coalition parties with multiple candidates running in districts across the country.

2.2 Electoral Districts

The landscape of the model is divided into electoral districts. Districts are identical in size (number of voters in the district) and magnitude (number of seats assigned per district). Each voter belongs to only one district, as do local factions. National factions are spread across all districts. Consequently, parties containing national factions contest elections in every district. Parties with only local factions compete in the district to which these factions belong.

District magnitude determines whether the system is majoritarian or proportional. Majoritarian systems consist of single member districts (SMD). As their name suggests, they select only one candidate per district. The party that garners the highest share of votes receives the parliamentary seat. In contrast, multi-member districts select more than one candidate per district. While there are different implementations of systems with multi-member districts, proportional representation (PR) is by far the most common. Hence, it is implemented in the model. In proportional representation systems, seats are allocated in proportion to the vote share. The model implements Largest Remainder method of seat allocation (see Appendix B for description).

Districts can be urban, rural or mixed. In majoritarian systems districts are either urban or rural. The ratio of urban to rural districts reflects the country's urbanization level. The average voter income in urban districts is higher than in rural ones. In proportional systems, all districts are mixed. In this scenario, urbanization level reflects the ratio of urban to rural voters within each district. The average voter income is equal across all districts.

2.3 Elections

The election process is rather straightforward (summarized in Figure 2.5). In the first election, each faction forms a separate political party. Thus, a party's policy preferences and capital are those of the founding faction. Parties declare their candidacy for each district in which they have factions. Since the study does not focus on individual candidates, the model assumes that each party fields enough candidates to cover all seats

within the district. Voters are allowed to cast only one vote. Again, since the study does not track individual candidates, voters can only vote for parties. Once the votes are tallied, parties are assigned legislative seats based on their votes (based on highest number of votes in majoritarian systems or using Largest Remainder method in proportional systems). Finally, based on the voting results faction may choose to join a different party or create a new one. National parties may also merge with each other at this step. And then the rearranged parties declare their candidacies again starting the next electoral cycle. Note that the step with each faction forming its own political party is executed only once during the simulation. Starting with the second electoral cycle, this step is replaced by the step in which factions switch parties.

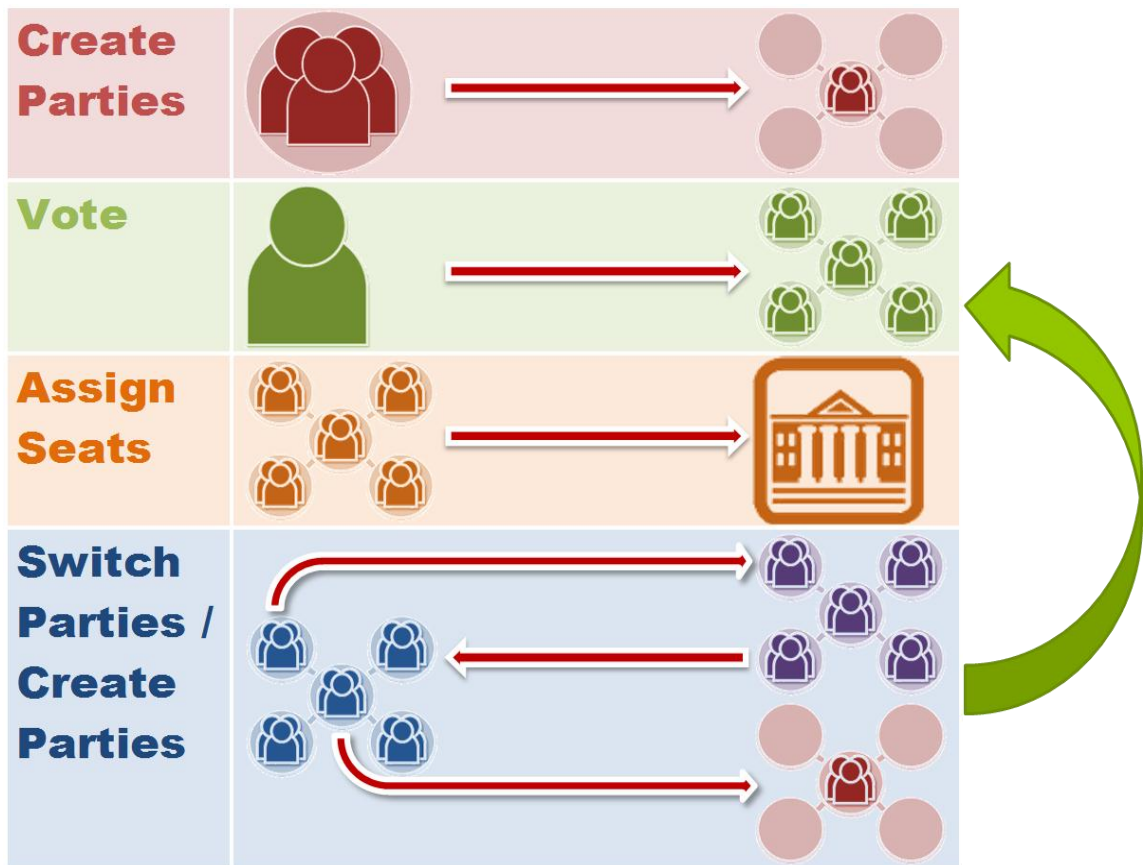


Figure 2.5 Elections Process

In the course of every electoral cycle, each model actor makes a single decision. Voters cast their votes for a party that best represents their interests. Factions switch parties in order to improve their chances to get into the legislature. And smaller national parties choose to merge with leading national parties to form coalition parties. Note that while voters always cast a vote, factions and parties may choose to do nothing in the current electoral cycle. Let's examine these decisions in more detail.

Voters evaluate each party running in their district and rank them according to their appeal. The party that ranks the highest receives the vote. Parties appeal to voters

either by pursuing policies that voters favor or through higher campaign spending (see equation 2.1). The strategies are not mutually exclusive; parties can utilize either one or both strategies. Note that a party's programmatic appeal and campaign spending impact voters independently and do not interact with each other. Consequently, their effects are added rather than multiplied in the equation.

$$X_i = \left[I(1 - T_i) + \frac{T_i \Sigma I}{N} (1 + \rho P_i)(1 - R_i) + \sigma \right] + \left[\delta \frac{C_i}{C_{max}} \right] \quad (2.1)$$

Where X_i – vote score for the party i ;

I – voter's income;

ΣI – total national income;

N – number of voters;

T_i – tax preference of party i ;

R_i – rent preference of party i ;

P_i – polarization of party i ;

ρ – coefficient that determines the impact of polarization of party i on the voters.

It equals to $-\alpha$ if the voter and party are in different economic sectors and $(1 -$

$\alpha)$ if they are in the same economic sector. Here, α is the share of voters that

belong to the same economic sectors as the party;

σ – random component;

δ – impact of capital spending;

C_i – capital spent by party i in the district;

C_{max} – the highest capital spending in the district.

The programmatic appeal of a party (in the first square brackets in equation 2.1) equates to a voter's expected income under the party's policies. A voter's expected income consists of two main components. The first component is the voter's after tax income. The second component is the voter's share of public goods. Since the model assumes that the government budget is spent on producing public goods, the voter's share of public goods equals to the voter's share of the government budget. As can be inferred from this equation, a voter's willingness to support redistributive or laissez fair policies depends on whether he or she receives more through his/her share of public goods than he or she loses through taxation. The amount that the voter loses through taxation is $T\mathbf{I}$; the amount he or she gains back through public goods is $T(\Sigma\mathbf{I}/N)$. Since $(\Sigma\mathbf{I}/N)$ essentially equals to an average income, a voter benefits from redistribution if his/her income is below the average income (see Figure 2.6). Otherwise, the voter will support laissez fair policies.

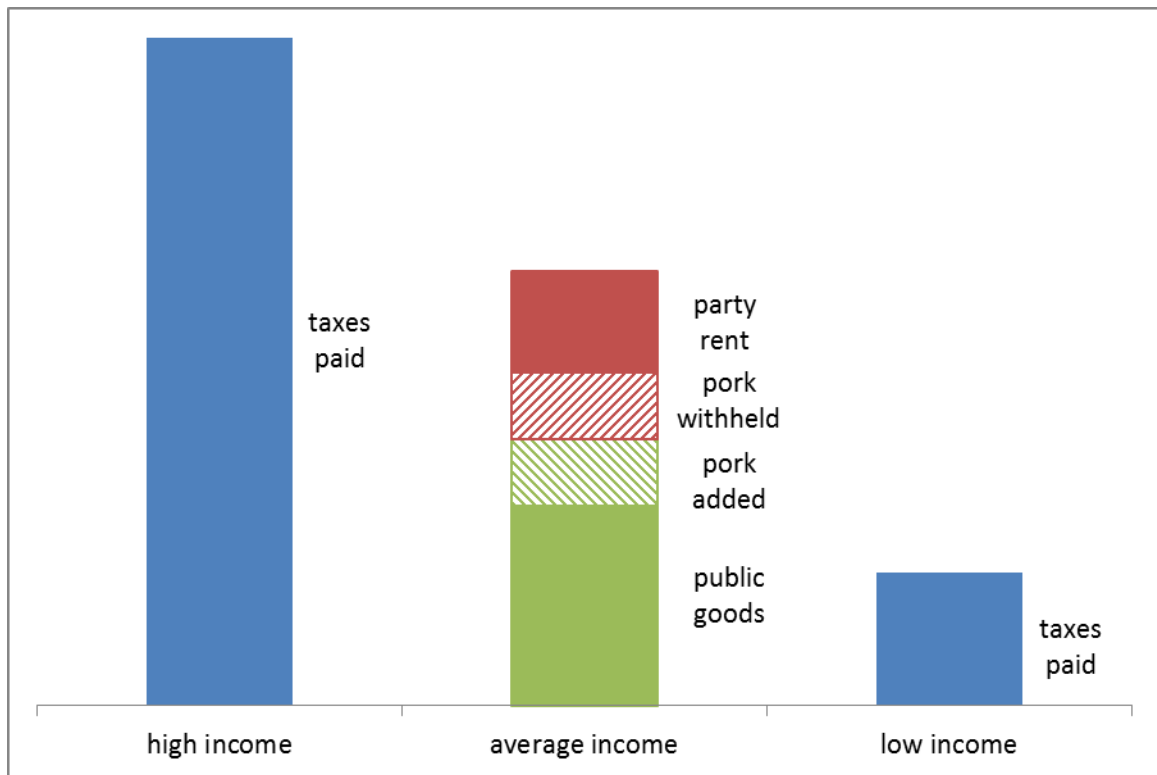


Figure 2.6 Voter Preferences Based on Income

This creates a polarized electorate. Voters with incomes below the average gain the most at the highest possible level of taxation. Conversely, voters with incomes above the average get the highest expected income at the lowest possible level of taxation. The intensity of their preference depends on the magnitude of the difference between their income and the average income. For voters whose income is considerably higher or lower than the average, a party's tax preference will be the overriding factor in the way they vote. On the other hand, voters with incomes close to the average will be less influenced by the tax preferences of the parties. Thus, they are more likely to be swayed by a party's campaign spending or non-policy considerations.

A voter's expected income can be further reduced by the party's level of corruption, i.e. rent-seeking. Each party appropriates a portion of the government budget for its own benefit, although this portion is higher for rent-seeking parties. A party's rent-seeking reduces the amount of public goods that voters get in addition to their net income. Thus, rent-seeking parties will be less attractive to voters, regardless of their tax rate preferences. Voter's expected income can also be increased or decreased by party's pork preferences. If a party belongs to the same economic sector as a voter, the latter receives a higher share of public goods. The higher the party's pork preferences, the higher the share of public goods that it targets to its economic sector. However, the party's polarization is adjusted by the share of voters that belong to the same economic sector. Since sector specific public goods have to be shared among all voters within the sector, the more voters belong to that sector, the lower is the return for an individual voter. If a party and voter belong to different economic sectors, the calculation is reversed.

Finally, each voter's evaluation includes a small random component. The purpose of this component is to make sure that two parties with similar tax and rent preferences receive similar number of votes. Without this component, a party with tax rate preference of 20% would receive all votes of agents favoring low taxes, while a party with the tax preference of 21% would receive none. Yet, such scenario is hardly realistic. First, neither voters nor even parties would be able to distinguish clearly between the preferences of these two parties. Given that ideology can be measured only roughly, such precision of evaluation is highly unlikely. Second, the tax rate in this model is a

composite variable indicating an average position over a number of issues. Depending on the relative weight given to different issues, the total value may differ slightly for various agents. Consequently, the two parties with preferences within 2 to 3 percentage points of each other should receive comparable vote counts. The random component achieves that purpose.

In addition to the expected income, voters are also influenced by each party's campaign spending. Since parties compete against each other, the value of a party's campaign spending is meaningful only in the context of campaign spending of competing parties. Therefore, it is the ratio of party's campaign spending to that of the highest spending competitor that influences voters. This, however, creates a problem. A voter's expected income enters into his or her calculations as an absolute value, whereas campaign spending is normalized to the range of 0 to 1. Changing income distribution changes the average income, which in turn affects the expected income portion of the voter's calculation. In order to avoid these changes from inadvertently affecting the relative weight of campaign spending in the voter's decision, the model adjusts the parameter δ to keep the relative weight of campaign spending constant in the equation. The parameter is measured in relation to the average income. Thus, the weight of 0.20 indicates that campaign spending value is adjusted to constitute one fifth of the average income.

Calculations for factions are based on utility rather than expected income. After each round of elections, factions may choose to switch parties or form new ones. In choosing a party, a faction balances its desire to secure access to the legislature, and

consequently government resources, with its desire to push for its policy preferences (see equation 2.2). A faction's access to government resources is determined by the total number of seats its party holds in legislature. However, its share of government resources is determined by its share of the party's capital. Parties with more seats in legislature have higher access to government resources, which makes them attractive to factions. On the other hand, they are likely to have higher capital. Thus, each faction's share of the parties' resources is lower compared to smaller parties.

$$Y_{ki} = R_i \left[\frac{V_k + V_i}{V_{av}} \right] \left[\frac{C_i}{C_k} \right] - (1 - R_i) D_{ki} \quad (2.2)$$

Where Y_{ki} – faction i 's expected utility from joining party k ;

R_i – rent preference of faction i ;

V_k – sum of votes of the factions that belong to party k ;

V_i – votes received by faction i ;

V_{av} – average number of votes required to secure a seat;

C_i – capital of faction i ;

C_k – capital party k ;

D_{ki} – distance between policy preferences of faction i and party k .

Since local factions run in a single district while national factions run in all, their calculations differ. When local factions calculate the chances of a party gaining legislative seats, they include only the votes for their district. Similarly, when they calculate their share of government resources, they do so only for their district. It is

calculated as a ratio of their capital to the capital spent by the party in their district. For national factions, however, all calculations are on national level. They include total votes and total capital.

In order to estimate the number of seats that a party would secure in the next round of elections, the faction first estimates the average number of votes required to secure a single seat in the given district. The average number of votes per seat is estimated as the sum of votes of winning parties divided by number of seats within the district. The faction then estimates the number of seats that a party is likely to get in the next election as a ratio of party's votes to the average number of votes per seat.

A party's vote is calculated as a sum of the votes of its constituent factions. The model uses the sum of faction votes instead of the vote the party received in the previous elections in order to account for factions switching parties. If a number of factions have already joined or left the party, the changes in its composition will not be reflected in its vote from the previous elections. The sum of faction votes is used instead. Since factions do not receive votes (only parties do), their share of party votes has to be calculated. A faction's share of party's votes is calculated in proportion to its share of party's capital.

The final component of each faction's calculations in equation 2.2 is the distance between its policy preferences and those of the party. It is calculated as a geometric distance between their tax, rent and polarization preferences (see equation 2.3). Note that the distance between polarization preferences is subtracted if both party and faction belong to the same economic sector; it is added otherwise.

$$D_{ki} = \sqrt{(T_i - T_k)^2 + (R_i - R_k)^2 + (P_i \pm P_k)^2} \quad (2.3)$$

Local factions may join either national parties or local parties running in the same district. National factions can only join national parties. Furthermore, a national faction can only switch parties if there are other national factions in its current party. The leading national faction, i.e. the faction with the highest capital, cannot switch parties. These restrictions are necessary to ensure that there are no “orphan” parties with a handful of local factions from different districts without a national faction to bind them together.

It is not enough, however, for a faction to decide to join a given party. The recipient party must also agree to accept the faction. Otherwise, numerous factions would join a successful party and enjoy the benefits of government resource while contributing next to nothing the party’s success. From a party’s perspective, a faction is a good fit if the number of votes that it bring to the party offsets the distance between their policy preferences (see equation 2.4). Consequently, factions with similar policy preferences will need to bring in fewer votes in order to receive a party’s consent to join. Factions that differ substantially in their policy preferences will need to bring a considerably higher number of votes in order to convince the party to let them in.

$$Y'_{ik} = R_k \left[\frac{V_i}{V_{av}} \right] - (1 - R_k) D_{ki} \quad (2.4)$$

Beyond switching one party for another, factions have a choice of starting a new party. A faction’s utility from starting a new party is calculated the same way as for joining an existing one. In this case, however, the second component for policy considerations drops

out, since the distance between policy preferences is zero. Furthermore, the faction does not have to share the benefits from securing a legislative seat with other factions. Thus, equation 2.2 is reduced to the following:

$$Y_{ki} = R_i \left[\frac{V_k + V_i}{V_{av}} \right] \quad (2.2b)$$

National parties may further aggregate into coalition parties. In this case, all factions from both parties will merge into a combined party. Similar to factions, their calculations are based on utility rather than expected income (see equation 2.5). Since national parties can generally secure a few seats, they are more concerned with increasing their influence than with simply securing more seats, particularly given that the largest party forms the government. Thus, parties will aggregate into coalitions that are substantially larger than the parties. As one can see from the equation, the party's benefits from merging with another party will be higher if its votes are considerably lower than the votes of the other party. Parties with comparable votes are more likely to compete against each other than merge. Larger parties in particular will tend to form their own coalitions.

$$Z_{kj} = R_k \left[1 - \frac{V_k}{V_j} \right] \left[\frac{C_k}{C_j} \right] - (1 - R_k) D_{kj} \quad (2.5)$$

Where Z_{kj} – utility party k receives from joining party j ;

R_k – rent preference of party k ;

C_k – capital of party k ;

C_j – capital of party j ;

V_k – sum of votes of the factions that belong to party k ;

V_j – sum of votes of the factions that belong to party j ;

D_{kj} – distance between policy preferences of parties k and j .

2.4 Model Calibration and Validation

The model parameters were acquired by sweeping through the extensive parameter space. Some of the parameters are logically limited to a given range, e.g. tax or rent preferences can only take values between 0 and 1. Others were found to have limited impact on the model outcomes. Yet, the model outcomes are quite sensitive to a number of parameters. These are described in more detail in the following chapter. The default model setup is summarized in Table 2.1.

Table 2.1 Model Run Values

<i>Variable</i>	<i>Range/Value</i>	<i>Distribution</i>
Factions		
C – faction capital	1 x5 – national x2 – rent-seeking	
R – rent preference	0.25 – programmatic 0.50 – rent-seeking	
P – polarization	0 – 1.0	Gaussian $\sim[0.5, 0.167]$
T – tax preference	0.2 – 0.6	Uniform
<u>By economic sector</u>		
Services	0.2	
Agriculture	0.3	
Industry	0.5	
State	0.6	
Voters		

I – voter income	Min income = 1.0 Pareto index = 2	Pareto
σ – random component	0 – 1	Uniform
δ – impact of campaign spending	0.2	
U – urban/rural income disparity	2	
<u>Distribution by economic sector</u>	<u>Rural</u>	<u>Urban</u>
Services	25%	25%
Agriculture	50%	0%
Industry	0%	50%
State	15%	15%
<hr/>		
General		
Number of seats in legislature	20	
Number of voters	50,000	
Number of factions (total)	1,000	
Number of national factions	150	
<hr/>		

Party systems can be described by a number of variables. Two most important ones are the number of parties and party size. According to the literature on party competition, smaller district magnitudes lead to fewer parties in the legislature. Yet, these parties tend to be larger, since factions have higher incentives to join the parties in legislature. Higher district magnitudes have the opposite effect. They allow a more diverse set of smaller parties to secure legislative seats. The number of parties in legislature further indicates the level of party fragmentation, while the average party size points to the level of inclusion of the party system. Thus, the combination of these two variable can tell researchers a great deal about the impact of institutional design and structural variables on the resulting party system.

The number of parties, however, can be measured in different ways. One way is to measure all parties in legislature. Yet, this measure includes both local and national parties. According to the model setup local parties are equivalent to independent candidates rather than parties. Consequently, this measure is not entirely accurate representation of the number of parties. An alternative is to measure only national parties. This measure includes only the parties that correspond to the traditional conception of political parties in political science. Yet, since the model generates both types of parties, the study includes them both in the analysis.

Party size can also be measured in different ways. It can be measured in terms of the number of factions that constitute each party or in terms of party's capital. The former measure indicates the ability of factions to form coalitions, i.e. parties, in order to pursue their interests. The latter measure may be better in approximating the actual size of parties. In the model, faction capital indicates both faction's wealth and faction's size. Thus, a coalition of fewer but larger factions may indicate a larger party. However, the study is interested in the ability of diverse factions to consolidate into parties. Consequently, the number of factions is used as the indicator of party size.

There are two sources of stochastic variation of the output variables. First is the variation in the initialization of factions. While the model initializes a large number of factions with a wide array of preferences, slight variations between initializations are inevitable. These result in certain amount of variation of the output. Another source of source of stochastic variation comes from the model itself. Faction decisions to switch

parties take into account the decisions of the other factions. Thus, the order in which factions are activated can impact the outcomes as well.

In order to determine the level of stochastic variation in the output variables, the study runs 100 simulations with the same initialization of factions – 50 simulation under majoritarian and 50 under PR system case. In addition, the study runs 100 simulations with different initialization of factions for each simulation. Again, the study runs 50 simulations with majoritarian and 50 simulations with PR system. Each simulation is executed for 25 iterations in order to allow the model to reach a steady state. All simulations reach a steady state within 10-15 iterations regardless of the test scenario.

The output variables in both scenarios seem to be normally distributed (see Figures 2.7 and 2.8). In order to verify their normality, the study runs Shapiro-Wilk normality test on the output variables. The results of the test are summarized in Table 2.2 together with the mean and standard deviation. The null hypothesis in Shapiro-Wilk test is that variables are normally distributed. The null hypothesis cannot be rejected at $p=0.05$ significance level for most of the output variables, especially in PR systems. Thus, they are normally distributed. In majoritarian system, both national and total party sizes are not normally distributed under either scenario. As histograms of the distribution of the output variables indicate, the distribution of party sizes is slightly skewed and has a heavier tail on the right. This also results in rather large standard deviation values.

Table 2.2 Output Variables under Same and New Faction Initialization Scenarios

	<i>Shapiro-Wilk Test (p-value)</i>	<i>Mean</i>	<i>Standard Deviation</i>
<u>PR System</u>			
<i>Same Faction Initialization Scenario</i>			
Number of Parties Total	0.88	12.88	1.33
Number of Parties National	0.51	3.72	0.95
Party Size Total	0.41	13.14	2.54
Party Size National	0.08	28.36	9.24
<i>New Factions Initialization Scenario</i>			
Number of Parties Total	0.70	10.96	2.10
Number of Parties National	0.99	5.24	1.33
Party Size Total	0.45	15.64	4.19
Party Size National	0.10	21.92	7.91
<u>Majoritarian System</u>			
<i>Same Faction Initialization Scenario</i>			
Number of Parties Total	0.99	3.24	1.18
Number of Parties National	0.99	3.18	1.13
Party Size Total	0.00	38.83	20.57
Party Size National	0.00	37.21	20.48
<i>New Factions Initialization Scenario</i>			
Number of Parties Total	0.06	2.68	1.43
Number of Parties National	0.21	2.26	1.17
Party Size Total	0.00	50.19	26.28
Party Size National	0.00	55.77	26.28

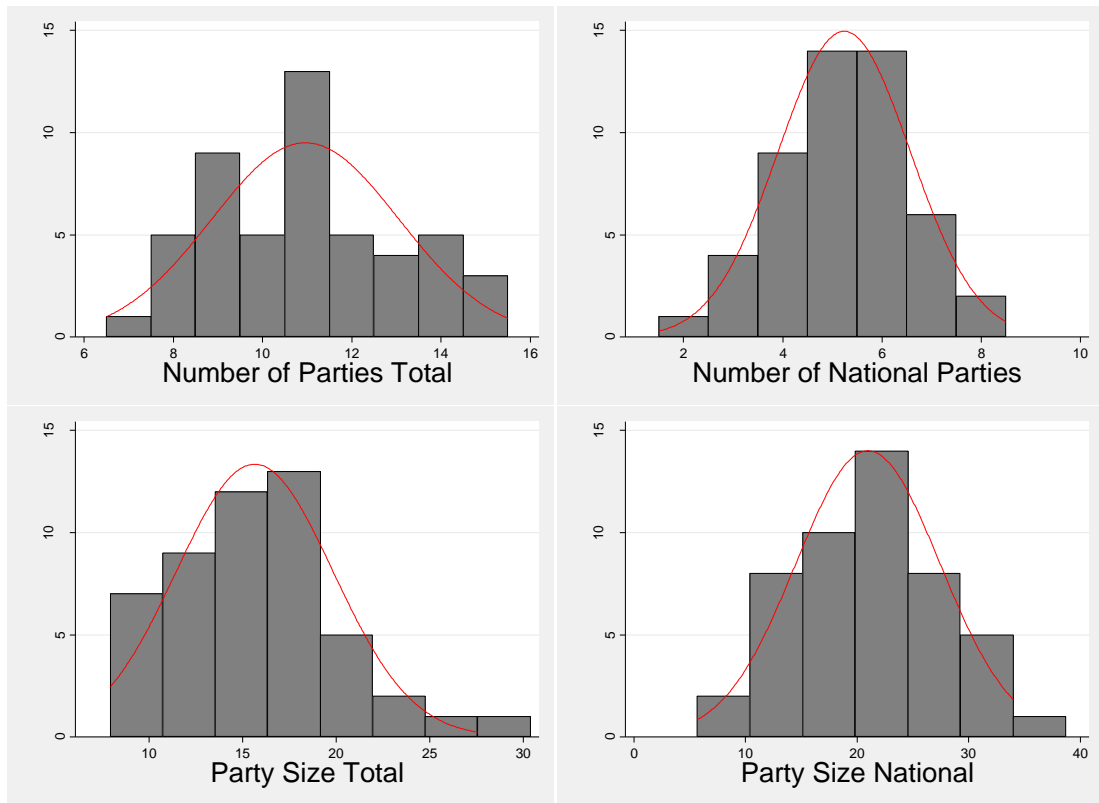


Figure 2.7 Histograms of Output Variables in PR Systems (Different Initialization)

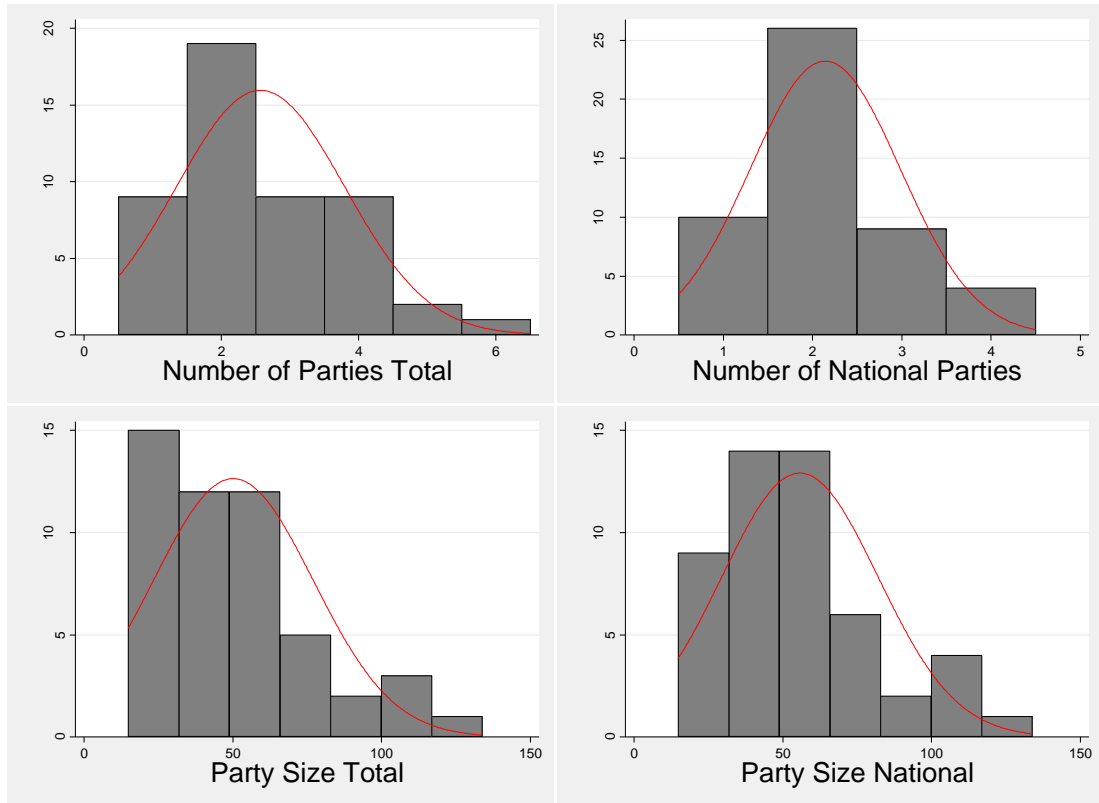


Figure 2.8 Histograms of Output Variables in SMD Systems (Different Initialization)

In the scenario with the same initialization of factions, most output variables are normally distributed. This indicates that the difference in the order of activation of factions leads to variation in the output. Given that the distribution of the output variables is normal and standard deviation is relatively small, the mean provides a good indicator of the model results. Comparing the mean and standard deviation for the two scenarios, one can see that the distribution of the output variables is roughly centered on the same value for both. However, standard deviation is higher for the scenario with new initialization at each simulation. Thus, the difference in initialization of factions increases stochastic variation of the output variables but does not alter the results of the model, i.e. the mean

of the output distribution. In the following tests, the study will use different initialization for each simulation.

It is important to note that the model does not generate a cyclical behavior in which a handful of parties take turns in forming the government. There are two main reasons for that. First, the model keeps the voter turnout constant at 100%. In real life, however, a large portion of the electorate does not vote regularly. Different variables impact the probability of a vote-eligible person actually casting his or her vote. Some of these variables affect certain portions of the electorate more than others. Thus, the voter landscape changes from election to election, altering the election outcomes.

Similarly, the model keeps campaign spending levels by factions constant at 100%. Again, campaign spending levels in real life vary depending on a number of factors. Losing factions may choose to contribute at a higher level, while winning faction may reduce their spending. Some factions may choose to drop out of politics altogether, while others may decide to join in. Thus, even if the composition of parties does not change, their campaign spending changes from election to election. These changes particularly affect the swing voters.

As this study is not interested in the impact of voter turnout or campaign contributions on the party system, it does not implement either of these variations. These questions fall outside of the scope of the study. However, it worth pointing out that the model framework is flexible enough for these changes to be implemented and examined in more detail.

The model tests the impact of input variables on a number of dependent variables. These variables can be grouped into two categories. The first category, described above, consists of the number of parties that have secured legislative seats as well as an average party size, i.e. an average number of factions in each party in the legislature. This category demonstrates the pressure exerted by the institutional design on factions to consolidate into parties. It also demonstrates the variety of interests represented within the legislature as well as the inclusiveness of the current system. The second category consists of strategies parties use in order to secure seats. In this case, the model tests the viability of various competition strategies given an institutional design.

The basic test that validates any model of party competition is whether it conforms to the Duverger's law. The Duverger's law predicts that the number of major parties is proportional to the district magnitude. Thus, proportional representation scenarios are expected to have higher number of parties than majoritarian ones. As a rule of thumb, the number of major parties in a system equals the district magnitude plus one.

As the results of the normality tests summarized in Table 2.2 indicate, the model does conform to the Duverger's law. PR systems result in a higher number of parties. Furthermore, the number of national parties roughly corresponds to the expected number of major parties. The scenario with $DM = 5$ results in 5.24 national parties. The histogram in Figure 2.7 indicates that both 5 and 6 national parties are the most frequent model outcomes in this scenario. The scenario with $DM = 1$ results in 2.26 national parties. And as the histogram in Figure 2.8 indicates, two national parties is by far the dominant outcome of the model. When it comes to the average party size, district magnitude has

the opposite effect. Majoritarian systems exert a stronger pressure on factions to consolidate into parties, leading to fewer but larger parties. PR systems, on the other hand, are more inclusive. They allow a wider array of smaller parties to get into the legislature.

In the next category of variables are the strategies used by parties to win elections. There are generally two ways they can appeal to voters. The first strategy is high campaign spending. This strategy is generally pursued by rent-seeking parties, as they have higher financial and organizational resources. It is targeted primarily at swing voters. As described above, swing voters are the voters with incomes close to average whose livelihood is less affected by various redistributive policies. The second strategy is the provision of public goods. Since programmatic parties have lower rent-seeking rates, they spend higher ratio of government resources on producing public goods. Consequently, the second strategy is used primarily by programmatic parties. Within the programmatic appeal, however, parties can target three distinct groups of voters. They can appeal to high income voters through pro-market policies, i.e. low tax rates. They can appeal to low income voters through redistributive policies, i.e. high tax rates. Alternatively, they can appeal to voters within the same economic sector through high pork spending.

The thresholds used to identify a party's strategy are summarized in Table 2.3. The threshold for high campaign spending is a median campaign spending of parties in the legislature. Note that it is lower in majoritarian systems. Rent preferences for rent-seeking and programmatic parties indicate lower and upper bounds of rent preferences of

factions. Similarly, pork preference threshold indicates the above the average pork preference range. Finally, tax preference thresholds are within 10% of the lower and upper tax preference range.

Table 2.3 Party Strategy Thresholds

<i>Strategy</i>	<i>Variable</i>	<i>Threshold</i>
Campaign Spending	C – Campaign Spending	C > 20 (PR) C > 10 (SMD)
Rent-seeking	R – Rent Preference	R > 0.35
Programmatic	R – Rent Preference	R < 0.35
Pork	P – Pork Preference	P > 0.7
Pro-market Policy	T – Tax Preference	T < 0.3
Redistributive Policy	T – Tax Preference	T > 0.5

The two dominant strategies that are used by parties in the model are high campaign spending and programmatic appeal. Together they account for virtually all seats in the legislature in both PR and majoritarian systems (see Figure 2.9 and 2.10). Furthermore, these strategies do not overlap – parties use only one of these strategies. In fact, virtually all parties that win through high campaign spending are rent-seekers. Consequently, they have little programmatic appeal. Their distribution, however, differs depending on the institutional design. Campaign spending dominates in majoritarian systems, while both strategies are competitive in PR systems. In majoritarian systems, higher pressure to consolidate into larger parties accounts for the prevalence of campaign spending strategy.

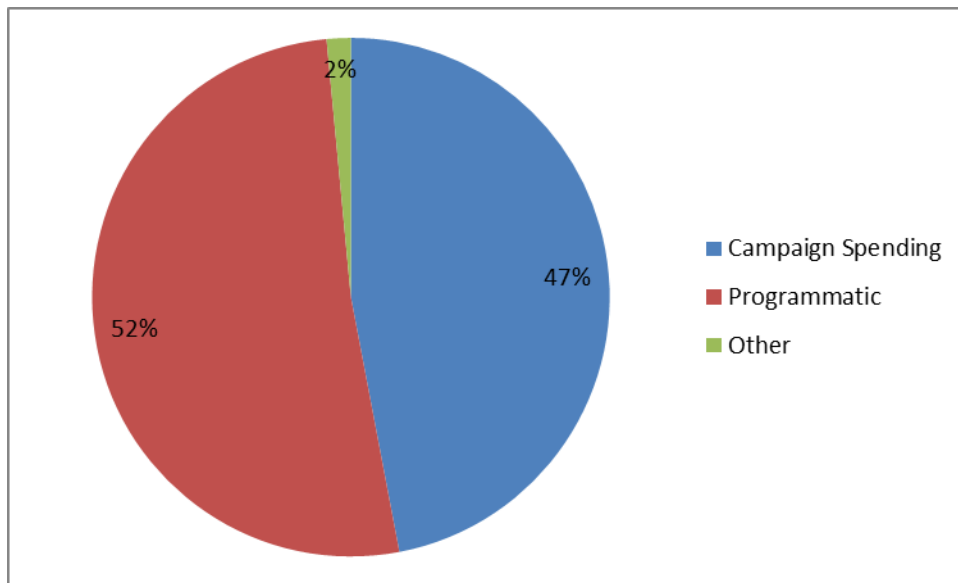


Figure 2.9 Distribution of Seats by Winning Strategy (PR)

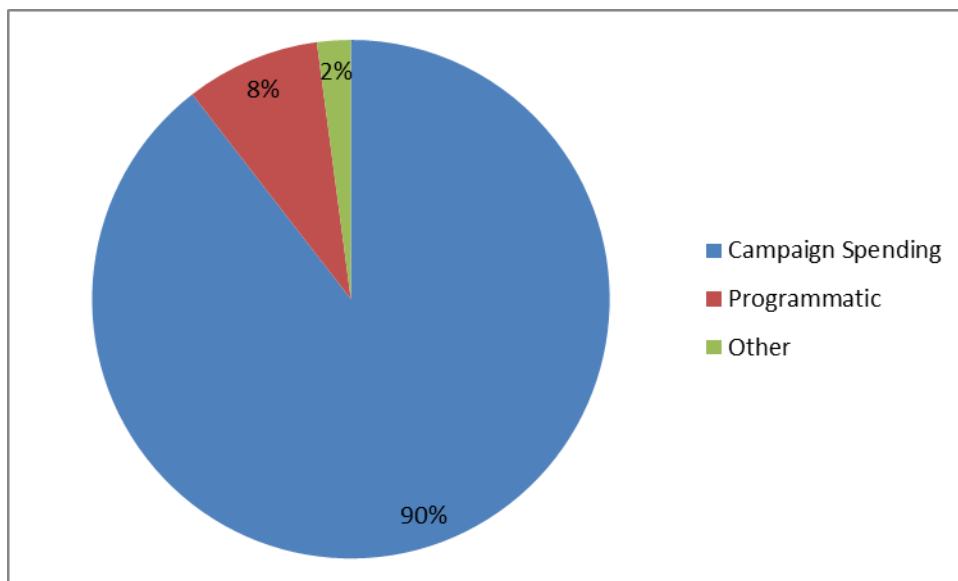


Figure 2.10 Distribution of Seats by Winning Strategy (SMD)

Most programmatic parties appeal to the voters within their economic sector by promising more pork (see Figure 2.11). Only a few appeal based on pro-market or

redistributive taxation policies. Even in this case, the taxation strategy is combined with the promises of pork. On its own, taxation strategy attracts few votes. Consequently, the appeal of the programmatic parties is still primarily redistributive. However, the redistribution promoted by parties is based on economic sector and not voter income. The fact that economic sector forms a stronger fault line than income distribution may be the result of model initialization. The model has a relatively high range of pork preferences and relatively low level of income inequality. If these were to be adjusted accordingly, taxation strategy would likely play a stronger role.

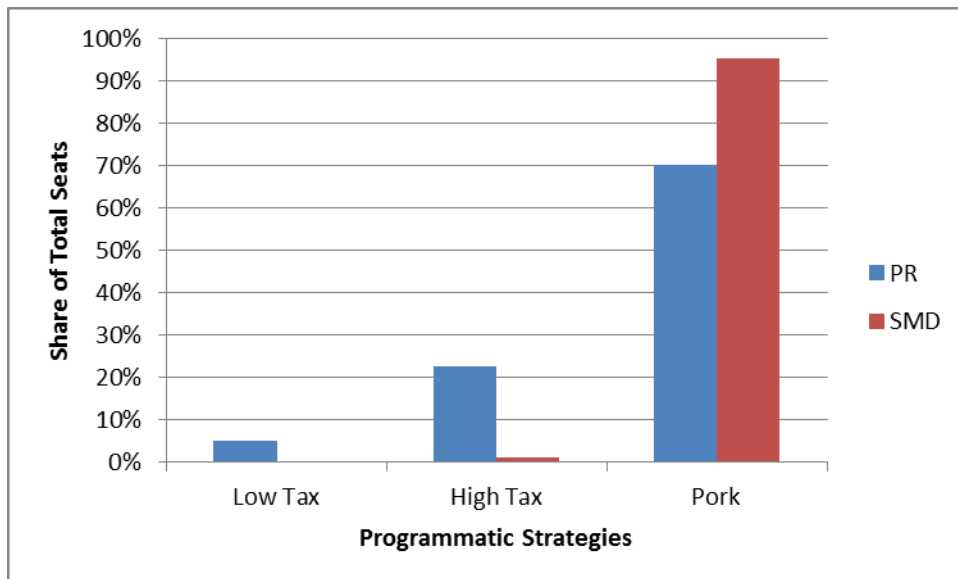


Figure 2.11 Distribution of Seats of Programmatic Parties by Strategy

A quick look at the distribution of seats by economic sectors (see Figure 2.12) confirms the findings on the winning strategies. There are only a few mixed parties in PR systems and most seats are distributed in roughly the same proportion as the number of voters in

each economic sector. In majoritarian systems, on the other hand, mixed parties are common. Yet, services sector is by far the dominant. This indicates that rent-seeking parties are more competitive if they have lower tax preferences. If voters expect little from the government, they prefer the government that takes little from them. Since parties in services sector have the lowest tax preferences, they receive a disproportionately high share of seats.

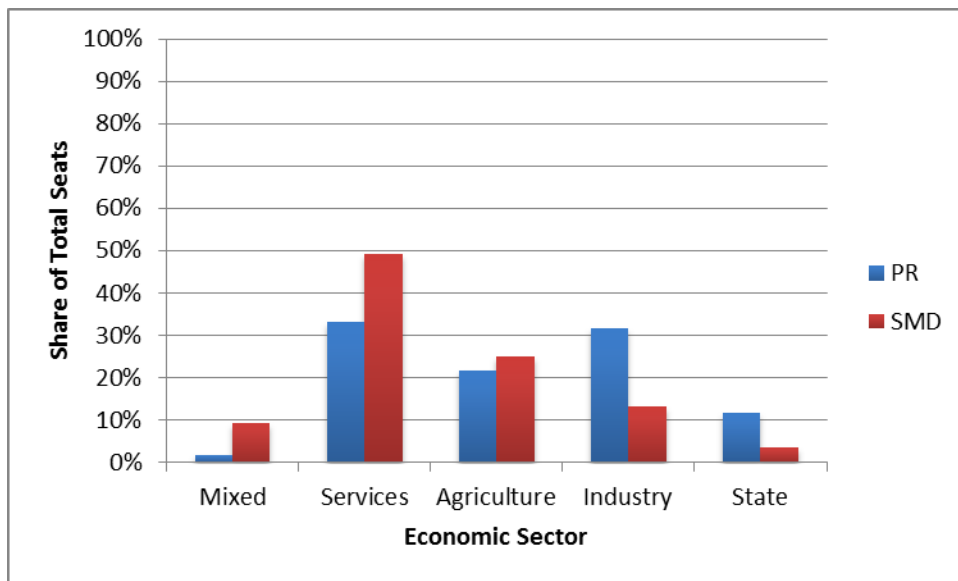


Figure 2.12 Distribution of Seats by Economic Sector

The purpose of this chapter was to create a model of emergence of political parties using Dahl's polyarchy framework. The resulting model produces a political party system that conforms to the Duverger's law. While there is some stochastic variation in the model, its output is normally distributed. There are a number of input variables that are subject to calibration in the model. In the following chapter, the study will test the impact of the

variation of these input variables on the outcomes of the model. In particular, it will test whether the model outcomes hold up when the input variables are varied over a wide range of values.

CHAPTER 3. SENSITIVITY ANALYSIS

In order to determine the parameter space over which the model remains valid, the study tests the model's sensitivity to variations in its main parameters. Thus, the model's relative insensitivity to the variation of some parameters speaks to the robustness of the model processes that lead to the given outcome. Higher sensitivity, on the other hand, does not necessarily invalidate the model's findings. Yet, researchers would need to exercise caution when interpreting these results.

The study performs local sensitivity analysis of the model. What this entails is variation of input parameters around their default values. For the most part, the study does not test the impact of interaction of input parameters as the number of parameters is too large for an interaction test. It only tests interaction of a number of related parameters. The main input parameters are summarized in Table 3.1. Each parameter is varied over a range of reasonable or in some cases possible values. The values are generally varied in each direction for equal intervals around the default value. Each variation is run 50 times. The average values are then plotted on a graph.

Table 3.1 Default Model Values

<i>Variable</i>	<i>Range/Value</i>	<i>Distribution</i>
General		
Number of voters	50,000	

Number of factions (total)	1,000	
Number of national factions	15%	
Factions		
C – faction capital	1 x1 – national x2 – rent-seeking	
R – rent preference	0.25 – programmatic 0.50 – rent-seeking	
P – pork preference	0 – 1.0	Gaussian $\sim[0.5, 0.167]$
Voters		
I – voter income	Pareto index = 2	Pareto
δ – impact of campaign spending	0.2	
U – urban/rural income disparity	2	

The number of voters should have little impact on the outcomes of the model. The voters' decisive characteristic in the model is their income. Voter income is drawn from a Pareto distribution, which has a heavy tail. This means that most voters end up with incomes quite similar to each other. The only possible source of variation is at high income levels, since Pareto distribution draws considerably fewer values at the higher range. Yet, large enough number of draws should smooth out most of this variation. In order to test that, the model is run with 10,000; 50,000 and 100,000 voters. As expected, the number of voters has little impact on the outcome of the model (see Figures 3.1 and 3.2). In both majoritarian and PR systems the number of parties and average party size remain relatively the same in all three tested scenarios.

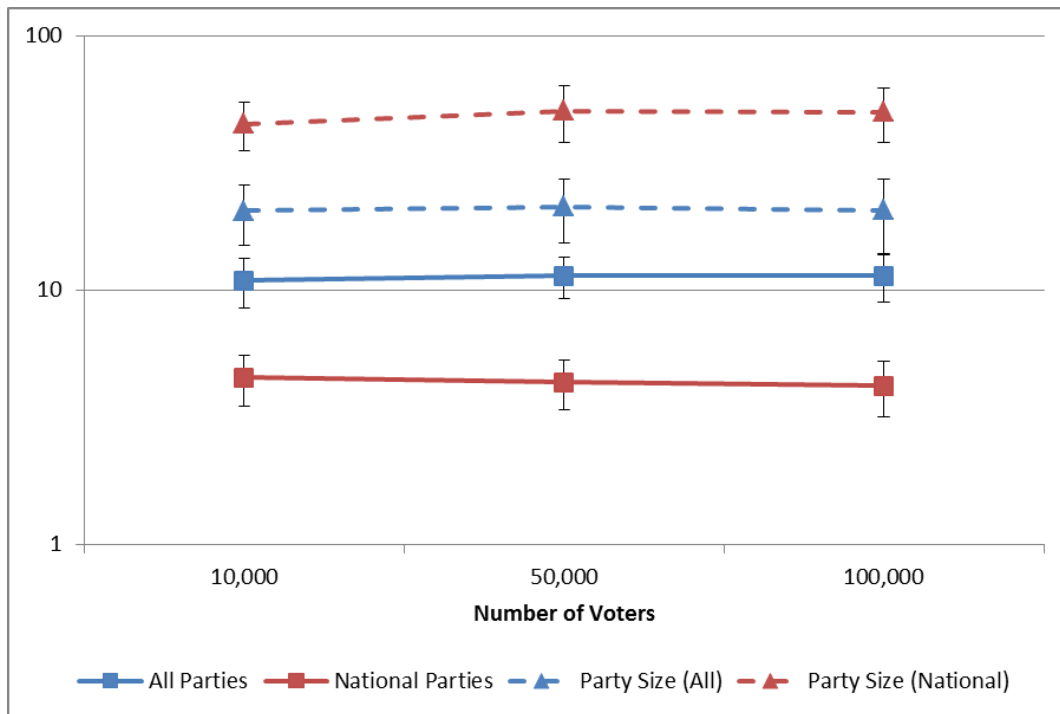


Figure 3.1 Sensitivity to Number of Voters in PR Systems

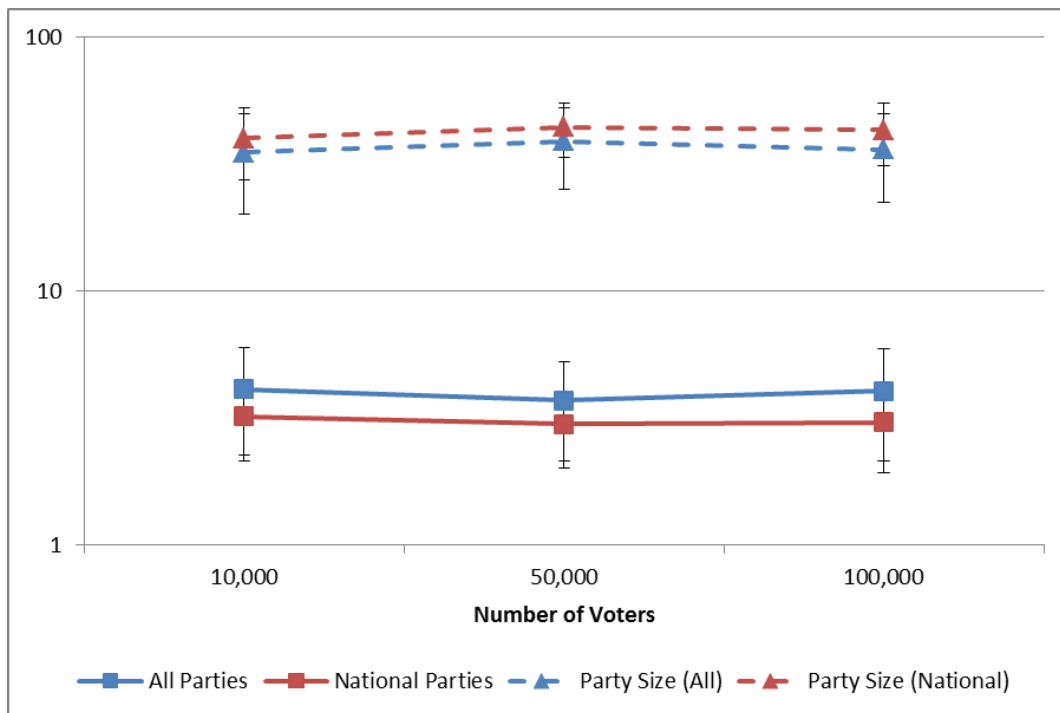


Figure 3.2 Sensitivity to Number of Voters in SMD systems

In contrast to voters, factions have a strong impact on the outcome of the model. As demonstrated in the previous chapter, their initialization and order of activation can have an impact on the stochastic variation of the output. Thus, it is natural to assume that the number of factions and the ratio of national factions will alter the outcomes as well, even if the direction of the change may not be immediately clear. The total number of factions has to be sufficiently larger than the number of contested seats in order to ensure that the model results are not affected by the initial distribution of factions. In order to test model's sensitivity to factions, the study runs the model with 200, 500, 1000, 1500, and 2000 factions. It further varies the ratio of national faction from 5% to 25% at 5% intervals.

Sensitivity of the model to the increasing number of factions is somewhat higher in majoritarian than PR systems (see Figures 3.3 and 3.4). In both cases, higher number of factions leads to lower number of parties, indicating a higher level of party consolidation. Yet, in majoritarian systems, the impact of the number of factions is more pronounced, particularly at the lower range. At the higher range, however, the model's sensitivity to the parameter diminishes. Thus, when the number of factions increases to 1000 factions or higher, the model outcomes are relatively unaffected. Note that the error bars are not indicated on the graph in order to avoid overcrowding. In general, the errors in this and the following graphs are equivalent to the ones shown in Figures 3.1 and 3.2.

Increasing the ratio of national factions, on the other hand, has a stronger impact on PR systems, while having almost no impact on majoritarian systems. Predictably, higher ratio of national factions shifts the balance of the party system towards national

parties. Yet, the impact of the parameter diminishes as the parameter continues to increase. Thus, impact of increasing the ratio of national factions beyond 15% on the number of national parties is almost negligible. Since most parties in majoritarian systems are national in any scenario, variation of this parameter has virtually no effect on the outcome.

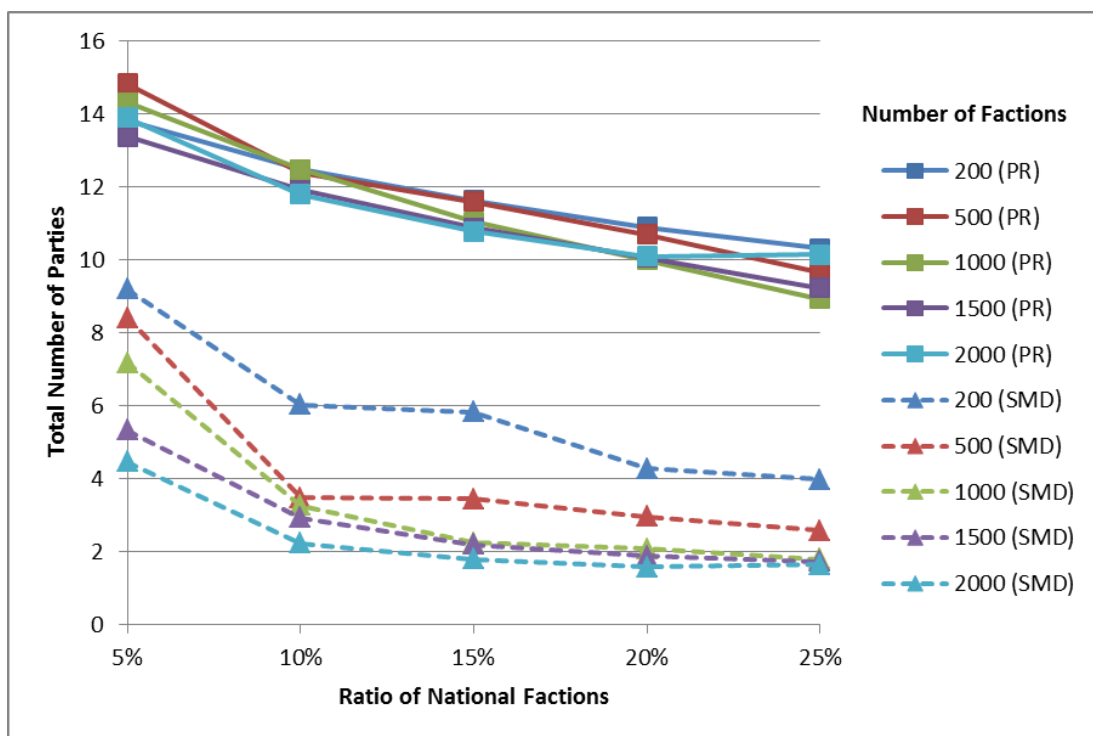


Figure 3.3 Sensitivity of Total Number of Parties to Number of Factions

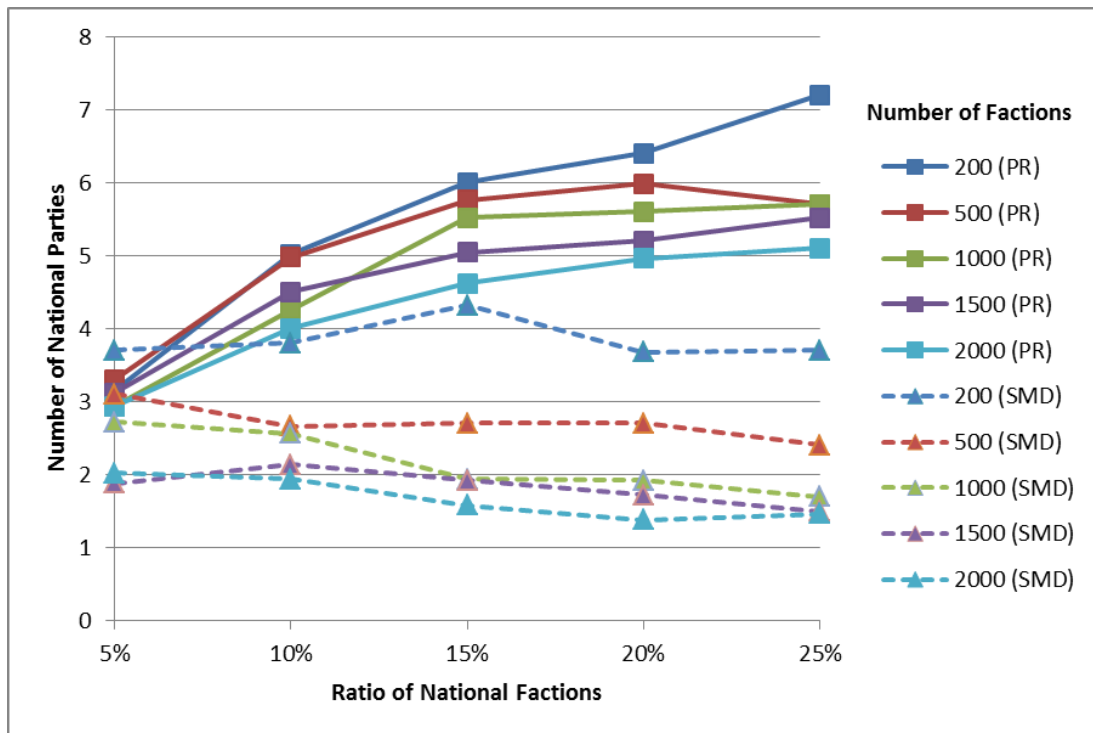


Figure 3.4 Sensitivity of Number of National Parties to Number of Factions

In addition to its impact on the model outcomes, increasing the number of factions increases the “deadweight” of the model. This “deadweight” is the result of the model’s approach to dealing with inadequate data on the number and distribution of factions. The number and relative distribution of factions is hard to estimate for any country, especially developing ones. Such data is generally unavailable. In order to accommodate the lack of data, the model is initialized with a large number of factions with preferences uniformly distributed over the entire spectrum of possible values. The factions are then allowed to aggregate into parties and coalitions. The result of this approach is the “deadweight” of factions, i.e. a number of factions that never receive any votes or have any impact on the electoral process. In other words, the unviable initial values of factions are quickly

identified and sidelined within the model itself, without the study relying on a priori assumptions in this regard.

Model results shown in Figures 3.5 and 3.6 indicate the percentage of additional factions that make it into the legislature. The remaining factions fall out as the “deadweight.” As one can see from the results, the ratio of additional factions that make it into the legislature drops rapidly from 40% to 10% at around 1000 faction in PR systems. It drops from 20% to 10% at 500 factions in majoritarian systems. It remains steady after that. The ratio of national factions has little effect on the “deadweight” of factions. Consequently, increasing the number of factions beyond 1000 is unlikely to alter the outcomes of the model. At 1000 factions, the model has sufficient variety of factions at every initialization in order to be insensitive to the initial distribution values. This conclusion is borne out by the findings shown in Figures 3.3 and 3.4, which indicate that model outcomes are relatively the same when initialized with 1000, 1500, and 2000 factions.

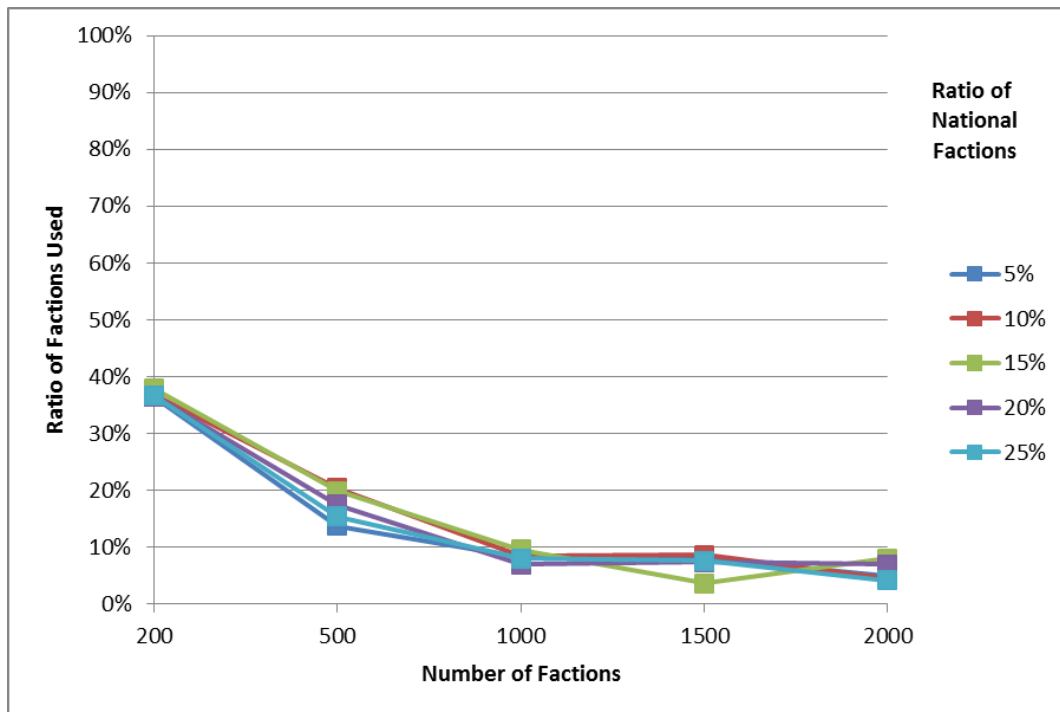


Figure 3.5 Deadweight of Factions in PR Systems

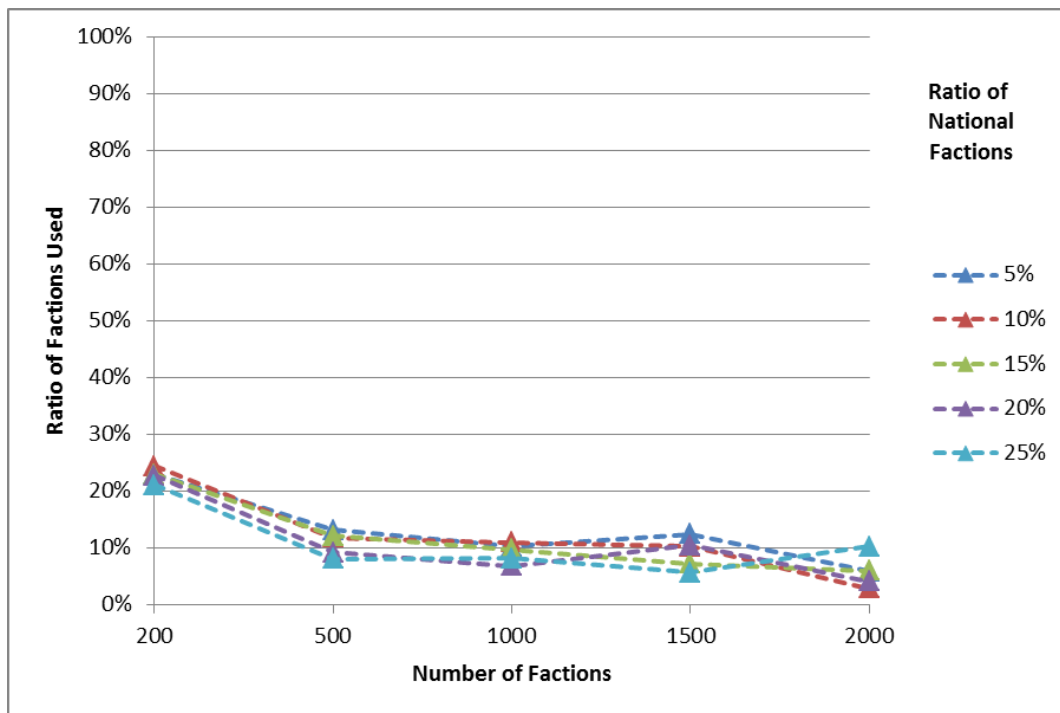


Figure 3.6 Deadweight of Factions in SMD Systems

Beyond the simple number of actors in the model (factions or voters), model outcomes are impacted by their initialization parameters. Initialization parameters of factions that may impact the model outcome include rent and pork preferences, and faction capital. Rent preferences figure in the model in two ways. First, they determine the willingness of the factions to compromise their policy preferences in order to gain access to the legislature. Second, they determine the attractiveness of faction policies to voters. Since factions are divided into programmatic and rent-seeking, their preferences are determined by two parameters. The first is the level of rent-seeking of the programmatic factions. It determines the lowest possible level of rent-seeking by the political elites in the country. Thus, a high level of rent preference for programmatic factions indicates a high level of corruption in the society as a whole. In such case, one can expect a higher level of consolidation of the party system, since factions are more interested in access to government resources than policy preferences.

The second parameter that determines the rent preference of factions is the gap between the preferences of rent-seeking and programmatic factions. This parameter determines how much more corrupt the rent-seeking factions are in comparison with programmatic ones. A higher gap in rent preferences gives some advantage to the rent-seeking factions. It affords them higher flexibility when choosing parties to join. They are more likely than programmatic factions to join the winning parties. On the downside, being more corrupt makes them less attractive to voters. Thus, a higher gap in rent preferences may also diminish the chances of the rent-seeking factions. The overall impact of the rent gap is therefore difficult to predict.

As expected, the higher rent preference of programmatic parties increases consolidation of the party system (see Figure 3.7). The series plotted in the graph indicate the rent preference of programmatic factions, i.e. the lowest possible level of rent-seeking. As the parameter increases, the total number of parties decreases. In PR systems, the model outcomes are also insensitive to the gap between rent preferences of programmatic and rent-seeking factions. In majoritarian systems, the outcomes depend on interaction of both rent preference parameters. An increasing gap between rent preferences of programmatic and rent-seeking factions decreases consolidation of the party system. Yet, the impact of the increasing gap diminishes as the corruption level of the society, i.e. the rent preference of programmatic factions, increases.

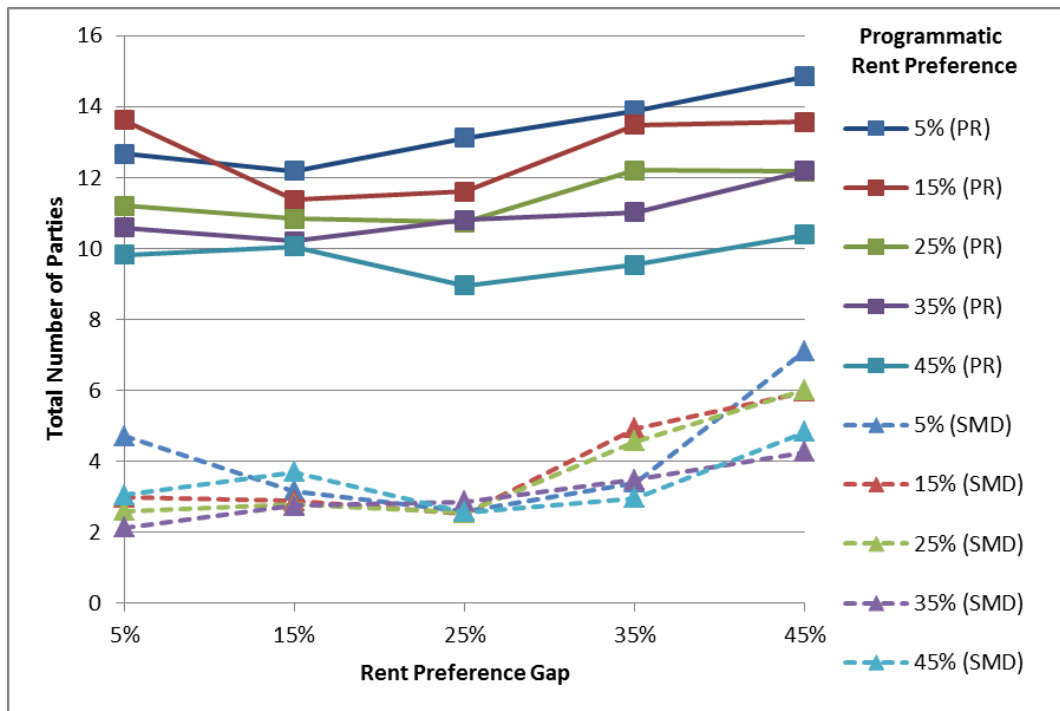


Figure 3.7 Total Number of Parties vs. Rent Preferences

When it comes to national parties, the interaction of the two parameters exerts a stronger influence (see Figure 3.8). In PR systems, increasing rent preference gap seems to increase the number of national parties, and the impact of this parameter is amplified as the rent preferences of programmatic factions increase. Thus, in more corrupt societies the difference between programmatic and rent-seeking factions has to be much higher in order for smaller programmatic parties to have a chance to get into the legislature. Otherwise, larger rent-seeking national parties dominate the system, leading to fewer parties. Interestingly, at the very low level of corruption (programmatic rent preference of 5%) the pattern is reversed – higher rent preference gap increases party consolidation. In this case, factions are too inflexible to consolidate into larger parties. Thus, increasing the rent preference gap affords rent-seeking factions more flexibility to consolidate.

In majoritarian systems, rent preference gap seems to exhibit both consolidating and dispersing forces, with the gap of 25% as a breaking point. When the gap is less than 25%, higher corruption level has a consolidating impact on the party system. Higher flexibility of rent-seeking factions allows them to consolidate into larger parties. Yet, their rent-seeking preferences do not rise to the levels that make them unelectable. As the gap increases, however, higher rent preferences begin to act against the rent-seeking factions, making space for smaller programmatic factions. Contrary to PR system, higher level of corruption dampens the impact of rent preference gap.

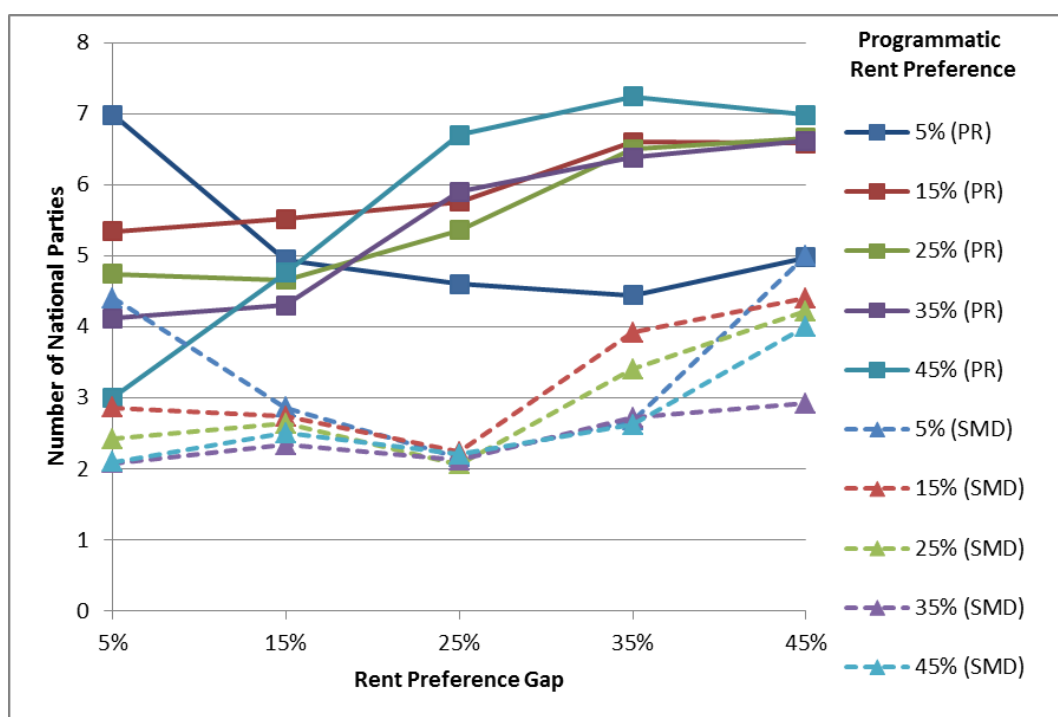


Figure 3.8 Number of National Parties vs. Rent Preferences

While the study chooses middle parameters as default values, these need to be adjusted if the model is calibrated for a particular society. Thus, the rent preferences of the programmatic factions indicate the level of corruption of a society, which varies from country to country. The gap between the rent preferences of programmatic and rent-seeking factions indicates the level of polarization between the elites and the people. If the elites closely identify with the interests of the people, the gap will be smaller; if they are too removed from the people, the gap is going to be larger. Again, this would have to be adjusted for a particular case.

Beyond rent preference, rent-seeking and programmatic factions differ in the amount of capital they can use for electoral campaigning. As a rule, rent-seeking factions will have higher capital as they represent a narrower circle of wealthy elites. The study

tests the model with a baseline in which rent-seeking factions have the same capital as programmatic ones and then increases the capital of rent-seeking factions to be 2 and 3 times higher. In addition to rent-seeking factions, national factions have higher capital as well. Yet, they have to split their capital evenly across all districts. Thus, their spending per district is more in line with the spending by the local factions. The study tests the model with various ratios of per district spending of the national to local factions. The ratios vary from 0.75 to 1.25 at 0.25 intervals.

As expected, higher ratio of per district spending of national to local factions leads to higher consolidation of the party system. Thus, increasing the relative capital of national factions decreases the number of parties, while having relatively little impact on the number of national parties, although it increases the latter somewhat in case of PR systems (see Figures 3.9 and 3.10). Consequently, increasing the capital of national factions increases the weight of national parties in the system.

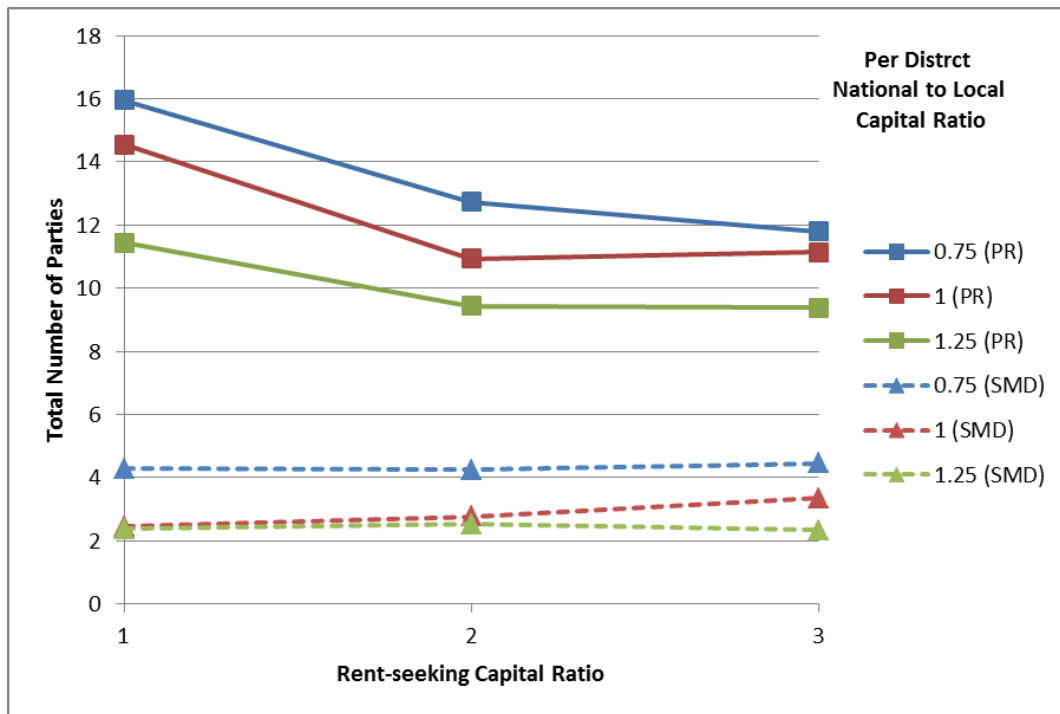


Figure 3.9 Total Number of Parties vs. National and Rent-seeking Capital Ratios

Increasing the capital of rent-seeking factions also increases party consolidation, but only in PR systems. In the baseline scenario, in which rent-seeking factions have the same capital levels, smaller programmatic parties dominate the system. Thus, even if rent-seeking factions consolidate into larger parties, they remain unattractive to voters and fail to secure legislative seats. Increasing their capital, however, allows the latter to outspend the smaller programmatic factions and secure more seats, leading to higher party consolidation. Since majoritarian systems force factions to consolidate into larger parties outright, increasing the capital of rent-seeking factions has little effect on the model outcomes.

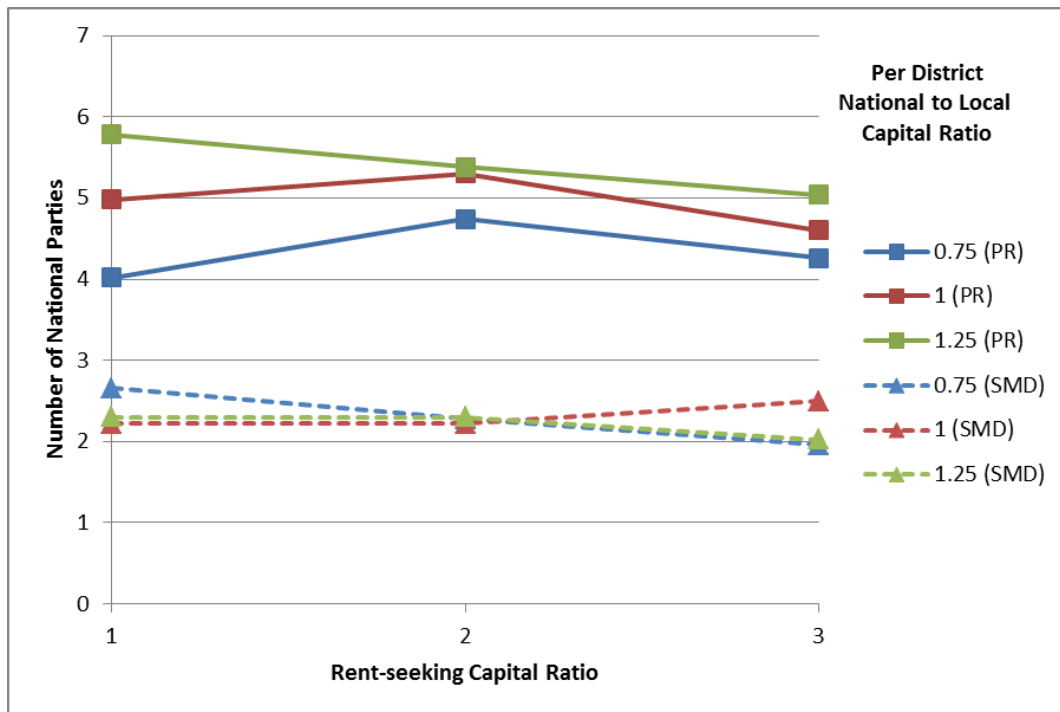


Figure 3.10 Number of National Parties vs. National and Rent-seeking Capital Ratios

Another crucial characteristic of faction initialization is pork preference. Unlike rent preferences, pork preferences are distributed continuously. Consequently, factions do not break down by type based on pork preferences; they rather differ in degree of polarization. The main reason for treating pork preferences differently from the other parameters is that economic sectors form the primary political cleavages in the society in the basic model. Factions in the model are united around economic issues, and pork preferences indicate how narrowly or broadly factions define their interests. Thus, a dichotomous definition of pork preferences would be far too simplistic.

Pork preferences are determined by the range of the parameter and the shape of its distribution. In order to test the sensitivity of the model to pork preferences, the study runs the model with two different types of distribution: normal and uniform. Normal

distribution is centered on half the range of pork preferences, with standard deviation of one sixth of the range. Thus, the end points of the range are within three standard deviations of the mean. Under normal distribution, the vast majority of pork preferences are concentrated around the middle of the given range. Under uniform distribution pork preferences are distributed equally across the entire range. The lower limit for pork preference is always zero, which indicates a faction fully committed to the interests of the public at large. The upper limit of the range is varied from 0.5 to 2.0 at 0.5 intervals.

As expected, increasing the range of pork preferences increases the number of parties (see Figure 3.11). Thus, if factions define their interests more narrowly along economic lines, they are less likely to find common ground and form coalitions with the other factions. The finding holds true for both majoritarian and PR systems regardless of the shape of distribution of preferences. Uniform distribution of preferences makes the model more sensitive to changes in the range of pork preferences, but does not alter the pattern of the impact.

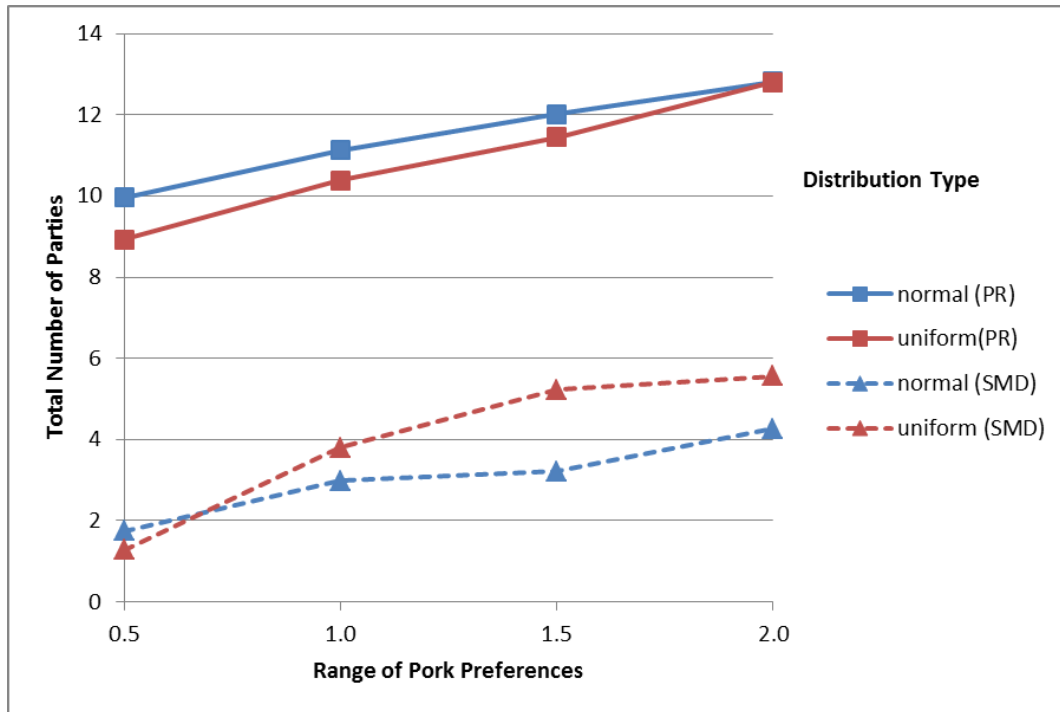


Figure 3.11 Total Number of Parties vs. Pork Preferences

When it comes to national parties, the impact of increasing the range of preferences is less pronounced (see figure 3.12). The number of national parties increases as the range is increased from 0.5 to 1.0 in majoritarian systems, while it decreases slightly in PR systems. Yet, increasing the range beyond that value has little impact on the number of national parties. Given that the total number of parties continues to increase, it appears that the balance of the party system shifts from national to local parties as the range of pork preferences increases. Normal distribution of pork preferences results in slightly higher consolidation of national parties.

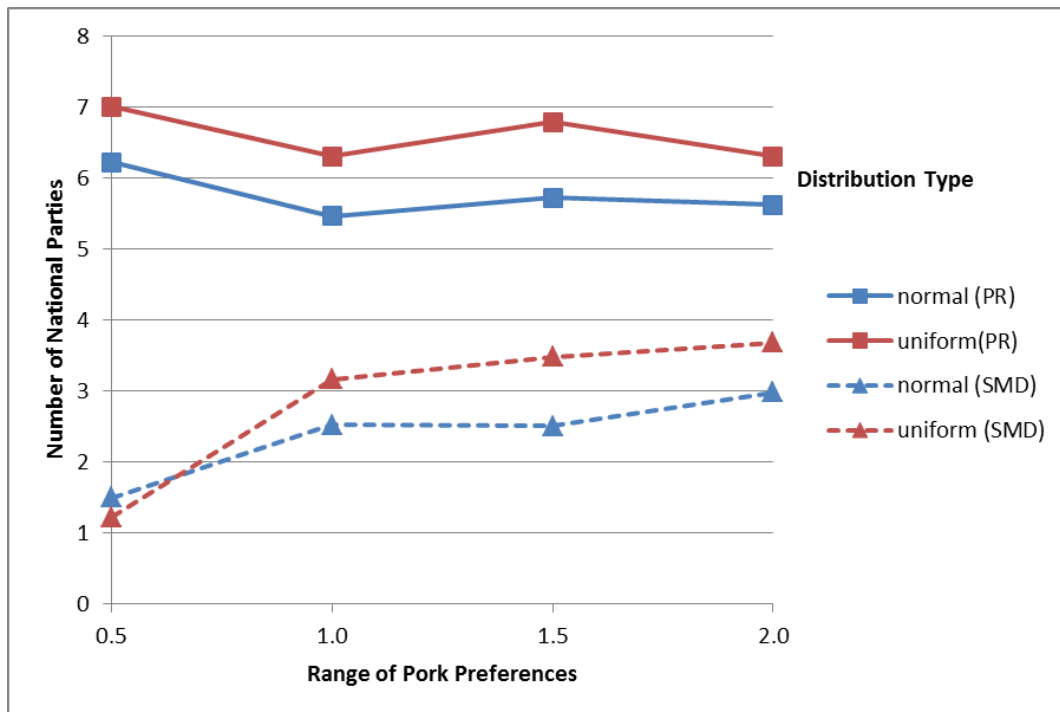


Figure 3.12 Number of National Parties vs. Pork Preferences

Unlike factions, voters have only two primary characteristics – income and economic sector. A voter’s income determines his or her preference for a particular tax policy or tolerance for a party’s rent-seeking activities. It also determines the voter’s receptiveness to political campaigns. As mentioned above, voters whose income is considerably higher or lower than average will be far less likely to be swayed by a party’s campaign spending. The stakes for such voters from various tax policies are far too high. On the other hand, the stakes are lower for voters with incomes close to average. Their expected income changes little regardless of the tax policies of the party in government. These voters form a swing vote block. They are more likely to be affected by high campaign spending.

Since voter incomes are drawn from a Pareto distribution, the ratio of swing voters depends on the level of inequality in the country – the higher the level of inequality, the lower the number of voters with incomes close to average. Consequently, the impact of campaign spending will be lower in countries with higher inequality. Another way of stating the relationship is that higher level of income polarization increases the appeal of programmatic parties. The different levels of inequality are achieved by varying the Pareto index from 1.5 to 2.5 at 0.25 intervals.

In this regard, the relative weight of the impact of campaign spending becomes crucial. If it is given too much weight, then all voters will vote for the largest party regardless of its policy preferences. If the weight is too small, factions will have no incentive to consolidate. Only a handful of small parties with the most appealing policy preferences will dominate the party system. Thus, in order to test the sensitivity of the model outcomes to the relative weight of campaign spending, the study varies the parameter from 0.05 to 0.35 at 0.05 intervals. Note that voter distribution by economic sector may also impact the outcome of the model. However, the distribution of voters into groups is investigated in more detail in the extension of the model in the next chapter. For now, the distribution is kept constant for all scenarios.

Higher income inequality, which corresponds to lower Pareto Index, slightly increases party consolidation, especially in PR systems. Yet, the impact of income distribution in either system is relatively small. The weight of campaign spending in voter's decision exerts a much stronger influence on the model outcomes (see Figures 3.13 and 3.14). When the relative weight of campaign spending increases from 5% to

15%, national factions gain at the expense of local ones. Thus, the total number of parties either stays flat or decreases, while the number of national parties increases. Once the relative weight is increased beyond 15%, both local and national factions are forced to consolidate into larger parties in order to stay competitive. The impact of this parameter is particularly strong in PR systems. Majoritarian systems are less sensitive to it, since parties are already consolidated under the pressure from the institutional design. At the weight of 35%, the number of national faction for both majoritarian and PR systems converges. Both cases end up with a single dominant national party. Thus, at this level the parameter undermines the impact of the institutional design.

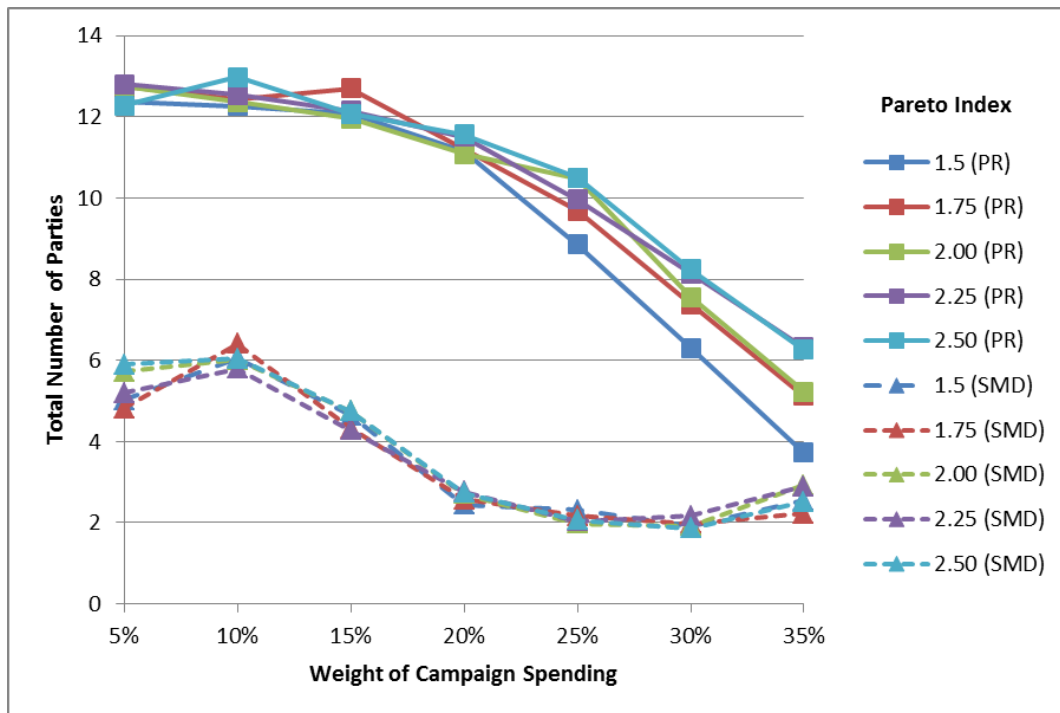


Figure 3.13 Total Number of Parties vs. Income and Campaign Spending

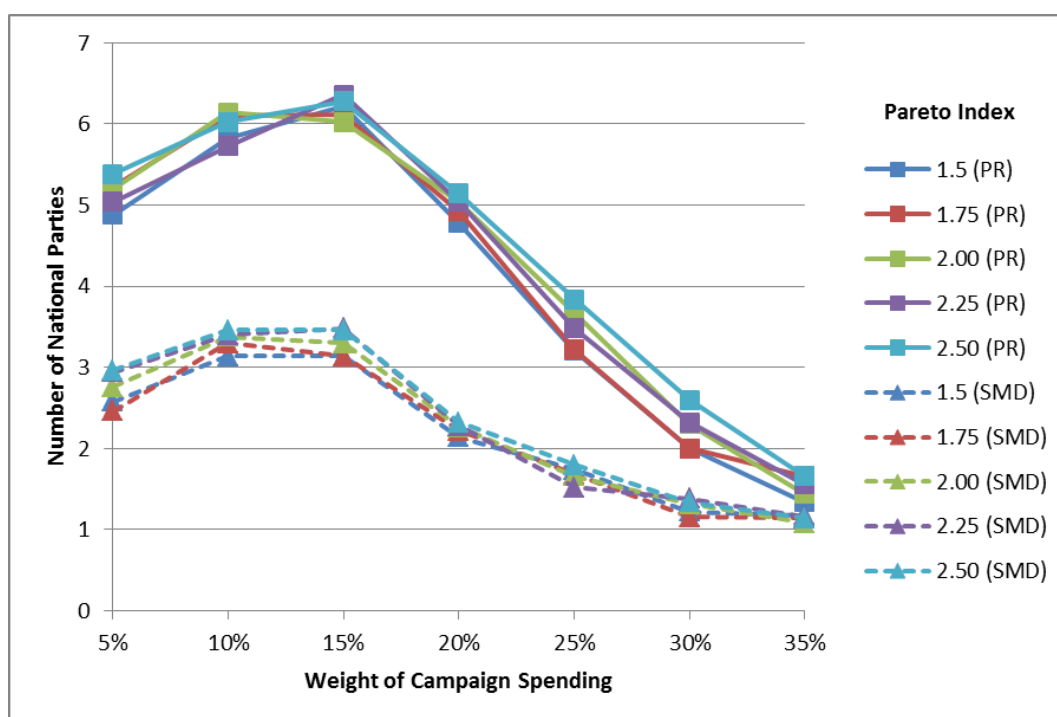


Figure 3.14 Number of National Parties vs. Income and Campaign Spending

Another way the distribution of voter incomes can change is through urban/rural income disparity. If under Pareto distribution the study varied the level of inequality between voters, with this parameter the study varies the level of inequality between entire districts. In other words, the model tests the impact of concentration of wealth and poverty on the model outcomes. Higher income disparity among districts is likely to increase the salience of party policy preferences to voters. Consequently, it is likely to increase the chances of programmatic parties.

As one can see from Figure 3.15, higher urban/rural income disparity has little noticeable impact on the number of parties in PR system, while it substantially increases the number of parties (both total and national) in majoritarian systems. Given that PR systems already afford smaller programmatic parties a chance to get into the legislature,

the impact of income disparity is rather limited. On the other hand, majoritarian systems are dominated by larger rent-seeking parties. Increasing the salience of policy preferences in this case allows smaller programmatic parties to gain ground at the expense of the rent-seeking parties. Therefore, the number of parties increases dramatically in majoritarian systems.

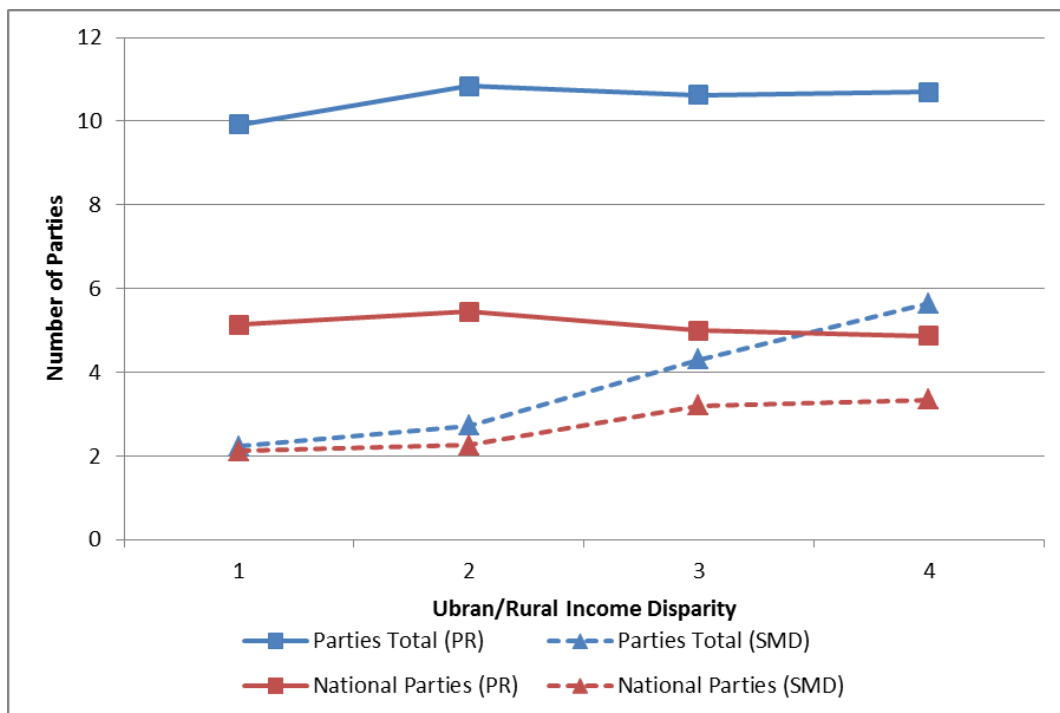


Figure 3.15 Number of National Parties vs. Urban/Rural Income Disparity

There are a number of other variables in the model that the study does not test for sensitivity. Some of these, such as minimum voter income or faction capital, are used only in relationship to each other. Thus, they would not change the outcomes of the model. The values for other variables, e.g. tax rate preferences, are logically predetermined to stay within a given range. It would be hard to imagine a country where

all factions favor extremely high or extremely low taxes. Consequently, these variables are left out of the sensitivity analysis.

In the end, the model outcomes do not alter dramatically as a result of variation in the number of voters or factions, voter income distribution or faction capital ratios. The model is highly sensitive to the variation in rent preferences of factions and the relative weight of campaign spending in voter decisions. But of these two, only the weight of campaign spending has strong enough impact to undermine the dominant impact of the institutional design. Rent preferences have a strong impact only at the extreme values of the parameter space. Otherwise, their impact is relatively modest. As mentioned above, rent preferences will need to be calibrated to each particular country. The weight of campaign spending is equally country specific. It indicates the level of political awareness and education of a country. If voters in a country have little experience in the political process and have little understanding of which policies promote their interest, campaign spending is likely to have higher importance. Better educated voters, on the other hand, will care more about the policy preferences of the competing parties.

There are a number of input variables that are subject to calibration in the model. Yet, the sensitivity analysis indicates that the model output is relatively insensitive to most of them, i.e. the output continues to conform to the Duverger's law. Only one input variable has strong enough impact to break down this relationship, although it is not difficult to estimate the range of the parameter that produces reasonable outcomes. In the following chapter, the study extends the basic model by introducing ethno-linguistic fractionalization dimension.

CHAPTER 4. THE IMPACT OF ETHNO-LINGUISTIC FRACTIONALIZATION

Economic considerations are quite important for voters, especially in countries with high levels of income inequality. However, they are rarely the only issue that influences voters. Thus, ethnic or religious affiliation of parties will be equally important in countries with deep ethnic or sectarian divisions. Yet, the conflict need not be among different ethnic or religious groups. It may be between religious and secular views within society. If both sides see the political process as a zero sum game, social positions may overshadow economic ones in elections.

The basic model has only one dimension of polarization based on economic sector. This chapter introduces another, ethno-linguistic dimension of polarization. Thus, voters prefer parties not only in the same economic sector but also representing the same ethno-linguistic group. In return, parties with a given ethno-linguistic affiliation distribute a higher share of public goods towards their voter base.

4.1 Ethno-linguistic Polarization

Ethno-linguistic issues tend to give rise to deeper passions than economic ones and serve as a stronger identity marker than one's professional occupation. Consequently, the range of ethno-linguistic polarization of factions is considerably higher. On the other hand, the weight that voters assign to ethno-linguistic issues vs. economic one depends on the level

ethno-linguistic polarization within a society. In deeply divided polities, ethno-linguistic considerations will drown out economic concerns in voters' decisions. Relatively unpolarized electorates, on the other hand, will pay more attention to the economic policy positions of political parties.

For simplicity, both economic and ethnic identity of the voters is treated as static. This, however, is not entirely realistic. Should parties in power prove successful in providing pork to members of their economic sectors, voters from the losing sectors may well choose to change their jobs. Thus, lucrative public sector salaries or rent-seeking opportunities may persuade many voters to become state employees (Baumol 1990; Murphy, Shleifer, and Vishny 1991). The same can often apply to ethnic identity. Where ethnicity has multiple dimensions (e.g. race, language, caste, religion, tribe, etc.), people choose among the "ethnic options" available to them the one that is the most beneficial (Posner 2005; Fearon and Laitin 2000; Waters 1990). Thus, a Sinhalese Christian can identify herself based on either language or religion. Her choice will often be determined by which identity brings her the most benefits. This in turn is determined by the institutional context in which the competing political forces operate. Due to scope limitations, the fluid nature of voter identity is not implemented in the current model. Instead, the model concentrates on the voters' choice between narrower ethnic or broader economic identities.

In order to account for both dimensions of polarization, the model modifies the utility calculation for voters (equation 2.1 from chapter 2) as the following:

$$X_i = \left[I(1 - T_i) + \frac{T_i \Sigma I}{N} (1 + [(1 - \omega)\rho P_i + \omega \varphi F_i])(1 - R_i) + \sigma \right] + \left[\delta \frac{C_i}{C_{max}} \right] \quad (4.1)$$

Where X_i – vote score for the party i ;

I – voter's income;

ΣI – total national income;

N – number of voters;

T_i – tax preference of party i ;

R_i – rent preference of party i ;

P_i – economic polarization of party i ;

ρ – coefficient that determines the impact of economic polarization of party i on the voters;

σ – random component;

ω – weight of ethno-linguistic polarization;

F_i – ethno-linguistic polarization of party i ;

φ – coefficient that determines the impact of ethno-linguistic polarization of party i on the voters;

δ – impact of capital spending;

C_i – capital spent by party i in the district;

C_{max} – the highest capital spending in the district.

As one can see from the equation 4.1, voters follow the same logic in deciding which party to vote for. The only difference in this case is that now they have two sources of pork: one diverted from the public at large towards their specific economic sector, the

other one targeted towards their ethno-linguistic group. Similar to the case with economic pork, a voter's share of ethno-linguistic pork is higher if the voter's ethno-linguistic group is smaller. However, the preference for one or the other type of pork in voter's decision will vary depending on the level of ethno-linguistic polarization. This preference is denoted by a new parameter ω that indicates the relative weight of economic vs. ethnic considerations for voters and factions.

In most cases, both dimensions are present in political calculations. However, the higher weight of ethno-linguistic dimension indicates more ethnically polarized societies. In relatively unpolarized societies, the weight of ethno-linguistic dimension will be considerably less than half. In moderately polarized societies, the weight will be around half. And in highly polarized societies, the weight will be considerably higher than half.

Table 4.1 Weight of Ethno-linguistic Polarization

<i>Polarization Level</i>	<i>Weight of Ethno-linguistic Polarization</i>
Unpolarized	$\omega \ll 0.5$
Moderately Polarized	$\omega = 0.5$
Highly Polarized	$\omega \gg 0.5$

Factions will similarly include ethno-linguistic polarization in their calculations. In general, they will gravitate towards other factions within their ethno-linguistic group in addition to their preference for factions within the same economic sector. The relative pull of ethno-linguistic vs. economic considerations also depends on a society's level of polarization. In order to accommodate this pattern, the model modifies the calculations of

factions in choosing to join or merge with another party. In particular it modifies the way factions calculate the policy distance (equation 2.3 from chapter 2) as the following:

$$D_{ki} = \sqrt{(T_i - T_k)^2 + (R_i - R_k)^2 + [(1 - \omega)(P_i \pm P_k) + \omega(F_i \pm F_k)]^2} \quad (4.2)$$

Since ethno-linguistic polarization is more intense, what this change accomplishes is the formation of a more polarized electorate. Given the higher range of ethno-linguistic polarization, the stakes in the zero-sum game of distribution of resources become higher. Consequently, it becomes harder for factions to switch to positive sum game in which resources are distributed as public goods and not targeted as pork towards specific groups. The impact of ethno-linguistic polarization on various types of electorates is described in the following section.

4.2 Model Setup and Results

The composition of ethno-linguistic groups is unique for each country. Broadly, however, multi-ethnic countries fall into two main categories. In the first category, at least one ethno-linguistic group accounts for more than half of the population. The number and relative size of minority populations vary. Typically, it is the largest minority group that poses the biggest challenge to the dominance of the ethno-linguistic majority. In this scenario, the aggrieved minority is the main source of potential conflict. Thus, the degree to which it is represented in the legislature may determine its propensity for violence.

In the second category, no ethno-linguistic group dominates the country.

Consequently, such countries are split among three or more minority groups. While some

groups can be considerably larger than others, no single group can control the political system on its own. Thus, ethno-linguistic fractionalization requires groups to cooperate across ethno-linguistic lines. The main source of potential conflict in this scenario is party fragmentation and political instability.

In order to test the political dynamic of both types of ethno-linguistic composition, the study runs simulations with two main scenarios. In the first scenario, the model initializes two ethno-linguistic groups: majority and minority. The study includes only one minority in order to simplify the interpretation of the results. The minority group in the simulation, then, stands in for the largest minority group challenging the dominance of the majority. The main variable in this scenario is the relative size of these two groups. The size of the minority ranges from very small to comparable to the size of the majority (see Table 4.2). Importantly, the ratio of minority and majority factions parallels that of voters. The model tests the impact of the size of ethno-linguistic minorities on both minority and majority affiliated parties.

In the second scenario, the model initializes multiple ethno-linguistic groups of equal size. No single group constitutes a majority of voters. While in most fractionalized countries the relative size of the groups varies considerably, replicating all distribution variations would be too time consuming and impractical. Thus, equal distribution is assumed for simplicity. Similar to the first scenario, the distribution of factions by ethno-linguistic group parallels that of voters. The model varies the number of ethno-linguistic groups from low to high level of fractionalization (see Table 4.2). The model tests the

ability of various groups to consolidate into a stable party system in highly fractionalized societies.

The model tests the impact of ethno-linguistic polarization at low, moderate and high levels. Ethno-linguistic polarization of factions ranges from zero to two, i.e. it has twice the intensity of economic polarization. The remaining variables have the same values as in previous chapters. Note that voters' income is drawn randomly from the same Pareto distribution regardless of ethnic group. Thus, the model implements an unranked ethnic system in order to isolate the impact of ethnic divisions from those of class. Ranked ethnic systems are outside of the scope of the study.

Table 4.2 Model Setup

<i>Variable</i>	<i>Range/Value</i>	<i>Distribution</i>
Factions		
ω – Weight of Ethno-linguistic Polarization	0.25 (low) 0.5 (moderate) 0.75 (high)	
F - Ethno-linguistic Polarization	0 – 2	Gaussian $\sim [1.0, 0.33]$
Voters		
<u><i>Ethno-linguistic Minority Scenario</i></u>	<u><i>Majority Size</i></u>	<u><i>Minority Size</i></u>
	55%	45%
	65%	35%
	75%	25%
	85%	15%
	95%	5%
<u><i>Fractionalized Polity Scenario</i></u>	<u><i>Number of Groups</i></u>	<u><i>Group Size</i></u>
	3	33%
	5	20%
	7	14%
	9	11%

The study runs 50 simulations of the model for each variation in both scenarios. In addition to group sizes, the model also varies district magnitude. Each simulation is run for 25 iterations until the model reaches a steady state. The results for both scenarios are briefly summarized below. The model results will be investigated in more detail in the following chapters.

4.2.1 Ethno-linguistic Minority Scenario

One notable change in ethno-linguistic minority scenario is the higher number of parties in the legislature and, consequently, smaller average party size (see Figures 4.1 and 4.2).

Thus, adding ethno-linguistic voting dynamic into the model results in slightly higher party fragmentation. This dynamic affects both PR and majoritarian systems.

Furthermore, as the size of the minority decreases, the number of parties in the legislature decreases as well, approaching the values of an ethnically homogenous scenario described in the previous chapters.

Interestingly, the impact of ethno-linguistic polarization on party fragmentation varies depending on electoral system. In PR systems, higher polarization level leads to higher party fragmentation. Ethno-linguistic polarization in this case creates an ethnic cleavage in a society in addition to the existing economic cleavages. Since PR systems are more inclusive, smaller parties divided on both economic and ethnic grounds are able to attract enough votes to get elected. Majoritarian systems, on the other hand, force

parties to consolidate. In this case, ethnic cleavage replaces rather than complements economic cleavages. Since there are fewer ethnic divisions than economic ones, party fragmentation decreases.

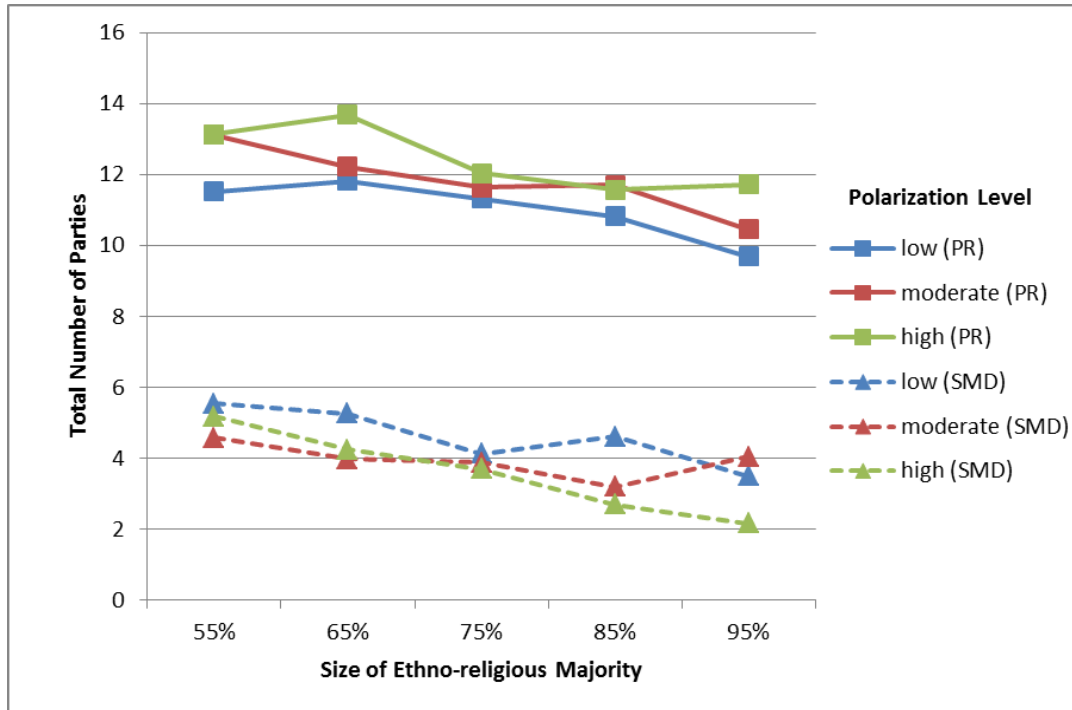


Figure 4.1 Total Number of Parties vs. Size of Majority

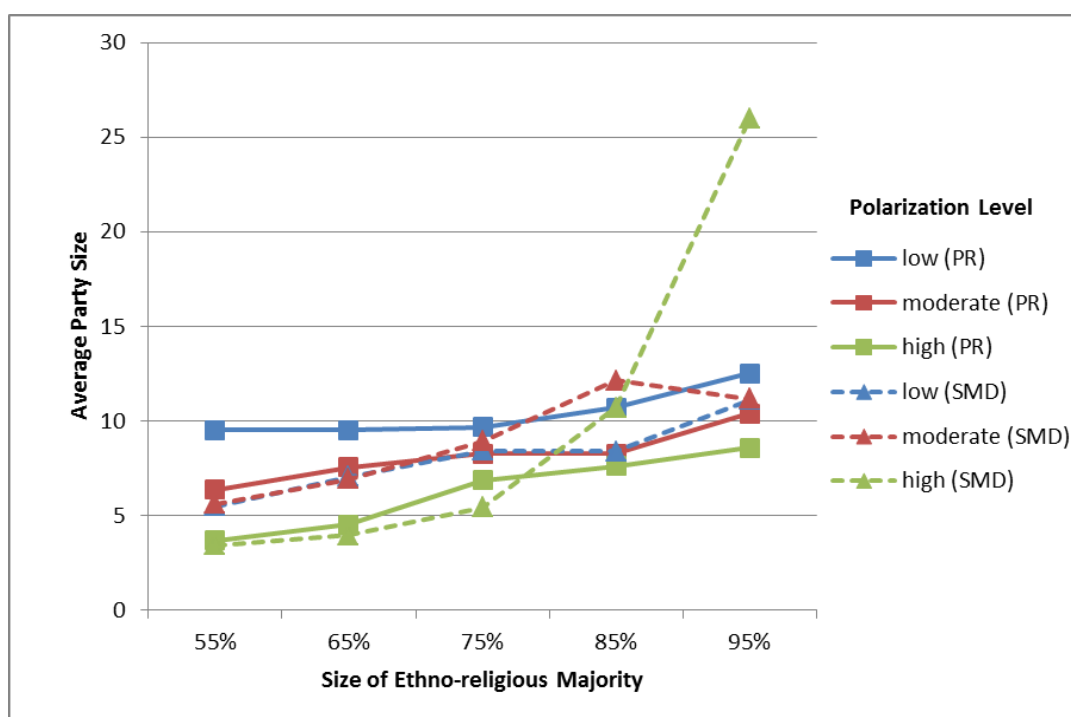


Figure 4.2 Average Party Size vs. Size of Majority

When it comes to the level of minority representation in the legislature, higher ethno-linguistic polarization level allows minorities the best chances. In highly polarized societies, the appeal of minority parties is not diluted by the appeal of parties using campaign spending or economic pork as their primary strategy. Thus, the ratio of seats held by minority parties in the legislature follows the ratio of minority voters in the society almost exactly. In less polarized societies, majority parties can poach some of the minority voters by appealing to them through pork, public goods or campaign spending. This results in considerably fewer seats won by minority parties, although the latter result does not necessarily indicate underrepresentation of minority interests. It simply shows that minority voters see their interests more in terms of economic policies than ethno-linguistic ones.

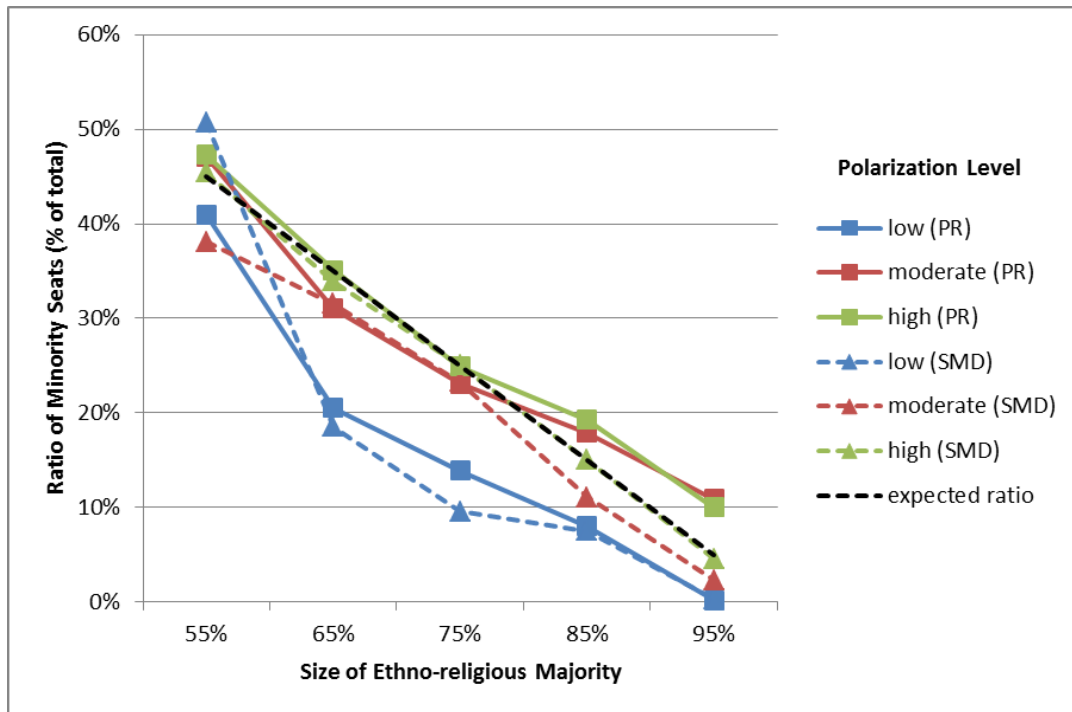


Figure 4.3 Ratio of Seats Held by Minority Affiliated Parties

4.2.2 Fractionalized Polity Scenario

Similar to the ethno-linguistic minority scenario, the number of parties in fractionalized scenario is higher compared to the homogenous society case (see Figures 4.4 and 4.5). Higher level of ethno-linguistic polarization leads to higher party fragmentation in PR system. Increasing ethno-linguistic fractionalization has little effect on the outcome, although it does reduce average party size in less polarized societies. Thus, district magnitude, which determines the minimum winning coalition, caps the level of party fragmentation. Once the size of an ethnic group dips below the minimum winning coalition, further party fragmentation fails to yield a winning strategy. The shift in strategy under the impact of fractionalization will be discussed in more detail in the following chapters.

The number of parties under majoritarian system is also higher compared to the homogeneous case. As mentioned before, parties in majoritarian systems are forced to consolidate. At extreme levels of polarizations only one type of cleavage affects the party formation. At low level of polarization, it is mostly economic; at high levels, it is mostly ethnic. In moderately polarized societies, however, both types of cleavages are relevant. While the system still consolidates into a dominant rent-seeking party system, its minor parties are more fractionalized. Consequently, fewer of them get elected than in either highly or less polarized electorates.

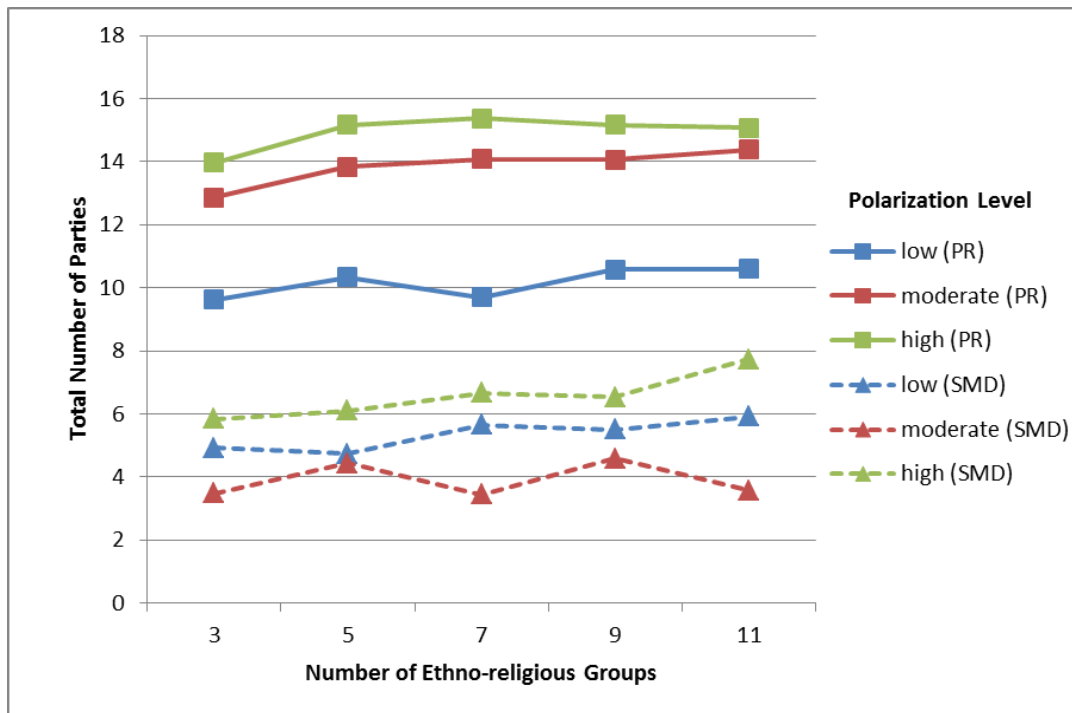


Figure 4.4 Total Number of Parties vs. Ethno-linguistic Fractionalization

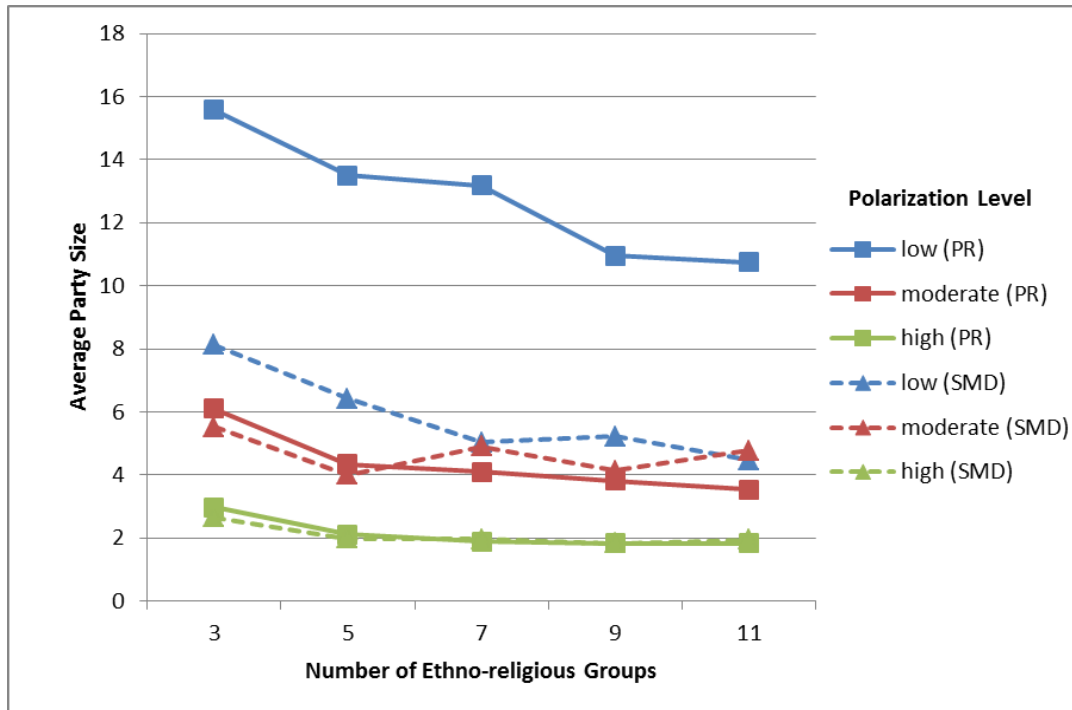


Figure 4.5 Average Party Size vs. Ethno-linguistic Fractionalization

4.3 Empirical Validation

There are a number of issues that make empirical validation of the model quite challenging. The first issue is the limited number of cases that can be included in the dataset for validation. In order to be included in the dataset for either scenario, countries have to hold periodic elections that are reasonably free and fair. Their demographic profile should correspond to one of the scenarios. The country should either have a substantial minority or a fractionalized society with no dominant ethnic group. Finally, the dataset excludes small nations with populations less than a million to avoid skewing the outcomes – small countries tend to have a somewhat different dynamic of political competition. As we will see in the following section, this leaves us with only 24 cases for ethno-linguistic minority scenario and only 13 cases for fractionalized polity scenario.

Another challenge to empirical validation is the fact that many of the democracies in the dataset are still in the process of transitions. The political landscape of these countries may change substantially from one election to the next. Validating against these cases is akin to attempting to hit a moving target. Consequently, the model can replicate the real life cases only in very general terms. Other issues specific to each scenario are discussed in more detail below.

4.3.1 Ethno-linguistic Minority Scenario

The process of even qualitative validation of the model with ethno-linguistic minorities runs into multiple problems. First of all, the study assumes that the elections are free and fair. Yet, this tends to be rarely the case, particularly in newly democratic states. In fact one of the most common policies that majorities pursue in order to appease their ethnic base is institution of formal and informal restrictions on the mobilization of minorities. These policies further extend to restricting access to government resources.

Some of these restrictions are relatively mild, such as official language proficiency requirement in Baltic States or Georgia, which put their minorities at a disadvantage. In other cases, parties based on ethnicity or religious ideology are proscribed in constitution. Both of these are in effect in Turkey, which complicates political mobilization for the country's Kurdish minority and adherents of political Islam (Banks et al. 2010). Even in countries that do not legally prevent minorities from mobilizing, majority controlled governments can make it exceedingly difficult for minorities to fully participate in the political process. They can do so by denying minority

parties access to media outlets, intimidating both minority candidates and voters, and using bureaucratic legalese to stall registration of minority parties.

Intimidation of minorities is not limited to governments. History of inter-communal violence may leave minorities disenfranchised and disillusioned with the political process. They may further be affected by the fear of aggravating the majority should they become politically active. The causes for violence between dominant Kyrgyz and minority Uzbeks in southern Kyrgyzstan in the summer of 2010 are complex and not entirely clear. Yet, at least one of the events that sparked the violence was the decision by the leaders of the generally apathetic Uzbek community to throw their support behind one of the parties in the political struggle of various Kyrgyz factions (International Crisis Group 2010). Such traumatic experience may lead most Uzbeks to withdraw from the political sphere in the future.

On the other hand, minorities themselves may choose not to participate in the political process. Thus, if a minority is struggling for independence, it may see participation in the political process as a threat to its goals, e.g. Tamils in Sri Lanka or Saharawis in Morocco occupied Western Sahara (Minorities at Risk). A widespread minority participation in the electoral process may be seen as conferring legitimacy to the majority controlled government, thereby undermining the ultimate goal of independence. If the leadership of the minority group is split on whether to boycott the elections or work within the political process, the overall impact on minority participation is difficult to estimate.

Incorporating such restrictions in the model, however, is extremely difficult. There is only one way to conduct free and fair elections, but there are numerous ways to undermine and deviate from the process. Thus, choosing a particular pattern of deviation from the process of democratic elections would necessarily assume a behavior that may only be applicable to a handful of cases. Furthermore, the history of inter-communal relations is unique for each country. As it impacts the dynamic of political mobilization, the outcomes for countries with similar ethno-linguistic profiles may differ substantially.

There may also be differences between the voter profiles of ethnic groups. If a given minority is predominantly rural and poorly educated, it may be less politically active. Rural population tends to be harder to mobilize. On the other hand, better off ethnic groups concentrated in the cities may be more effective in pursuing their interests. Since the variation in voter turnout or campaign contributions is not implemented in the model, such difference may not be reflected in the model outcomes.

One final challenge in the validation of the model is the difficulty of obtaining reasonably accurate data. Given that ethnic composition tends to be a very sensitive subject, estimates for each country can vary substantially. Government sources, particularly in ethnically divided nations, may choose to give lower estimates of minority populations in order to justify the dominant position of the ethnic majority. The sources further differ in the way they define particular ethnic groups. As the lines between ethnic and sub-ethnic groups are often blurred, similar groups can be counted as a single ethnicity in one source and separately in the other. For example, a widely used ethno-linguistic fractionalization dataset by Alesina et al. (2003) defines Czechs and Moravians

as distinct ethnic groups. The CIA World Factbook, on the other hand, counts them together. On the other hand, Alesina et al. count various related Nepalese ethnic groups as one, while the CIA World Factbook counts them separately.

Estimates of ethnic groups are concerned with population numbers of groups residing in a country. The political status of minorities is generally outside of the scope of these studies. Yet, what matters for the political process is the ratio of eligible voters and not the general population. These can differ substantially. For example, a significant number of ethnic Russians in Latvia and Estonia do not have citizenship and are therefore ineligible to vote (Banks et al. 2010). This reduces their ability to mobilize and influence the political process.

Finally, discerning the political platforms of various parties particularly in new democracies can be daunting. Ethnic affiliation of parties is not always clear. Distinguishing between minority parties and mainstream parties that enjoy a strong support of minorities or between center-right and right-wing parties can also be challenging. Ultimately, the distinction is a judgment call on the part of the author.

Keeping these limitations in mind, the study proceeds to validate the model outcomes against real life cases. For the dominant ethnic group scenario, the study tests the impact of the size of the minority and level of polarization on the resulting party system. There are three main output variables that the study validates: (1) ratio of seats held by minority parties, (2) ratio of seats held by minority-friendly parties, and (3) ratio of seats held by right-wing anti-minority parties. The combination of these three

parameters indicates the ability of the minority group to defend its interests in the political arena.

For the dataset, the study selected countries with population of at least one million. It only included the countries that were ranked at least Partially Free by Freedom House in its 2010 democracy ranking. While many of the countries designated as Not Free by Freedom House do hold multi-party elections, the results are likely to be significantly skewed by government repression. Consequently, the latter were not included in the dataset.

The study did not limit the cases to countries with only two ethno-linguistic groups. As long as one of the groups constituted a majority, the cases were included. However, the study did not include the cases in which ethno-linguistic groups were different only racially, as racially based parties are explicitly proscribed throughout the world. It only included cases in which groups were distinct culturally or linguistically. This has led to the exclusion of most of the Western hemisphere democracies. The countries included in the dataset are listed in the Table 4.3.

Table 4.3 Ethno-linguistic Minority Dataset

Country	Minority	Share	Majority	Share	Conflict level	Electoral System
Botswana	Kalanga	11.00	Tswana	79.00	low	SMD
Belgium	Walloon	31.00	Fleming	58.00	moderate	PR
Bulgaria	Turk	9.40	Bulgarian	83.90	moderate	PR
Canada	Francophone	21.60	Anglophone	58.90	moderate	SMD
Croatia	Serb	4.50	Croat	89.60	high	PR
Estonia	Russian	25.60	Estonian	68.70	moderate	PR
Finland	Swedish	5.60	Finn	93.40	low	PR
Georgia	Azeri	6.50	Georgian	83.80	moderate	PR

Israel	Arab	23.60	Jewish	76.40	high	PR
Latvia	Russian	27.80	Latvian	59.30	moderate	PR
Lithuania	Polish	6.10	Lithuanian	84.00	moderate	SMD
Macedonia	Albanian	25.20	Macedonian	64.20	high	PR
Malaysia	Chinese	23.70	Malay	50.40	moderate	SMD
Mauritius	Creole	27.00	South Asian	68.00	low	SMD
Moldova	Slav	14.20	Moldovan	78.20	high	PR
Morocco	Berber	35.00	Arabs	65.00	moderate	PR
Namibia	Kavango	9.00	Ovambo	50.00	high	PR
Niger	Djerma	21.20	Hausa	55.40	low	PR
Romania	Hungarian	6.60	Romanian	89.50	moderate	PR
Singapore	Malay	13.90	Chinese	76.80	low	SMD
Spain	Catalan	17.00	Spanish	74.00	moderate	PR
Sri Lanka	Tamil	17.80	Sinhalese	73.80	high	PR
Switzerland	French	18.00	German	65.00	low	PR
Turkey	Kurdish	18.00	Turkish	75.00	high	PR

The data on the ratio of ethno-linguistic groups was obtained from the CIA World Fact Book. It was supplemented with the data from Minorities at Risk dataset when necessary. The data on the level of ethnic conflict between these groups was gathered from Vanhanen (1999). Vanhanen rates the level of violent ethnic conflict in each country on a scale of 0 to 100. The score of 0 indicates no ethnic conflict at all. The score of 5 indicates occasional violence. The scores of 10 and 20 indicate sporadic ethnic clashes. While anything above that score indicates recurring large scale ethnic violence. Consequently, the scores of 0-5 are coded as low level of conflict, the scores of 10-20 are coded as moderate and the scores above 20 are coded as high level of conflict.

There were several modifications to the original data necessitated by the setup of the validation test. The validation dataset includes only one minority for each country, even if there are several minorities present. Since the largest minority is assumed to

constitute the biggest challenge to the majority, only the largest minority is included in the dataset. Yet, in some cases the primary ethno-linguistic conflict is not between the two largest groups in the country. Rather, it is a smaller group that elicits a violent response from the majority, which is then reflected in the ethnic conflict score. Thus, the level of ethno-linguistic conflict in Georgia is high, but the primary conflict is between the Georgian majority and Abkhazian and Ossetian minorities. The largest minority in the country, however, is Azeri. The relationship between Georgians and Azeris is generally even, if not entirely peaceful. Thus, the ethnic conflict score is adjusted accordingly. The score was similarly adjusted for Niger's well integrated Djerma minority.

The size of the minority was adjusted for Moldova. Russians and Ukrainians are normally counted as separate groups. Yet, in Moldova, most Ukrainians in urban areas commonly identify with Russia and favor stronger ties with Russia, as opposed to ethnic Moldovans who tend to favor stronger ties with Romania. Furthermore, Ukrainians are equally unlikely to be assimilated into the dominant Moldovan culture. Consequently, Ukrainians and Russians were counted as a single group. Ethnic composition and political party data for Moldova does not include the breakaway region of Transnistria, since the latter acts as an independent political entity. Similarly, the data for Israel does not include West Bank or Gaza.

The data on electoral systems was gathered from the Dataset of Political Institutions (DPI) published by the World Bank in 2001 and updated in 2010. The study kept to a simple binary distinction of electoral systems instead of measuring district magnitude since district magnitudes vary widely, often within a single country. Another

feature of electoral systems that complicates coding is the fact that countries often utilize both majoritarian and proportional representation systems. DPI dataset goes around this problem by determining which system is the dominant one, i.e. accounts for the majority of candidates elected. The study followed DPI dataset in resolving such cases. For countries with bicameral legislatures, the study only coded the data for the lower chamber as it is normally the primary legislative body in most countries.

The data on parties and respective seat ratios was gathered from Political Handbook of the World (PH, Banks et al. 2010). The parties were coded into minority parties, minority-friendly parties and anti-minority parties. Parties were coded as minority if the party platform clearly indicated that the party's main concern was representation of the minority's interests. In a few cases, minorities were so integrated into the larger society that they essentially acted as members of the majority ethnic group. Instead of forming separate political parties, these minority groups utilized the same vehicles for political and economic advancement as the ethnic majorities. In these cases, the study assumed that the ratio of minority seats in the legislature was proportional to their ratio of total population.

Minority-friendly parties are mainstream parties that raise issues important to minorities among other issues. Parties were coded as minority-friendly if their platform indicated minority rights as one of the issues or if they drew substantial support from minorities. Finally, parties were coded as anti-minority if their platform indicated far right orientation. Note, however, that only the far right parties opposed to the minorities in the dataset were included. Thus, Swiss People's Party, a far right anti-immigrant party

in Switzerland, was not counted in the current dataset as its platform was directed against immigrants rather than the ethnic French minority included in the dataset.

Comparing the outcomes of the model with the dataset, one can see that the model slightly overestimates the salience of ethnic pork in the party strategies, particularly in PR systems (see Figure 4.6). In the model, ethnic minorities split their vote between minority and minority-friendly parties at low level of ethno-linguistic polarization. Anti-minority right-wing parties do gain seats but are generally small. In the dataset, ethnic considerations do not enter into political calculations in two of the three cases. In these cases, minorities are so well integrated that they use the same vehicles for political and economic advancement as the ethnic majorities. Hence, their share of political power is coded as equivalent to their share of population. The Swedish minority in Finland is the only exception in this scenario as it does form its own party. Yet, this provokes no anti-minority sentiment from the majority Finnish population.

In moderately and highly polarized societies, the level of minority representation is roughly equivalent to its share of population, although minorities are somewhat underrepresented on average. This outcome holds true for both the dataset and the model. Where the two differ is the split of the minority vote between minority and minority-friendly parties. In the model, ethnic minorities defend their interests primarily through formation of minority parties. In the dataset, both strategies are used. Predominance of minority-friendly parties often reflects official restrictions of the formation of ethnically-based parties, as in the case of Turkey. In other cases, it reflects geographical dispersion of the minority population. Lack of geographic concentration makes it harder for

minority parties to secure legislative seats. As a consequence, minorities turn to minority-friendly parties for representation of their interests. The voting pattern of the Russian minority in the Baltic States generally falls within this category. Finally, the ratio of seats of anti-minority parties is considerably lower in the dataset in moderately polarized societies. In highly polarized societies, model outcomes are closer to the dataset.

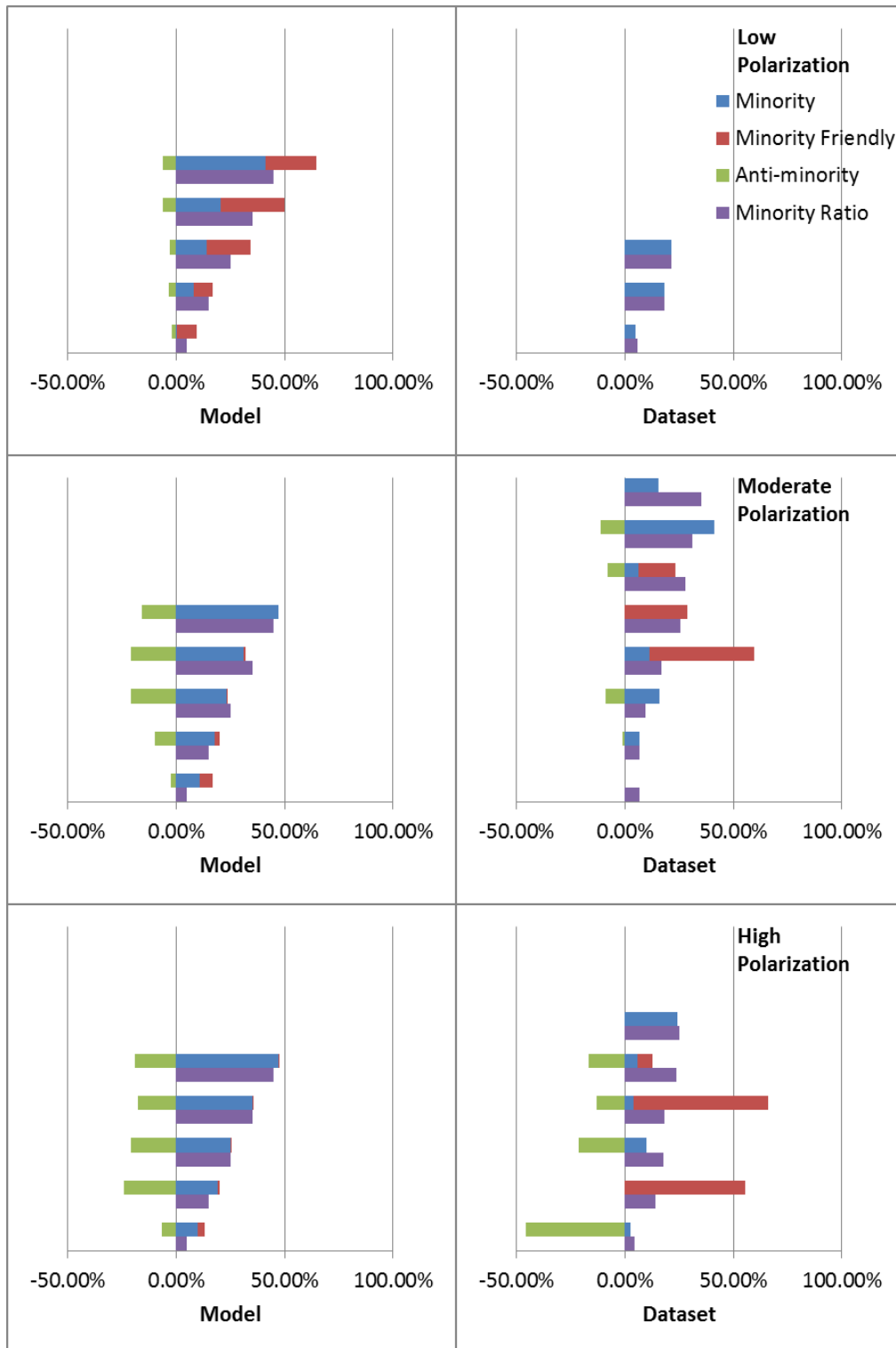


Figure 4.6 Distribution of Seats by Party Type in PR Systems

For majoritarian systems, the model can only validate against the data for low and moderate levels of polarization, as there are no data for highly polarized majoritarian systems. Again, there are no ethnic parties in three of the four cases in the dataset at the low level of polarization (see Figure 4.7). Thus, minorities join the same parties as ethnic majorities. In the only case with ethnic parties, minorities split the vote between minority and minority-friendly parties. Similarly minority votes are split between minority and minority-friendly parties in the model, although the ratio of minority parties is somewhat higher.

For moderately polarized scenario, the model outcomes replicate the dataset quite closely. Thus, minority interests are represented primarily by minority parties. The minority representation level generally follows minority's share of population. The representation level, however, is somewhat lower resulting in underrepresentation minority interests. There are few anti-minority parties under either levels of polarization.

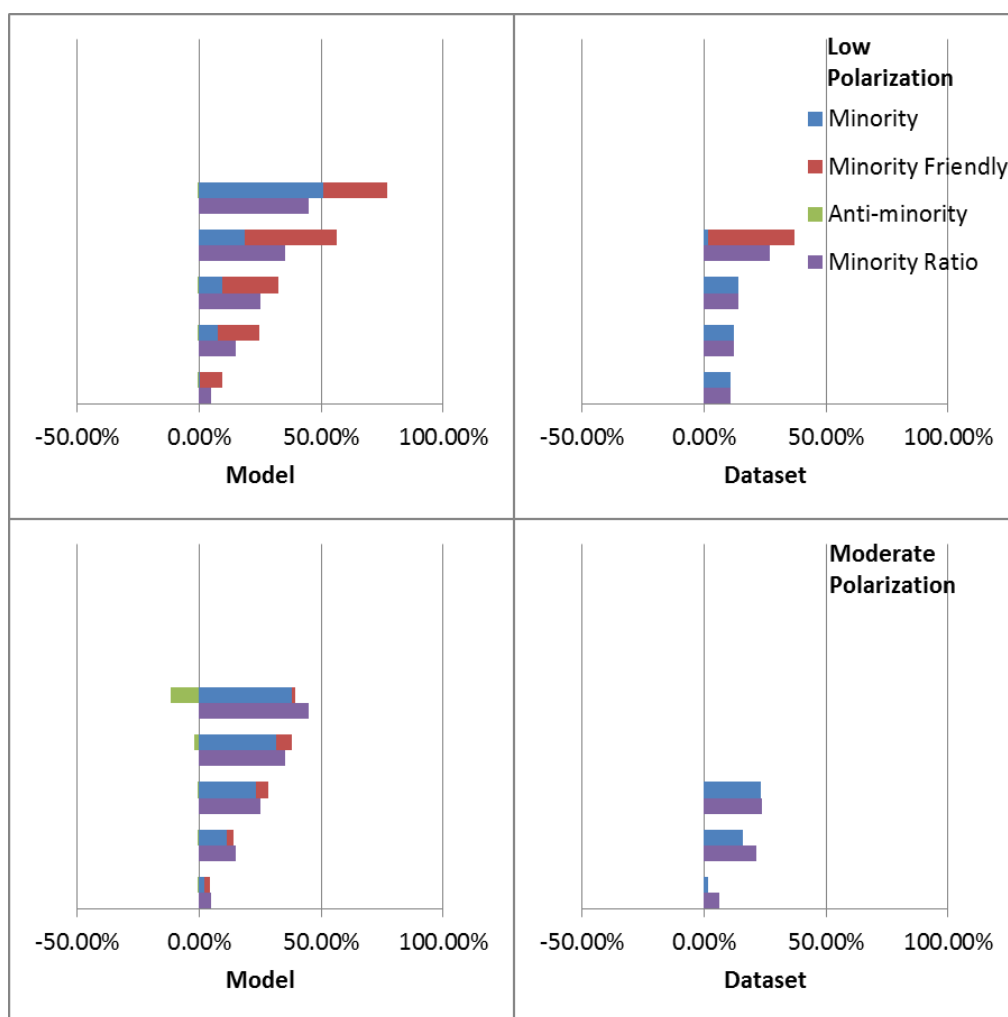


Figure 4.7 Distribution of Seats by Party Type in SMD Systems

4.3.2 Fractionalized Polity Scenario

Validation of fractionalized polity scenario presents additional problems beyond the ones outlined above. The study defines polity as fractionalized if it has three or more ethno-linguistic groups and no single group constitutes a majority. The biggest challenge is relatively limited number of cases, the vast majority of which are concentrated in Sub-Saharan Africa. Of the few fractionalized polities outside of Africa, some are ineligible

due to authoritarian nature of their regimes (e.g. Afghanistan, Myanmar, Iraq); others have a predetermined division of power among ethno-linguistic groups (e.g. Bosnia and Herzegovina, Lebanon); while in others, ethnic group are further grouped on a higher level into religious ones, turning them into ethno-linguistic minority scenario (e.g. India, Indonesia, Philippines). That leaves us with Pakistan as the only non-African country eligible to be in the dataset.

Given that fractionalization as a phenomenon is so concentrated in a single region, it is not surprising that most datasets related to the subject tend to focus on Sub-Saharan Africa. The study has found no relevant datasets that would include non-African countries. Consequently, Pakistan is dropped from the dataset. The main output variables in this scenario are (1) the ratio of ethnic parties in the legislature, (2) party system volatility and (3) party fragmentation.

The final dataset is based on the data from Afrobarometer paper by Cheesman and Ford (2007). In this paper, the authors used Afrobarometer survey in order to calculate the extent of ethnic support of all major parties in the dataset. The study uses these data to estimate the ratio of ethnic parties in the party system. Cheesman and Ford break down parties into several categories according to the level of ethnic support they get. For this dataset, the study collapses these categories into two – ethnic and non-ethnic. Parties are considered ethnic if the size of the largest ethnic group is above fifty percent. Otherwise, they are coded as non-ethnic.

The data on electoral volatility comes from Linbderg (2007). In his paper, he calculates Pederson's Electoral Volatility Index for Sub-Saharan African countries. The

latter is a standard measure of party system institutionalization. Where index values were available for more than one election round, the study took the average of electoral volatility index for the last two elections. The data on party fragmentation come from Political Handbook of the World. Party fragmentation is calculated as a share of legislative seats that are held by minor parties receiving less than 5% of seats.

In order to estimate the level of ethno-linguistic fractionalization, the study utilizes the index constructed by Alesina et al (2003). This index allows the dataset to account for the differences in relative sizes of groups. Unlike other ethno-linguistic fractionalization indices based on Atlas Narodov Mira published in 1964 (c.f. Roeder 2001, Posner 2003), Alesina et al. base their index on more recent data. The data on the level of conflict and electoral system are obtained as above from Vanhanen and DPI. The countries included in the dataset are presented in Table 4.4.

Table 4.4 Fractionalized Polity Dataset

Country	Fractionalization	Conflict level	Electoral System
Benin	0.79	moderate	PR
Ghana	0.67	moderate	SMD
Kenya	0.86	high	SMD
Malawi	0.67	moderate	SMD
Mali	0.69	high	SMD
Mozambique	0.69	high	PR
Namibia	0.63	moderate	PR
Nigeria	0.85	moderate	SMD
Senegal	0.69	high	SMD
South Africa	0.75	high	PR
Tanzania	0.74	moderate	SMD
Uganda	0.93	high	SMD
Zambia	0.78	moderate	SMD

As one can see, there are no cases for low level of conflict in the dataset. This may be the result of ethno-linguistic fractionalization. On the other hand, it may simply indicate the relatively young age or low level of development of most African democracies. The underlying reasons are outside of the scope of this study. This, however, limits the validation of the model to moderately and highly polarized scenarios.

In order to compare the ratio of ethnic parties in the dataset with the model output, the study graphs the impact of ethno-linguistic fractionalization on the ratio of ethnic parties in both. The study calculates ethno-linguistic fractionalization in the model in the same manner as the ethno-linguistic fractionalization indices. As with the dataset cases, the study collapses the parties in the model into two categories: ethnic and non-ethnic. Parties are coded as ethnic if their ethno-linguistic pork preferences are above the mean. They are coded non-ethnic otherwise. Such coding mirrors the coding of the dataset, which counts parties as non-ethnic even if they have clear ethnic base, as long as no ethnic group accounts for more than half of the party.

As one can see from the graphs (Figures 4.8 and 4.9), the model reproduces the general pattern of behavior for majoritarian systems. Thus, higher ethno-linguistic polarization results in higher ratio of ethnic parties. Yet, the ratio of ethnic parties decreases as ethno-linguistic fractionalization increases. This indicates that ethno-linguistic base becomes too small to provide a winning coalition for parties. Consequently, they are forced to appeal beyond a single ethno-linguistic group in order to win elections. One notable difference between the dataset and the model outcomes, however, is the rate at which the ratio of ethnic parties decreases. While the ratio of

ethnic parties in both is quite comparable at lower levels of fractionalization, the ratio drops precipitously in the dataset but experiences only moderate decline in the model. This may be due to the fact that virtually all countries in the dataset have presidential systems, which exert even higher pressure to consolidate and form much bigger winning coalitions. Presidential elections are not implemented in the model as they are outside of the scope of the study.

When it comes to the PR system, the picture is less clear. The first problem is the lack of data. Most Sub-Saharan African countries have majoritarian systems, only a few have chosen proportional representation. Consequently, there is only one data point for moderately polarized systems. While it does fall within the same range as the model outcomes, it provides little basis for validation. Similarly, there are only two data points for highly polarized scenario. In both, however, the ratio of ethnic parties is far below the expected values from the model. The ratio, in fact, is even lower than in majoritarian systems. This apparent contradiction may be the outcome of the specific history of these countries, Mozambique and South Africa. Both countries are dominated by pan-Africanist parties forged either during the struggle for independence or apartheid. Frelimo, the dominant pan-Africanist party in Mozambique does have an ethnic base, but it accounts for less than half of the party. South Africa's ANC, on the other hand, is far more inclusive as well as more dominant in politics. This may be explained by South Africa's apartheid experience forcing various African ethnic groups to act together.

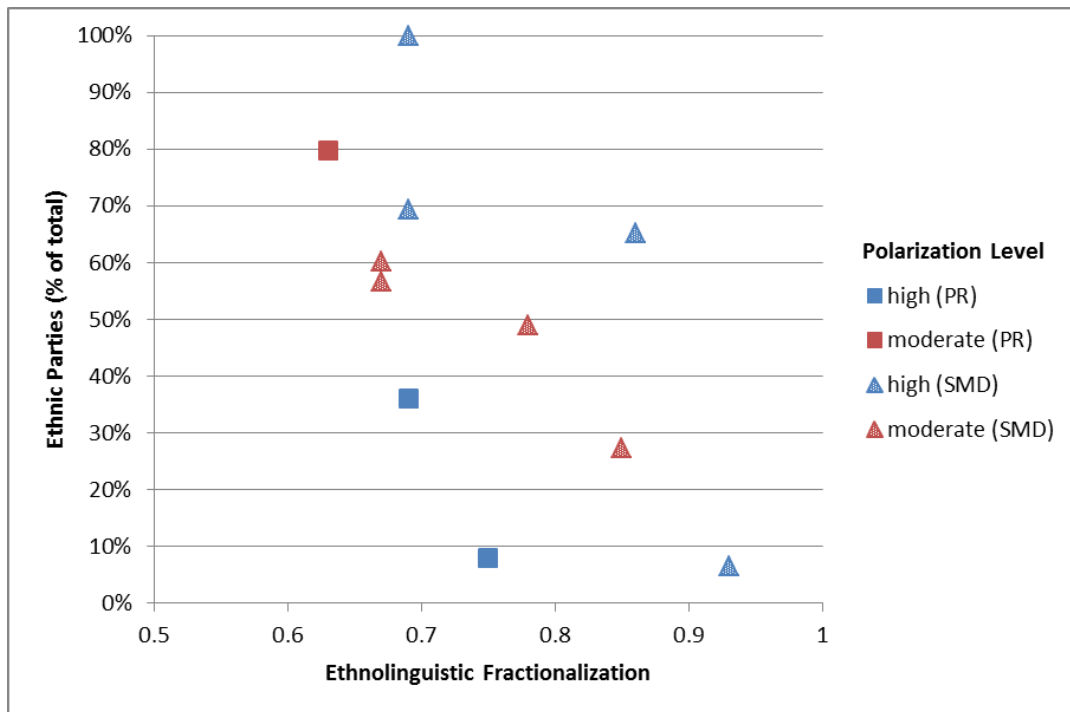


Figure 4.8 Ratio of Ethnic Parties vs. Ethno-linguistic Fractionalization (empirical)

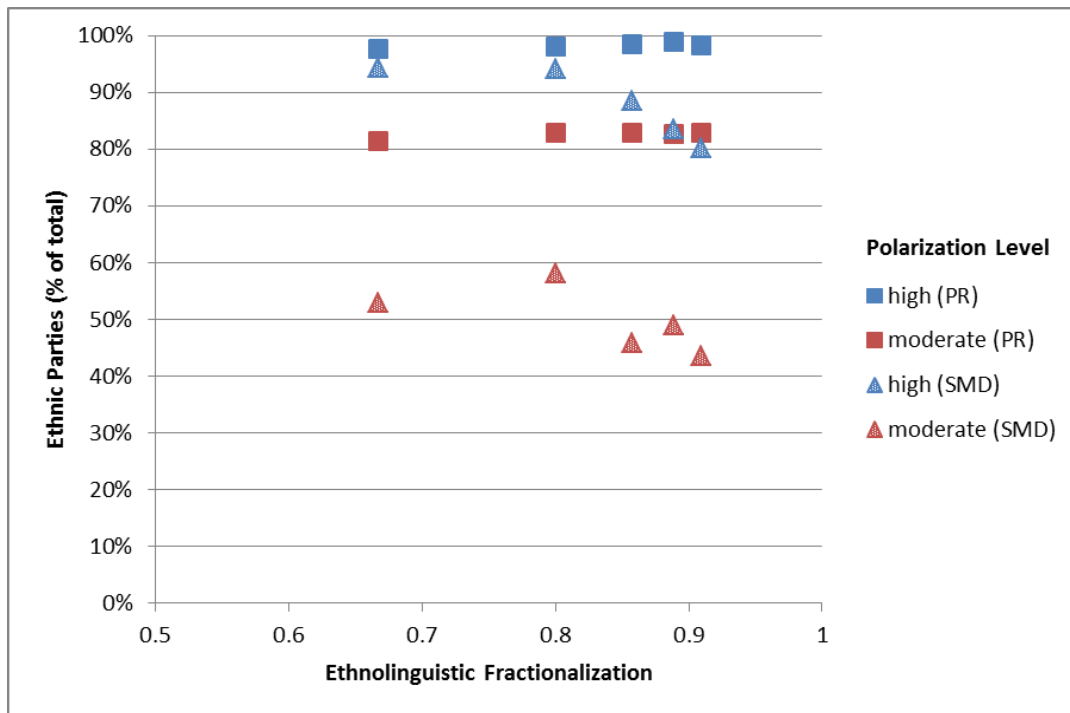


Figure 4.9 Ratio of Ethnic Parties vs. Ethno-linguistic Fractionalization (model)

The model comes the closest in replicating the impact of ethno-linguistic fractionalization on electoral volatility (see Figures 4.10 and 4.11). Since the model does not generate cyclical turnover of parties in elections, the study estimates electoral volatility as the number of competitive parties. The study defines competitive parties as the parties receiving at least 75% of the winning vote. In majoritarian systems, the winning vote is rather straightforward – it is the highest vote within the district. In PR systems, however, there are a number of parties gaining seats from the same district. In order to get into the legislature, other parties need not get the highest vote. They only need to beat the vote of the winning party with the lowest vote. Thus, the winning vote in PR systems is the lowest vote of a winning party within the district.

Given the model's limitations, electoral volatility measures in the two graphs do not directly correspond to each other. But they do measure the same phenomenon. As the graphs indicate, the model reproduces the relationship between electoral volatility and ethno-linguistic fractionalization. Electoral volatility in majoritarian systems is higher in highly polarized societies. It increases with the increase in ethno-linguistic fractionalization in highly polarized systems. The relationship is less pronounced in moderately polarized systems. This indicates that parties are larger and more consolidated under lower levels of ethnic polarization. Consequently, they win by larger margins, making them less susceptible to challenge.

Electoral volatility under PR system also increases with ethno-linguistic fractionalization. While generalizing from only a few data points is rather difficult, the range of volatility in the dataset does correspond to that of the model outcomes. Volatility

in PR systems is lower than in highly polarized majoritarian ones and roughly the same as in moderately polarized majoritarian systems. The impact of ethnic polarization on volatility in PR systems is reversed. In the model, ethnic voting produces more consistent results. And since parties in PR systems can get away with smaller winning coalitions, smaller ethnic parties are still able to secure seats. Whether the same dynamic is at work in the dataset is unclear. Lower electoral volatility of the highly polarized societies may be due to the dominance of the larger pan-Africanist parties in South Africa and Mozambique mentioned above.

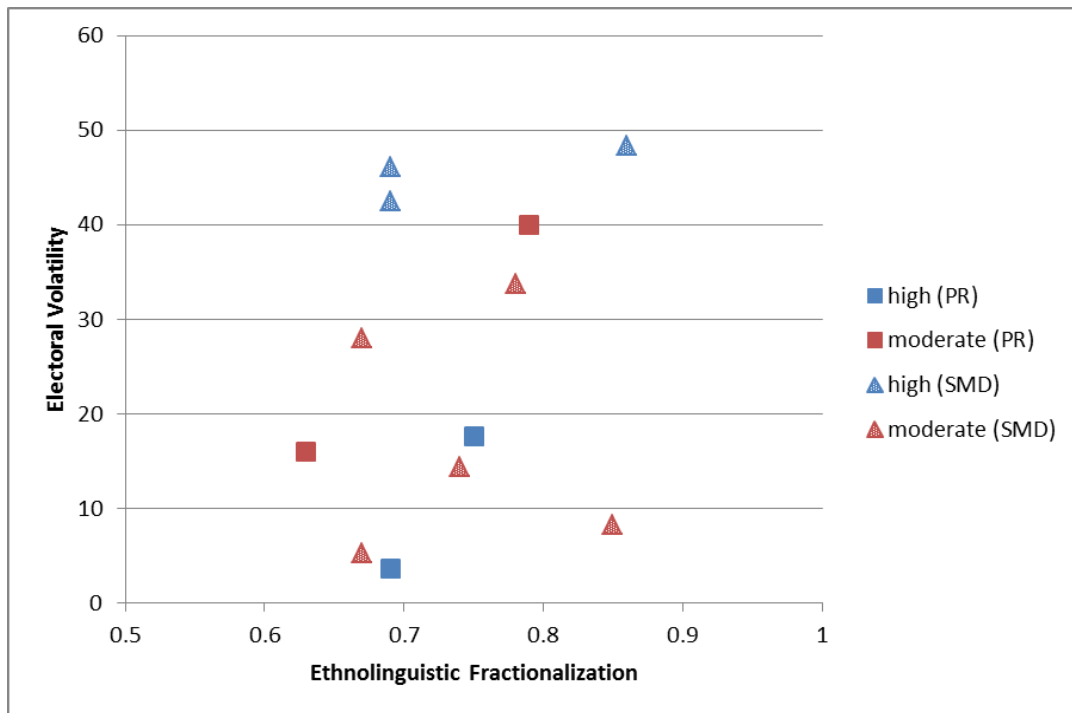


Figure 4.10 Electoral Volatility Ethno-linguistic Fractionalization (empirical)

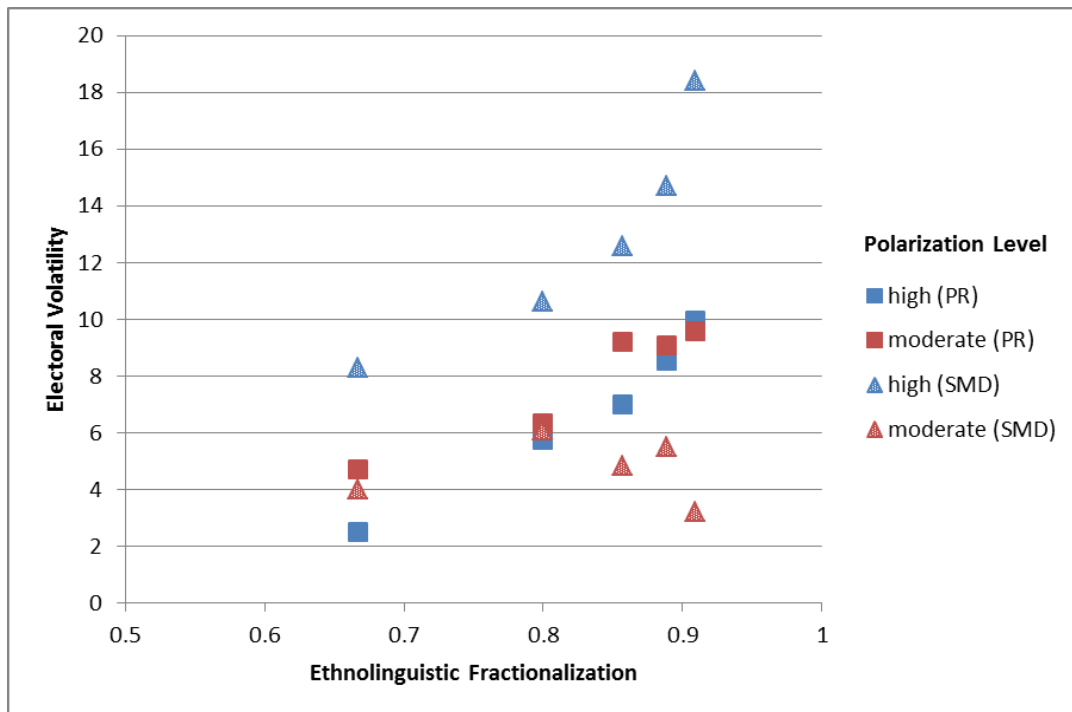


Figure 4.11 Electoral Volatility Ethno-linguistic Fractionalization (model)

The study measures party fragmentation as the ratio of legislative seats held by minor parties, i.e. parties that have received less than 5% of seats. Similar to previous validation measures, the study reproduces the dataset behavior pattern rather closely for majoritarian cases (see Figure 4.12 and 4.13). Thus, higher polarization increases party fragmentation. Higher fractionalization has little effect on moderately polarized societies; it increases party fragmentation somewhat in highly polarized cases. This indicates that even with all the pressure on parties to consolidate in majoritarian systems, quite a few continue appealing to their smaller ethno-linguistic base. The unreliability of this strategy, however, is reflected in the higher levels of electoral volatility in highly polarized majoritarian systems.

In contrast, the study considerably overestimates the level of party fragmentation for PR systems. It does reproduce the increasing pattern of fragmentation in response to higher ethno-linguistic fractionalization. However, the impact of polarization is reversed in the study. The latter, however, may again be the result of the dominance of pan-Africanist parties in South Africa and Mozambique. The level of party fragmentation under PR systems in the empirical dataset may be tempered by the fact that all of these countries have presidential systems. While presidentialism does not impact the formation of parties directly, it does have a consolidating effect similar to reducing district magnitude. In addition, some of the PR systems have relatively high electoral thresholds that similarly increase party consolidation and prevent smaller parties from entering the legislature.

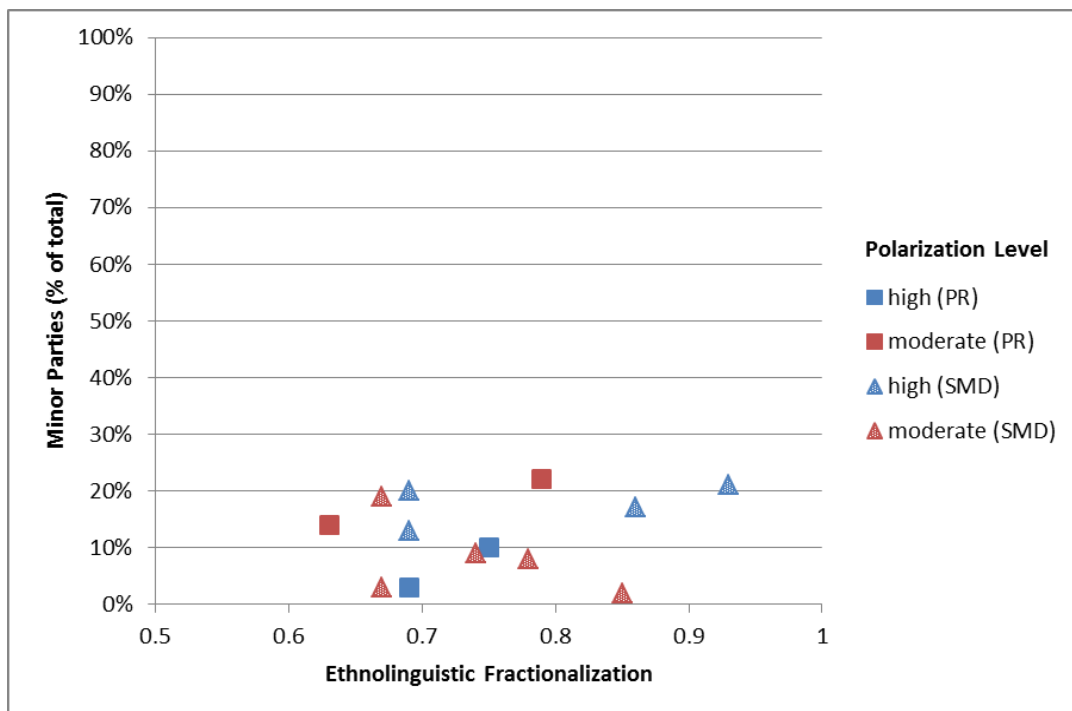


Figure 4.12 Ratio of Minor Parties Ethno-linguistic Fractionalization (empirical)

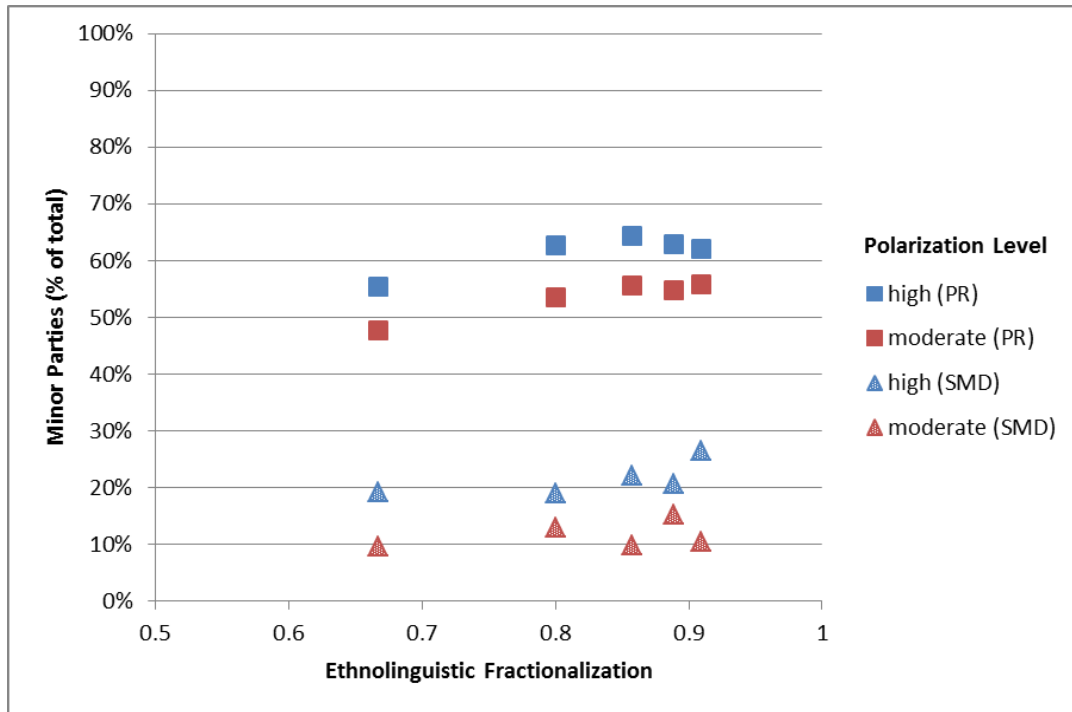


Figure 4.13 Ratio of Minor Parties Ethno-linguistic Fractionalization (model)

4.4 Discussion

Overall, empirical validation indicates that the model outcomes reasonably reproduce the real life data. For ethno-linguistic minority scenario, this means validation of ethnic voting strategies of parties in the legislature. For fractionalized polity scenario, it means validation of party fragmentation, electoral volatility and ethnic voting strategies of parties. The model outcomes, however, do differ from real life data to some degree. A number of factors affect the ability of the model to achieve higher precision level.

The model traces the impact of only two parameters – ethno-linguistic fractionalization and polarization level. When it comes to other socioeconomic characteristics, the model initializes a very generic case with only four distinct economic sectors and relatively low level of income inequality. It further assumes no significant

differences in the socioeconomic profiles of various ethnic groups or factions. Given the main focus of this research on ethno-linguistic fractionalization, these variables are left outside of the scope of the study.

Countries in the dataset, however, differ substantially both economically and politically. They vary in levels of economic development and income inequality, which impact the salience of economic pork and tax policies. The model assumes relatively low level of income inequality, which leads to moderate overestimation of the salience of ethnic pork. The countries also vary in the level of institutionalization of minority rights and representation. Thus, in some cases, the lower level of political mobilization of ethnic minorities in the dataset is the outcome of obstructions instituted by ethnic majorities rather than lack of interest on the part of minorities. The level of geographic concentration further impacts minorities' choice of voting strategies.

Validation of fractionalized polity scenario is further complicated by the very limited and somewhat biased set of real life cases. There are only a handful of countries with no ethnic majority. Only a few of them are even partially democratic and virtually all of them are in Sub-Saharan Africa. Most of these countries are still in the process of transition to democracy. Thus, their political landscape can alter substantially from one election period to the next. Furthermore, the unique regional experience of Sub-Saharan Africa with its legacy of colonial racial policies may skew the data.

Yet, even with the substantial limitations of the empirical data, the model does capture the direction and relative magnitude of the impact ethno-linguistic fractionalization and polarization. Consequently, it provides us a valuable tool for testing

the various theories outlined at the beginning of this research. Some of these are tested in the following chapter.

CHAPTER 5. APPLICATIONS OF THE MODEL

One of the advantages of an agent-based model is that it can be used as a virtual lab to test out theories postulated in the literature. It can provide a peek at “what if” scenarios by allowing scholars vary the parameters they think might be important in determining the outcome of a given social process. It can further provide evidence in favor of one or the other theory in case of competing explanation in the literature. This chapter tests some of such theories described in the research framework section.

5.1 Coalition Building

One of the key concepts used in the model is the concept of a minimum winning coalition first introduced by Riker (1962) in “The Theory of Political Coalitions.” In the context of democratic elections, a winning coalition refers to the smallest number of supporters required for a candidate to secure a legislative seat. As described in previous sections, the model provides a number of cleavages along which a party can construct its winning coalition. These cleavages divide the electorate into potential coalitions of various sizes. Some cleavages, such as income inequality, provide for broad and relatively inclusive coalitions. Others, such as ethnic divisions, drastically limit coalition size. Parties choose how broadly or narrowly to define their coalitions based on which cleavages they focus on.

Building on this concept, Bueno de Mesquita et al (2005) claim that majoritarian systems require substantially larger winning coalitions than PR systems since they only award one seat per district. They force factions to consolidate into fewer parties that are larger in size. In contrast, winning coalitions in PR systems are smaller, as the latter award multiple seats per district. They accommodate a larger number of smaller, more diverse parties. Thus, parties focusing on cleavages that lead to smaller coalitions should have more success in PR systems.

Parties in the model can pursue one of three primary electoral strategies. They can appeal through higher campaign spending, public goods or pork. Both campaign spending and public goods appeal to all voters. In contrast, pork is targeted towards a specific group. Consequently, parties that rely on pork to secure votes limit their winning coalitions to the member of their particular group. In the ethno-linguistic minority and fractionalized polity scenarios considered in this model, ethnic parties limit their winning coalitions the most. Ethnic voter base diminishes over the various scenarios run in the model and so does the size of the potential winning coalition of any ethnic party. Given that PR systems allow parties to win even with smaller coalitions, ethnic parties should be more successful in such systems. This leads us to the following hypothesis:

H1: Ethnic parties will have higher chances of winning in PR rather than majoritarian parliamentary elections.

Similar to the previous chapter, the study codes parties into ethnic and non-ethnic ones based on their pork preferences. The study uses the same threshold, i.e. mean ethnic pork preference, to distinguish between ethnic and non-ethnic parties. Thus, according to the

hypothesis, ethnic parties will have a higher ratio of seats in the legislature under PR systems.

As one can see from Figure 5.1, the model outcomes confirm the hypothesis for ethno-linguistic minority scenario. At every level of polarization, the ratio of ethnic party seats is higher in PR systems compared to majoritarian ones. As expected, the ratio of ethnic party seats decreases as the level of ethno-linguistic polarization decreases. The diminishing salience of ethnic pork reduces the effectiveness of ethnic voting as a strategy.

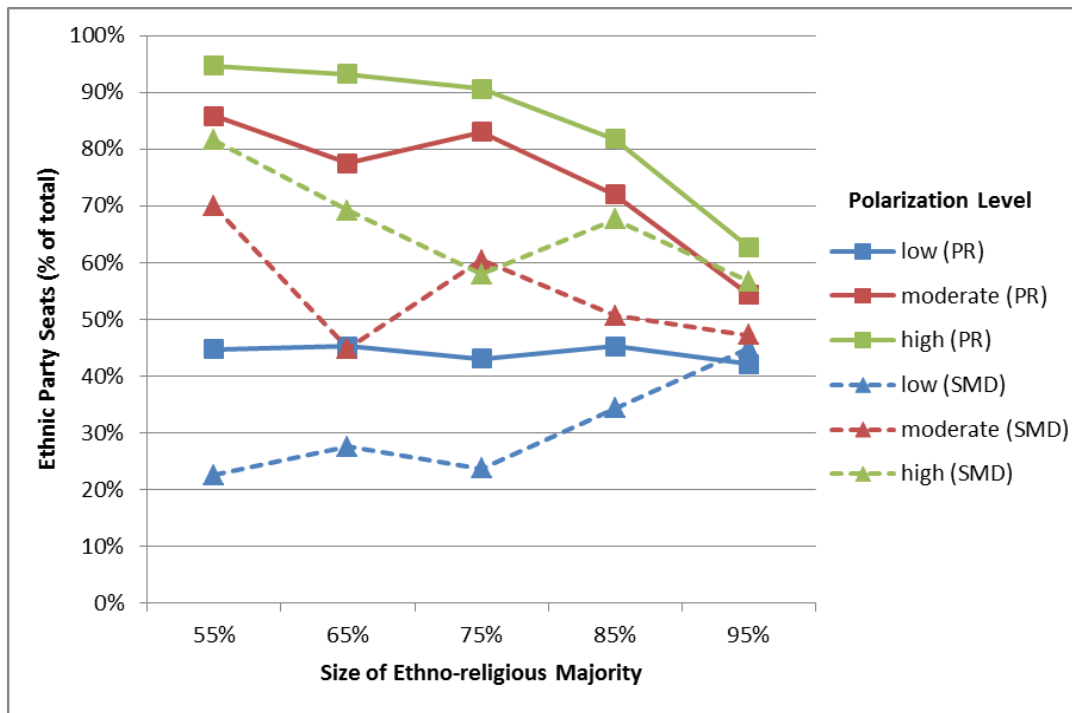


Figure 5.1 Ratio of Seats Held by Ethnic Parties (Ethno-linguistic Minority)

Similarly, as the ratio of ethnic minority population decreases, the ratio of ethnic parties decreases as well. Thus, as the political challenge from minority diminishes, it becomes

harder for majority affiliated parties to appeal to voters through ethnic pork. Other strategies become more competitive at this point. A partial exception to this pattern is the ratio of ethnic party seats in less polarized majoritarian systems. In the latter scenario, the ratio of ethnic party seats actually increases, although it does so from a low initial point. However, in all cases, the ratio of ethnic parties converges to half the seats in the legislature. This is the ratio one would expect if ethnic pork was no longer salient in voter decisions, since the threshold separating ethnic and non-ethnic parties is the mean of ethnic pork preference range.

Turning to fractionalized polity scenario, one can see that the model outcomes confirm the hypothesis for this case as well (see Figure 5.2). Thus, the number of seats secured by ethnic parties is higher in PR systems in comparison with majoritarian ones at every level of polarization. Furthermore, in moderately and highly polarized majoritarian systems, the number of ethnic party seats decreases as the level of ethno-linguistic fractionalization increases. This indicates that parties switch to alternative strategies as their ethnic voter bases become too small to secure victory. In PR systems, on the other hand, ethnic pork strategy remains viable as the ethnic voter base still provides an effective winning coalition.

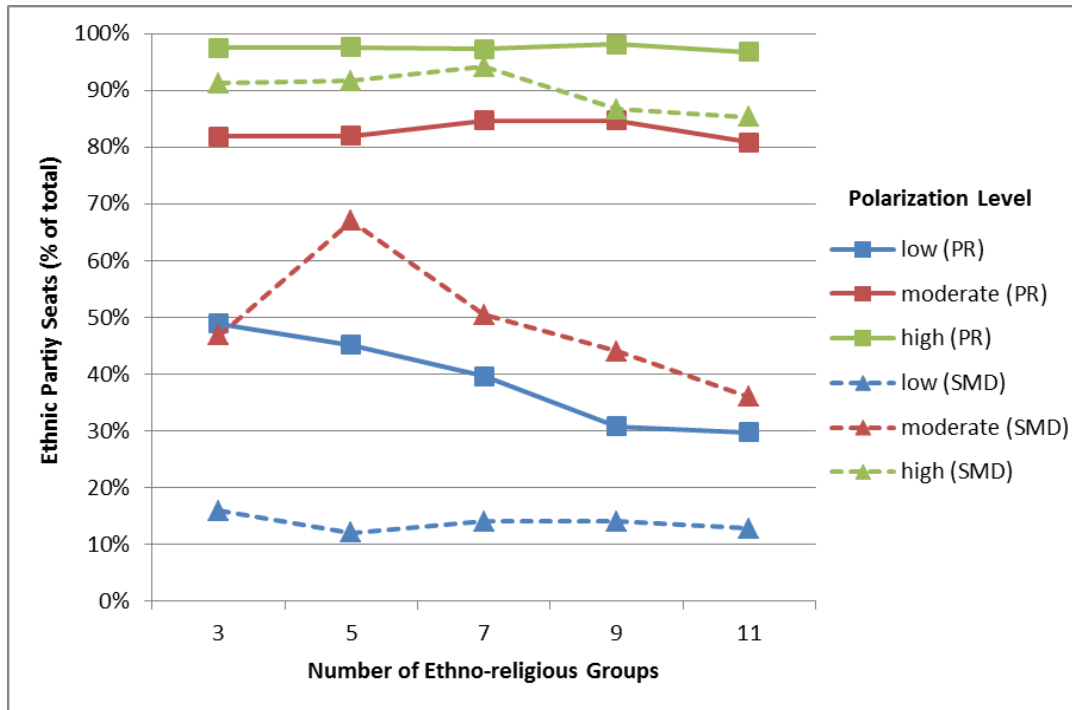


Figure 5.2 Ratio of Seats Held by Ethnic Parties (Fractionalized Polity)

Within the model, ethnic parties relying on pork as their main strategy limit their winning coalitions to their ethno-linguistic group. In contrast, both rent-seeking and programmatic parties appeal to the entire population, albeit with different strategies. Smaller winning coalitions of ethnic parties reduce their ability to secure legislative seats in majoritarian systems, which have higher winning coalition requirements. Thus, the model confirms the prediction of Buena de Mesquita et al regarding winning coalition requirements under different institutional designs.

5.2 Electoral Volatility

If different institutional designs impose different winning coalitions, they should also impact the electoral volatility present in the party system. At higher ethno-linguistic

polarization levels, parties form their winning coalitions primarily from their ethnic voter base. Since ethnic parties in both scenarios have smaller winning coalitions, they also have smaller margins of victory over their nearest competitors. This in turn leads to higher electoral volatility. However, the impact of volatility may be different in PR and majoritarian systems. If both systems generate a comparable number of competitive ethnic parties, more of these parties actually receive seats under PR systems. This leaves fewer competitive parties outside of the legislature, thereby decreasing the chances of an outside party challenging the parties in the legislature. In contrast, only one party receives a seat under majoritarian systems. All of its competitors are left outside of the legislature, increasing the chances of party turnover.

This logic, however, applies only to highly polarized scenario. At low level of polarization, ethnic pork is no longer the dominant party strategy. Most parties switch to campaign spending as a strategy of choice. The latter requires consolidation in to larger parties, particularly in majoritarian systems. Consequently, the margin of victory in majoritarian systems will be considerably higher, leading to lower electoral volatility.

A related argument is presented by Birnir (2007). In her work on the impact of ethnicity on politics she claims that ethnic voting can increase the stability of voting patterns. According to Birnir, voters in new democracies commonly lack enduring political party affiliations. Evaluating the policy preferences of numerous newly established parties presents an additional challenge. Consequently, voters frequently switch alliances, leading to higher electoral volatility. This in turn makes it harder for political parties to construct enduring winning coalitions (de Marchi 2003). Ethnic voting

counters this trend by providing an informational shortcut for voters. Therefore, highly polarized systems dominated by ethnic parties should have lower electoral volatility.

These arguments lead us to the following hypotheses:

H2: Party systems dominated by ethnic parties will be more volatile under majoritarian than PR systems.

H3: Higher ethno-linguistic polarization will lead to lower electoral volatility.

There are many ways to define electoral volatility. It may refer to the turnover of parties in the legislature, swings in the policy positions of the legislature, or volatility within the parties themselves. The literature on party competition predicts that in more polarized societies, voter will quickly identify themselves with ethnic parties and vote for them consistently. Thus, the electoral volatility in this case refers to party turnover.

Furthermore, ethnic voting in the literature is considered primarily in the context of minorities. The impact of institutional design on parties associated with ethnic majority is not investigated.

As described in the previous chapter, party turnover is measured as the number of competitive parties. Due to the model limitations, the actual party turnover is not generated. Parties are considered competitive if they receive more than 75% of the winning vote within the district. For majoritarian systems, the winning vote is the highest vote in the district. For PR system, on the other hand, the winning vote is the lowest vote that is still sufficient to secure a legislative seat for a party within the district. Party turnover is counted as an average over 50 simulation runs. Finally, the party system tends

to be dominated by ethnic parties mostly at the higher level of ethno-linguistic polarization given higher salience of ethnic pork. Thus, the hypothesis refers to the impact of the institutional design at high polarization level. The impact of the institutional design at other levels of polarization is also presented for comparison.

In general, the model confirms the hypothesis (see Figure 5.3). Electoral volatility of minority parties is higher in majoritarian systems at high level of polarization. Model outcomes are indeterminate for moderately polarized societies – electoral volatility is roughly the same under either district magnitude. The relationship is reversed, however, at low level of polarization. Thus, as the salience of ethnic pork diminishes, the ability of pork oriented minority parties to secure seats decreases as well. Ethnic vote is diluted and parties switch to campaign spending as a primary strategy.

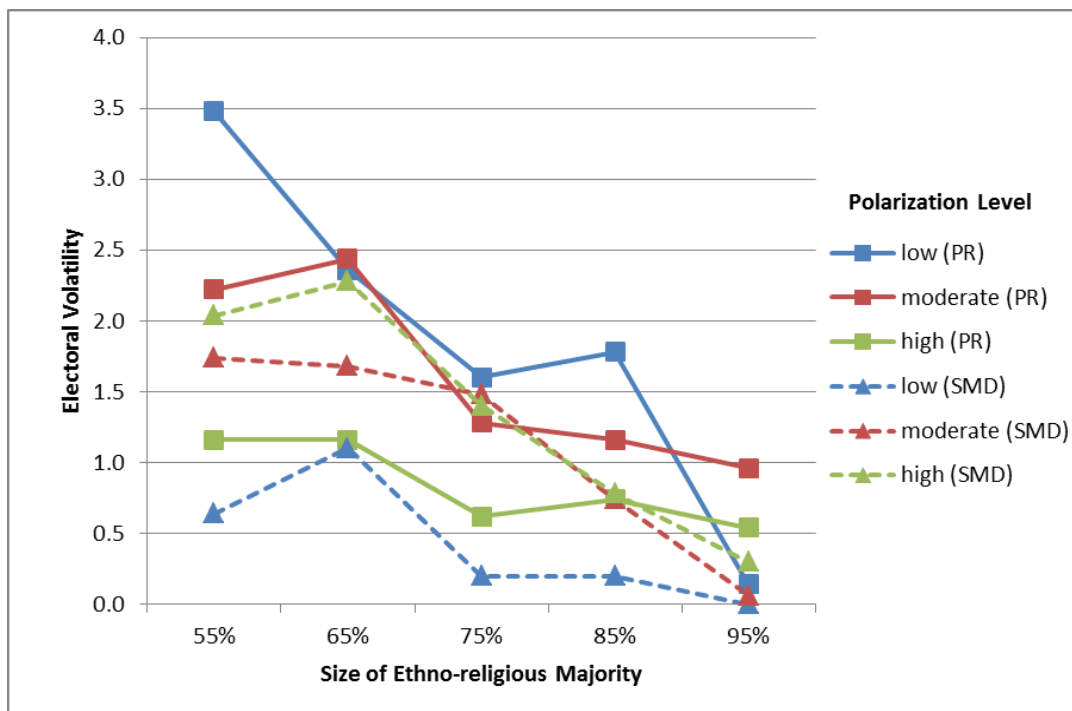


Figure 5.3 Electoral Volatility of Minority Parties (Ethno-linguistic Minority)

Model outcomes, therefore, indicate that the ability of PR systems to accommodate a larger number of competitive parties leads to lower electoral volatility. While the volatility is still present, it has less to do with the threat of outside parties replacing parties in the legislature. Rather, it shifts to the changes in relative standings of parties within the legislature. Figure 5.4 graphs the number of parties in the legislature with votes within 25% of minimum winning vote in PR systems. For comparison, it leaves the electoral volatility figure for majoritarian systems. As one can see, once the volatility within the legislature is included, PR systems are more volatile than majoritarian ones, since the latter promotes higher party consolidation and larger margins of victory. On the other hand, relative fluctuation of votes within PR systems is unlikely to change the actual distribution of seats within the legislature. It would take a substantially higher number of votes for any party in the legislature to take over the other party's seat. Thus, PR systems in highly polarized societies do reduce electoral volatility.

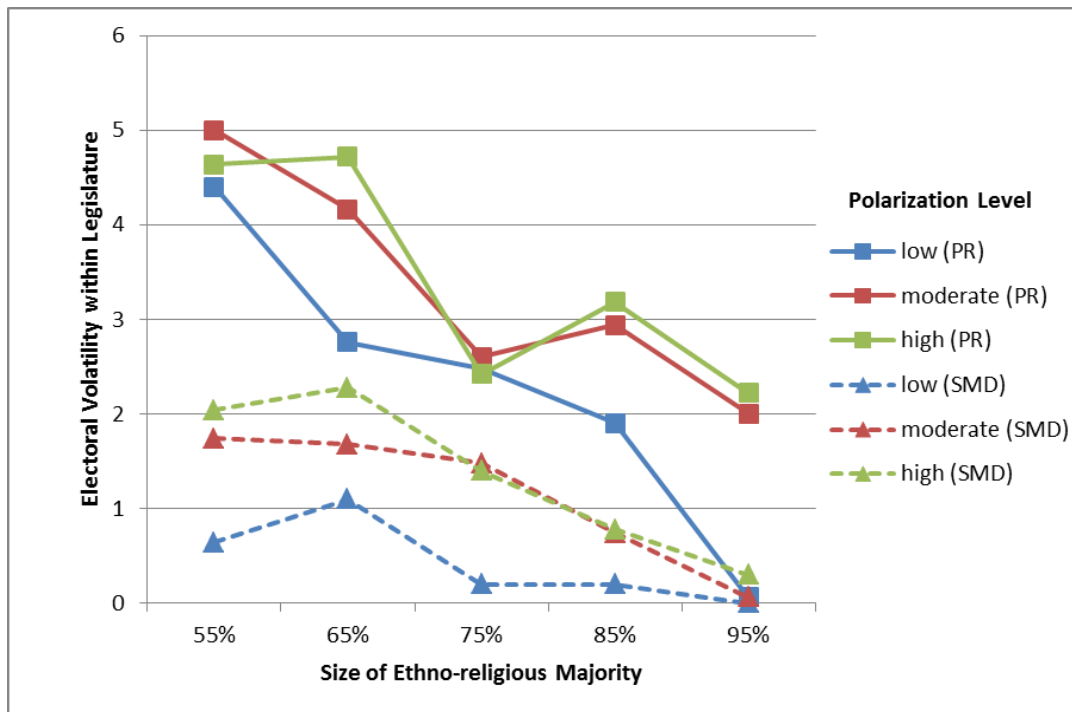


Figure 5.4 Electoral Volatility within Legislature (Ethno-linguistic Minority)

When it comes to the impact of ethnic voting on electoral volatility, the hypothesis holds true only for PR systems (see Figure 5.3). As polarization increases in PR systems, the level of electoral volatility decreases. Consequently, as voters begin to vote based primarily on ethnic pork considerations, they consistently elect the same few parties. At low polarization levels, however, no single issue consistently attracts the votes. Thus, votes become spread over a larger number of parties and margins of victory by parties in the legislature diminish, resulting in higher electoral volatility.

The same relationship, however, does not hold true in majoritarian systems. Unlike PR systems, majoritarian systems do have a dominant strategy. Given considerably lower district magnitudes, majoritarian systems force factions to consolidate into larger wealthier parties. This allows the larger parties to use campaign spending in

order to secure legislative seats by considerable margins. Consequently, electoral volatility in homogenous societies is lower under majoritarian systems. Adding an ethnic voting dimension only increases the volatility in this case.

The model results do support Birnir's claim but with some caveats. Higher polarization in the model increases the level of ethnic voting. This in turn leads to lower electoral volatility, pointing to more stable voting patterns, but only in PR systems. In majoritarian systems, higher level of ethnic voting increases electoral volatility. The crucial distinction here is the alternative to ethnic voting. In the absence of ethnic voting patterns, PR systems produce a relatively volatile party system. Introducing ethnic voting, therefore, decreases electoral volatility. In contrast, majoritarian systems are dominated by a handful of large parties and produce little volatility. While ethnic voting produces stable voting patterns even in the latter case, the resulting volatility level is still higher compared to the case with no ethnic divisions.

Running the model with fractionalized polity scenario, the study finds that electoral volatility of the party system is higher in highly polarized majoritarian systems (see Figure 5.5). Furthermore, under both PR and majoritarian systems volatility increases as ethno-linguistic fractionalization increases, indicating that the size of ethnicity-based winning coalitions diminishes. Thus, the model bears out both predictions of the hypothesis.

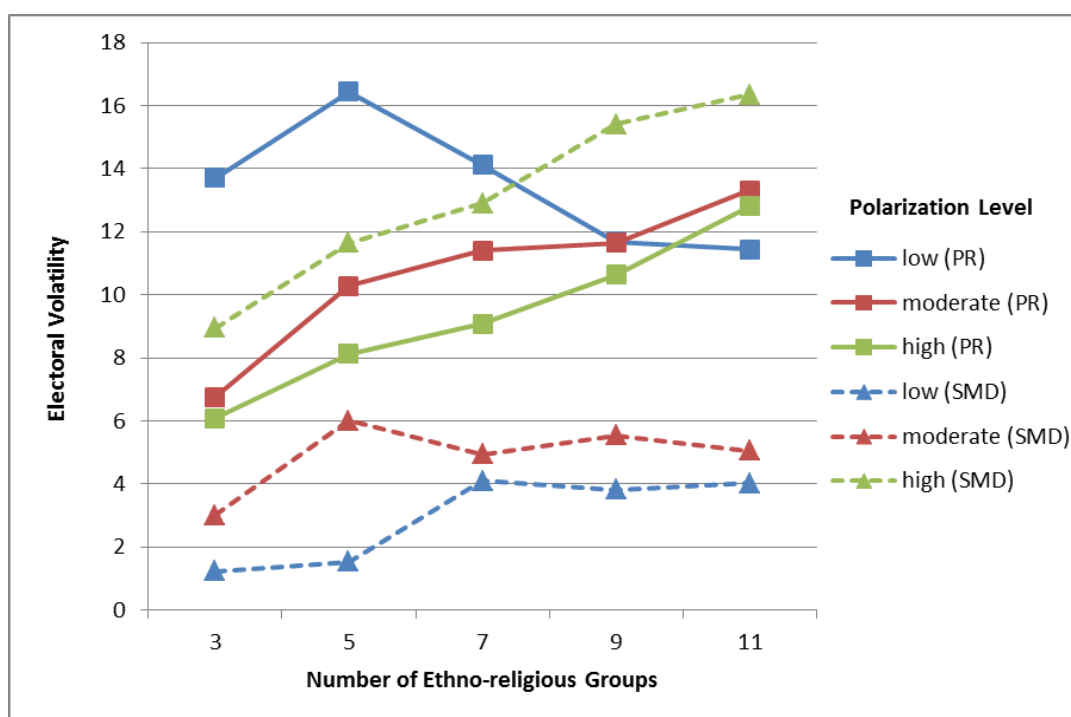


Figure 5.5 Electoral Volatility of Parties in Legislature (Fractionalized Polity)

Interestingly, the pattern of electoral volatility changes substantially at lower polarization levels. In PR systems, ethnicity-based winning coalitions still dominate at moderate level of polarization (see also Figure 5.3). Thus, electoral volatility increases with ethno-linguistic fractionalization. At low polarization level, on the other hand, voter bases are divided both on economic and ethno-linguistic lines, leading to high electoral volatility regardless of fractionalization level. In majoritarian systems, ethnicity-based winning coalitions are no longer viable at either low or moderate polarization levels. Thus, parties appeal to all voters through higher campaign spending or public goods. Larger winning coalitions constructed through such broader appeal result in considerably lower electoral volatility.

Ethnic voting in PR systems leads to lower volatility. Yet, at lower ethno-linguistic polarization level, ethnic divisions are compounded by economic ones. As voting patterns shift from ethnic voting to include economic dimension, winning coalitions become smaller and electoral volatility increases. In majoritarian systems, on the other hand, ethnic voting is replaced by the impact of higher campaign spending. Larger, wealthier rent-seeking parties defeat their competitors by considerable margins. As polarization decreases in majoritarian systems, electoral volatility decreases as well.

Thus, the model outcomes support Birnir's argument regarding the stabilizing impact of ethnic voting (Birnir 2007). The results hold true, however, only for PR systems. In majoritarian systems, electoral volatility increases with polarization. The difference in impact of ethnic voting stems from the difference of electoral volatility levels under PR and majoritarian systems in the absence of ethno-linguistic divisions. Since no electoral strategy dominates in PR systems, no stable voting patterns emerge, leading to higher electoral volatility. In majoritarian systems, on the other hand, wealthy rent-seeking parties consistently attract large share of voters through higher campaign spending. This results in substantially lower volatility levels.

5.3 Party Fragmentation

Literature on party competition is not unanimous on the impact of ethno-linguistic fractionalization on party fragmentation. Thus, Neto and Cox (1997) and Ordeshook and Shvetsova (1994) claim that higher fractionalization leads to higher fragmentation. Mozaffar, Scarritt, and Galaich (2003), on the other hand, claim that it follows an inverse

U-shape pattern. They find this pattern in Sub-Saharan Africa in particular. All authors agree, however, that district magnitude can limit the level of party fragmentation.

As described above, higher level of ethno-linguistic fractionalization decreases the size of ethnicity-based coalitions. Yet, if the district magnitude allows parties to win elections with smaller winning coalitions, higher fractionalization will lead to the proliferation of smaller ethnic parties, increasing party fragmentation. Once the size ethnicity-based coalitions get too small, however, parties will be forced to appeal beyond their ethnic voter base in order to secure legislative seats, leading to the consolidation of parties. The two forces, one increasing party fragmentation, the other forcing consolidation, act at different stages of ethno-linguistic fractionalization to produce an inverse U-shape relationship. This leads to the following hypothesis:

H4: The level of fractionalization of a society will have an inverse U-shape relationship to party fragmentation.

Testing this hypothesis in the model, the study finds that ethno- linguistic fractionalization does impact the level of party fragmentation. Higher ethno- linguistic fractionalization increases party fragmentation (see Figures 5.6). Contrary to the hypothesis, however, the impact does not follow a U-shape form. The relationship is basically linear. Thus, while the forces increasing party fragmentation are quite active in the model, the consolidating forces fail to impact the model outcome. The result of this failure to consolidate is the increase in electoral volatility seen in Figure 5.5 above.

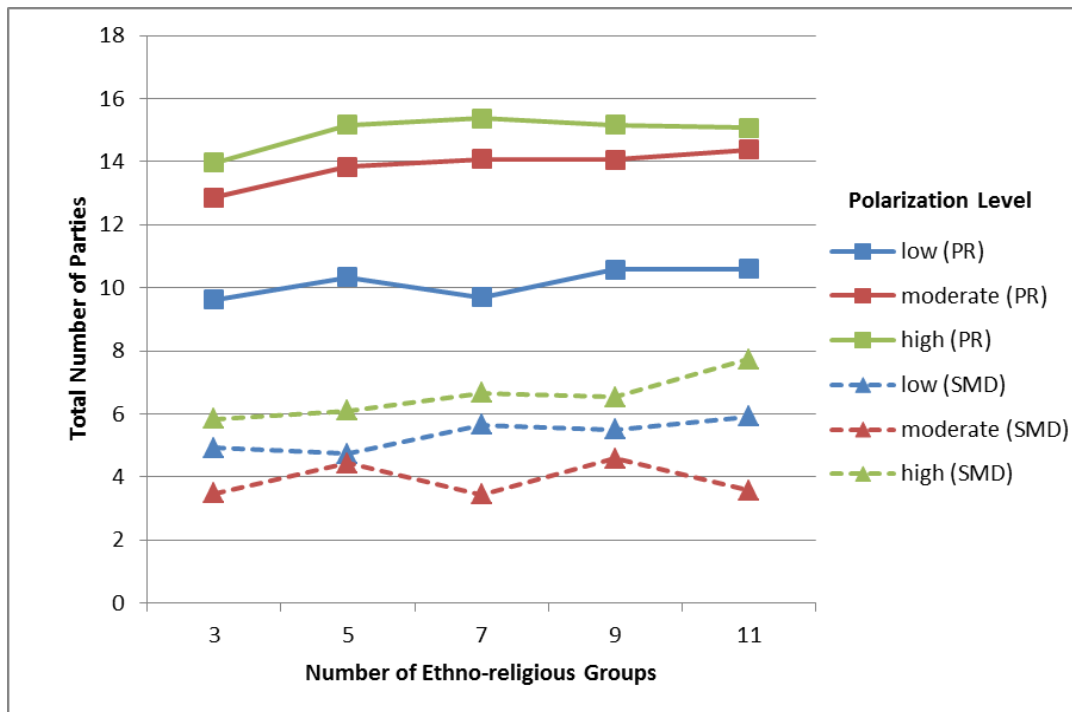


Figure 5.6 Number of Parties in Legislature

The model does not find the support for an inverse U-shape pattern of party fragmentation. Party fragmentation increases in response to higher ethno-linguistic fractionalization. While fragmentation stops at some relatively high level, at no point does the party system begin to consolidate. Thus, the model results support the claims by the authors arguing for linear as opposed to U-shape relationship of party fragmentation and ethno-linguistic fractionalization. The model results do confirm the claim that district magnitude limits party fragmentation. Thus, party fragmentation in majoritarian systems is considerably lower than in PR systems.

Note, however, that in the current model there are no minimum vote requirements. Thus, the model does not force parties into runoffs in single member districts if none of the candidates secures an outright majority of votes. And it has no

electoral thresholds in proportional representation districts.¹ Consequently, there is little pressure on parties to go beyond their voter base. The competition among parties is concentrated on their ability to attract the larger portion of voters within their ethno-linguistic base.

Given that both ethno-linguistic fractionalization and polarization impact the party system, it is interesting to examine the interaction of the two factors. Thus, Neto and Cox (1997) and Ordeshook and Shvetsova (1994) argue that higher ethno-linguistic fractionalization leads to higher party fragmentation. On the other hand, higher polarization should also increase the level of party fragmentation. As polarization level increases, more parties begin to rely on ethnic pork as primary strategy. In other words, higher polarization increases the number of ethnic parties. Consequently, higher ratio of winning coalitions will be limited to ethno-linguistic groups. As fractionalization increases, the size of the winning coalitions of ethnic parties diminishes. Smaller winning coalitions, in turn, will lead to smaller parties and, consequently, higher party fragmentation. This leads us to the following hypotheses:

H5: The level of fractionalization and polarization will impact the type of parties that are formed in a society:

- a) High fractionalization and polarization will lead to the formation of elite parties.*
- b) High fractionalization and low polarization will lead to the formation of business parties.*
- c) Low fractionalization and high polarization will lead to the formation of ideological parties.*
- d) Low fractionalization and polarization will lead to the formation of pragmatic catch-all parties.*

¹ This is not necessarily a limitation of the model, since many electoral systems do not have electoral thresholds or runoff elections.

H6: Higher polarization in fractionalized societies will lead to a higher party fragmentation.

Parties differ based on size and level of ideological commitment. Based on size, parties are divided into large and small; based on ideological commitment, they are divided into rent-seeking and programmatic. Thus, elite parties are small and programmatic. Business parties are also small but are generally rent-seeking. Large programmatic parties are categorized as ideological, while large rent-seeking parties constitute pragmatic catch-all parties. The hypothesis can be broken down into two components based on fractionalization and polarization. The hypothesis predicts that higher fractionalization will lead to higher party fragmentation and consequently smaller parties. Higher polarization, on the other hand, will increase the level of ideological commitment of parties, leading to higher ratio of programmatic parties.

There are different ways to identify the size and ideological disposition of parties. One way is to look at the average size and rent preferences of the parties in the legislature. In this case, party size is measured as a number of factions within in each party, while ideological disposition of parties is measured as a simple average of rent preference of parties. Another way is to look at the ratio of seats held by parties in the legislature. Rather than measure averages, this approach defines thresholds for party size and ideological commitment levels. Thus, parties are considered small if they hold only one seat in the legislature. The threshold for dividing parties into rent-seeking and programmatic is the same as the one used in previous chapters. Thus, a party is considered programmatic if its rent preference is less than 30%; it is considered rent-

seeking otherwise. The ratios of small and rent-seeking party seats, then, give an indication of the types of parties predominant in the legislature. The main difference between these approaches is that the first approach indicates the influence of factions, while the second approach indicates the strength of party following among voters. The study uses both approaches to test the hypothesis.

Confirming the hypothesis, higher polarization decreases the level of rent-seeking by parties in the legislature (see figure 5.7 and 5.8). Lower rent-seeking preferences correspond to higher programmatic orientation of the parties. The relationship is robust for both PR and majoritarian systems. Furthermore, it holds up regardless of how rent-seeking is measured. In fact, the patterns of change in the level of rent-seeking on both graphs directly correspond to each other, indicating that both indices measure the same phenomenon.

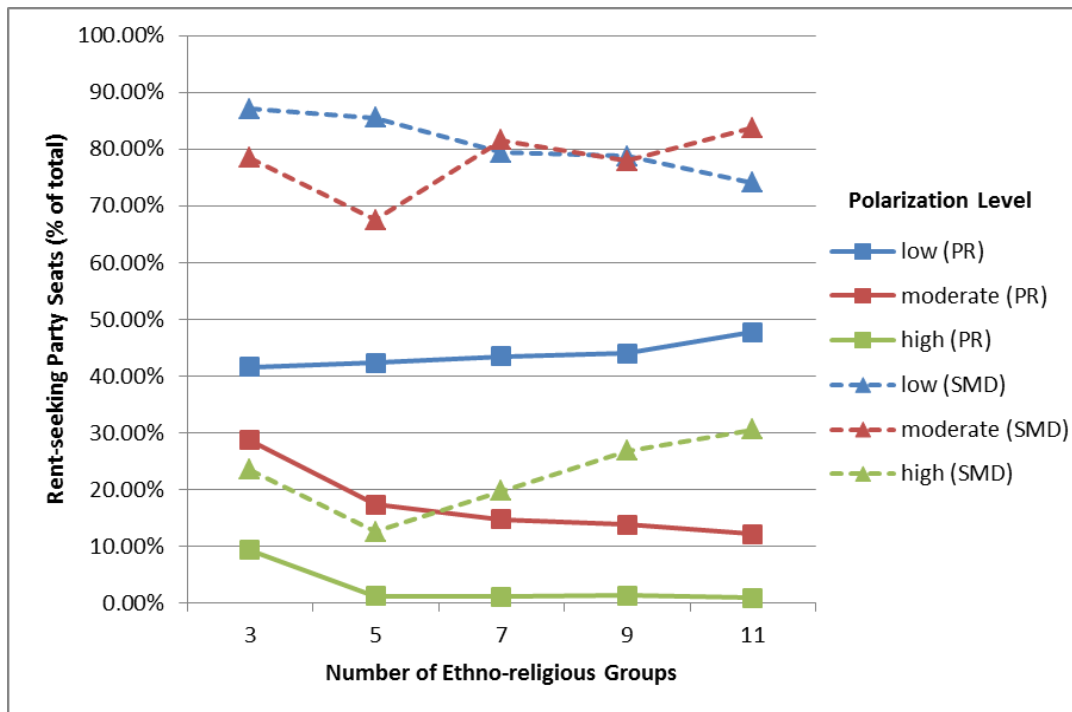


Figure 5.7 Ratio of Seats Held by Rent-seeking Parties

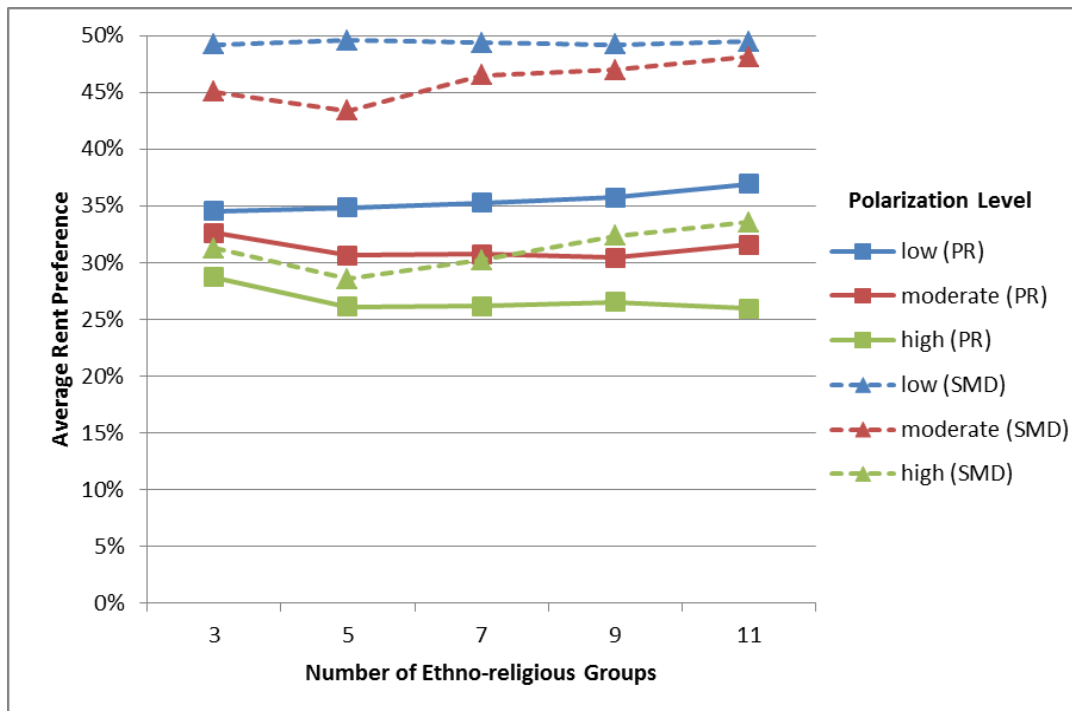


Figure 5.8 Average Rent Preference of Parties in Legislature

Similarly, the impact of fractionalization follows the hypothesis predictions. Again, the hypothesis prediction is supported by both measures (see Figures 5.9 and 5.10). The ratio of seats held by minor parties increases with higher ethno-linguistic fractionalization. This indicates higher party fragmentation resulting from higher fractionalization. It further confirms the findings of the previous hypothesis showing an increase in number of parties as a result of higher ethno-linguistic fractionalization (see Figure 5.6). The average party size, on the other hand, drops substantially as fractionalization increases, pointing to a different aspect of party fragmentation. In both cases, however, increase in party fragmentation slows down at higher levels of fractionalization. As mentioned in the previous hypothesis, institutional design limits the level of party fragmentation.

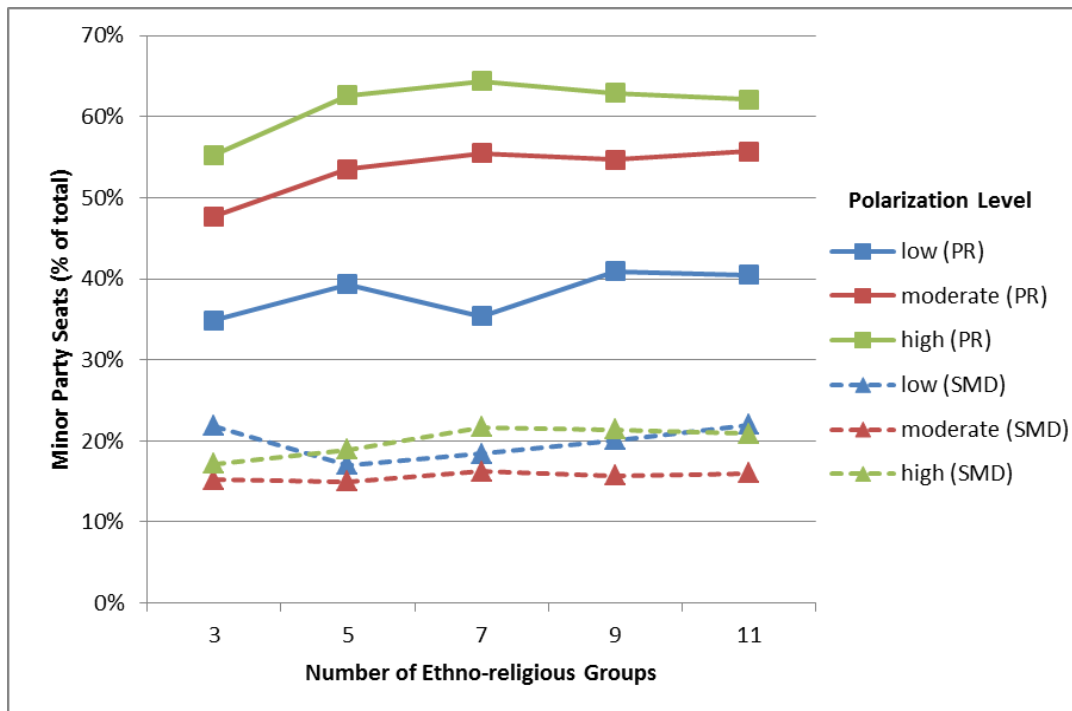


Figure 5.9 Ratio of Seats Held by Minor Parties

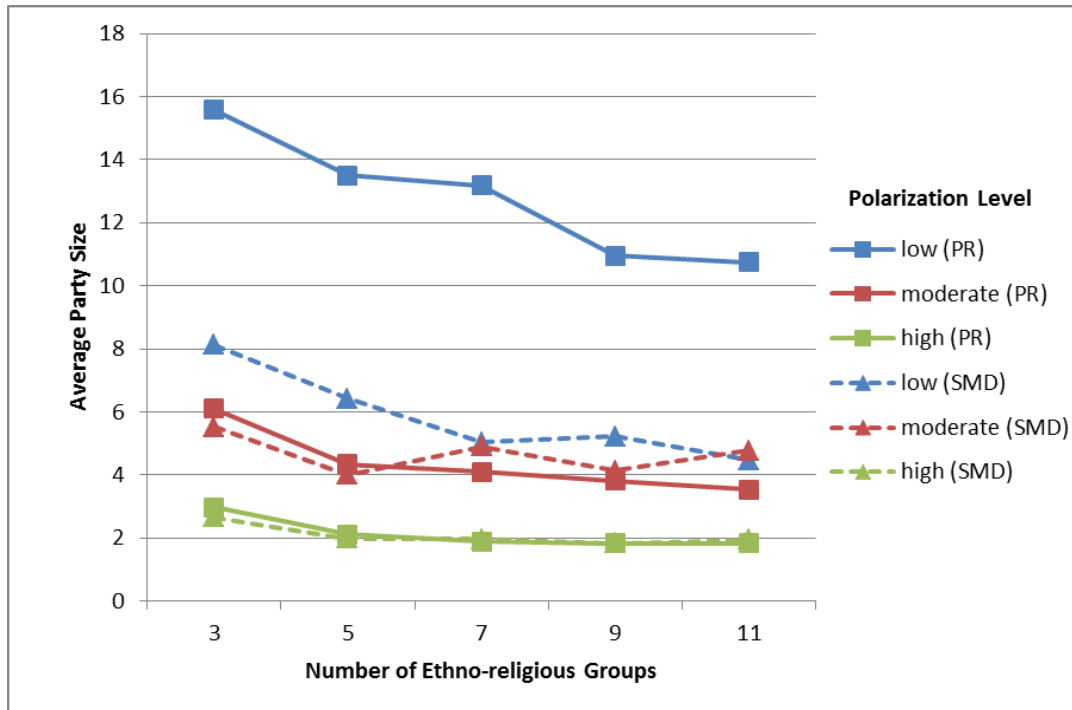


Figure 5.10 Average Size of Parties in Legislature

The model tests the combined effect of two variables: ethno-linguistic fractionalization and polarization. It confirms the argument by Neto and Cox (1997) and Ordeshook and Shvetsova (1994) claiming that higher fractionalization leads to higher fragmentation. This in turn leads to the formation of smaller elite or business parties in the legislature. Higher polarization, on the other hand, increases the salience of ethnic pork as the dominant electoral strategy. This in turn reduces the ability of rent-seeking parties to secure legislative seats through higher campaign spending. Consequently, the ratio of rent-seeking parties in the legislature decreases, leading to the formation of elite or ideological parties.

The model further confirms the hypothesis prediction that higher polarization leads to higher party fragmentation but only for PR systems (see Figure 5.6 and 5.9). In

majoritarian systems, on the other hand, the hypothesis is only partially confirmed. Party fragmentation at high level of polarization is considerably higher than at either low or moderate polarization levels. Yet, party fragmentation at moderate polarization level is the lowest. The reason for this apparent disparity is the fact that at moderate polarization level parties appeal to voters both through pork and campaign spending. As Figure 5.7 indicates, most parties in majoritarian systems use campaign spending as a primary electoral tool in moderately polarized societies. On the other hand, almost half of them also use ethnic pork (see Figure 5.4). Consequently, these parties are able to secure higher turnout within their own ethnic bases as well as appeal to voters beyond their bases, leading to lower party fragmentation.

5.3 Discussion

Overall, model outcomes confirm the hypotheses outlined in the first chapter. The hypotheses test the impact of institutional design, polarization and fractionalization on the various aspects of an emerging party system. In most cases, they support the claims of the party competition literature regarding the impact of the input variables. The impact of these variables is consistent for both scenarios. In other words, the institutional design, polarization and fractionalization affect the output variables in similar manner in both ethno-linguistic minority and fractionalized polity scenarios.

Thus, in both scenarios ethnic parties are more prevalent in PR systems than majoritarian ones, as the former are more accommodating of parties with smaller winning coalitions. Yet, systems dominated by ethnic parties are more volatile under majoritarian

systems, since PR systems mask most of the volatility within the legislature. On the other hand, ethnic voting leads to stable voting patterns. Higher ethno-linguistic fractionalization increases party fragmentation, as does higher polarization. In both cases, parties rely on smaller ethnicity-based winning coalitions. Finally, higher polarization also increases the share of programmatic parties in the legislature. While these results reflect the impact of only three variables, it is possible to draw some policy implications from the model outcomes. In the following chapter, the study defines both negative and positive outcomes for emerging party systems. It further identifies a set of institutional design tools that may help to mitigate the negative outcomes under different scenarios.

CHAPTER 6. POLICY IMPLICATIONS

The model created in this study has a number of limitations – it does not allow for variations in voter turnout or political contributions by factions, it does not implement presidential elections, and it assumes no preexisting political movements or parties. In addition, the study tests only a limited number of scenarios. In particular, the main thrust of the study is to examine the impact of ethno-linguistic fractionalization and polarization on the model outcomes. It does not vary the level of income inequality, urbanization, urban/rural income disparity or the ratio of voters in various economic sectors.

Yet, even with these limitations, the model still allows for a number of policy implications to be drawn from its results regarding the impact of ethno-linguistic fractionalization. In order to evaluate the outcomes of the model scenarios, we must first define the criteria based on which the outcomes will be judged. These are outlined in the next section. The following section uses the criteria to evaluate the policy outcomes. The final section draws policy implications based on these evaluations.

6.1 Party System Criteria

The criteria of evaluation of the model outcomes fall into two categories. The first category deals with the characteristics of the emerging party system. In other words it examines the changes in the number of parties in the legislature and their relative sizes.

The second category deals with the characteristics of the parties themselves. Thus, it focuses on their policy preferences. Both categories are important in determining whether a given scenario leads to positive or negative outcomes.

6.1.1 Party System Characteristics

When one considers a party system, the level of competition is the predominant concern. A healthy level of party competition has as much to do with avoiding excessive competition as having too little of it. Thus, it is a matter of striking the right balance between the two extremes rather than simply pushing in a particular direction. In this regard, a good party system is characterized by a sufficient level of party consolidation as well as regular changes of parties in power. Bad party systems, on the other hand, can fall into one of the two extremes. A fractured party system is characterized by excessive party competition, whereas a dominant party system has too little of it.

Excessive competition in a fractured party system is likely to make it ungovernable. No party in such system will have sufficient support of population or other parties. This will either lead to a paralyzed dysfunctional political system or to frequent rotation of parties in power, resulting in high electoral volatility. In contrast, lack of competition in a dominant party system is likely to result in poor representation of the diverse political interests of the country. Factions in such a system are forced to either collude with the dominant party or be shut out of power altogether. Given the dominant party's inability to appeal to specific interests within population, it can only win through

higher campaign spending. As a consequence, it is likely to have high rent-seeking preferences as well.

Finally, a concern that is specific to the ethno-linguistic minority scenario is the level of minority access to the legislature. Distribution of parties based on ethnicity is understandably constrained by the voter distribution. Given that both voters and factions are distributed according to a demographic scenario, the most equitable distribution of seats within the legislature would be equivalent to the voter distribution. But this may not reflect the true state of minority access to the legislature through them. Minority factions can always join the majority or mixed parties and gain access to the legislature. Thus, the ratio of minority factions crossing over to join majority parties provides an additional indicator for minority access.

Since the model does not produce cyclical party turnover, a good approximation of regular change in power system is the presence at least two major parties of comparable size. Here, major parties are defined as parties holding more than one seat in the legislature. In order for them to be comparable in size, neither of the parties should be considerably larger than the other. In other words, no party should be dominant. The study follows DPI in characterizing dominant parties as parties holding more than 75% of seats in the legislature. Party consolidation, on the other hand, can be measured as a ratio of seats held by minor parties. The study defines minor parties as parties holding a single legislative seat. While the presence of minor parties is not necessarily detrimental, if minor parties hold more than half of the seats, the system is likely to be fractured.

Minority access to the legislature is measured only for ethno-linguistic minority scenario. It is measured in two ways. The first measure is the ratio of seats held by minority parties in the legislature. The ratio that indicates unconstrained access to the legislature is the share of minority voters within the population. If the ratio of minority parties falls below that ideal ratio, minority voters are likely underrepresented. On the other hand, minority interests can also be represented by minority-friendly majority parties. Thus, the second way of measuring minority access is to examine the ratio of minority factions joining majority parties. Higher ratio of such crossover factions would indicate minority access to the legislature through minority-friendly majority parties.

6.1.2 Party Policy Preferences

There is no specific set of policy preferences that defines a good party system. There are a few markers to avoid, but overall, a good system is the one that allows for a mixture of approaches and political views to be represented in the legislature. In contrast, problematic party systems are characterized by either excessive ethnic polarization or high levels of corruption. Both can jeopardize the legitimacy of the democratic process and lead the country on the path of violence or relapse into autocracy.

A polarized party system is likely to lead to ethnic conflict as parties are unable to sort out their differences in the political sphere. In case of fractionalized societies, it is also likely to be unstable and result in low margins of victory. A corrupt party system, on the other hand, is less prone conflict, so the outcome is less negative. However, it is likely to foster disillusionment with the democratic process. This makes the whole system prone

to be hijacked by the extremist parties. Thus, if the level of polarization of the society is the primary variable that determines whether the outcome is a corrupt party system rather than a polarized one, extremist parties might pursue the course of polarizing the country by instigating ethnic violence.

There are a few thresholds that determine if a given scenario results in a positive or negative party system outcome. There is a threshold of the number of seats held by extremist parties that determines whether a party system is polarized. There is a similar threshold for the number of rent-seeking party seats. If a system does not fall into either of these categories, it is considered a mixed strategy system – the desired outcome in the model. Given that extremist parties can cause more damage to the party system's stability, the threshold for extremist seats is lower than for rent-seeking ones. Thus, a few seats by extremist parties may be tolerable and most likely inevitable, but if they gain a more than a quarter of seats, the system is considered polarized. For rent-seeking parties, the threshold is half the seats in the legislature.

6.2 Model Outcomes

The results of the model vary for different scenarios. In particular, minority size plays an important role in ethno-linguistic minority scenario, while ethno-linguistic fractionalization seems to have little impact on the outcomes of fractionalized polity scenario. In other variables, however, there are a number of common trends and pitfalls for both scenarios. These are examined in more detail below.

6.2.1 Ethno-linguistic Minority Scenario

As one can see from the graphs 6.1 – 6.3, there is a clear tradeoff between majoritarian and PR systems in achieving the proper balance of party competition. Thus, PR systems generate enough party competition for a system to have regular change in power (see Figure 6.1). Regardless of the size of the minority, PR scenario generates more than two major parties (the threshold is indicated by a red dash line). In majoritarian case, party system approaches a competitive scenario at higher levels of polarization, but only if the ethno-linguistic minority is sufficiently large.

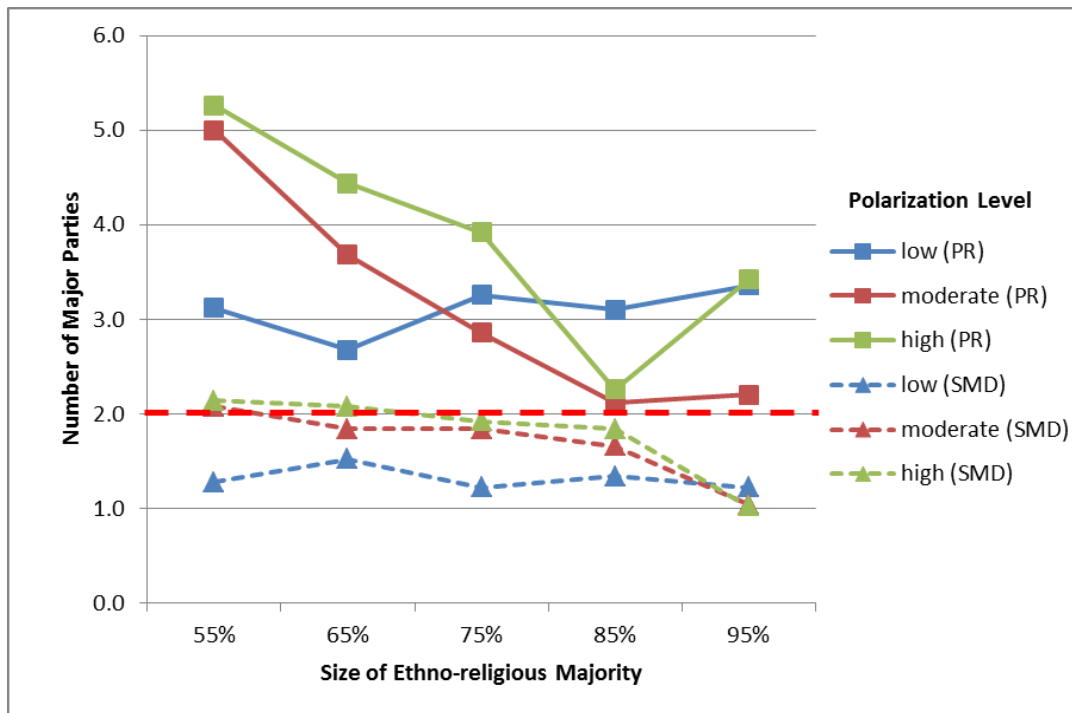


Figure 6.1 Number of Major Parties in Legislature

Looking at the share of seats held by the largest party in the legislature confirms the findings of Figure 6.1. As the size of the minority decreases, the scenario quickly

degenerates into the dominant party system in majoritarian case (see Figure 6.2, the threshold is indicated by a red dash line). Polarization level amplifies the impact of the minority size on party dominance. Thus, with large minorities, higher polarization decreases the chances of any party dominating the system. With small minorities, however, higher polarization has the opposite effect. In PR systems, on the other hand, no party gets close to dominance. Consequently, PR systems avoid the pitfalls of dominant party system and generate regular change of parties in power.

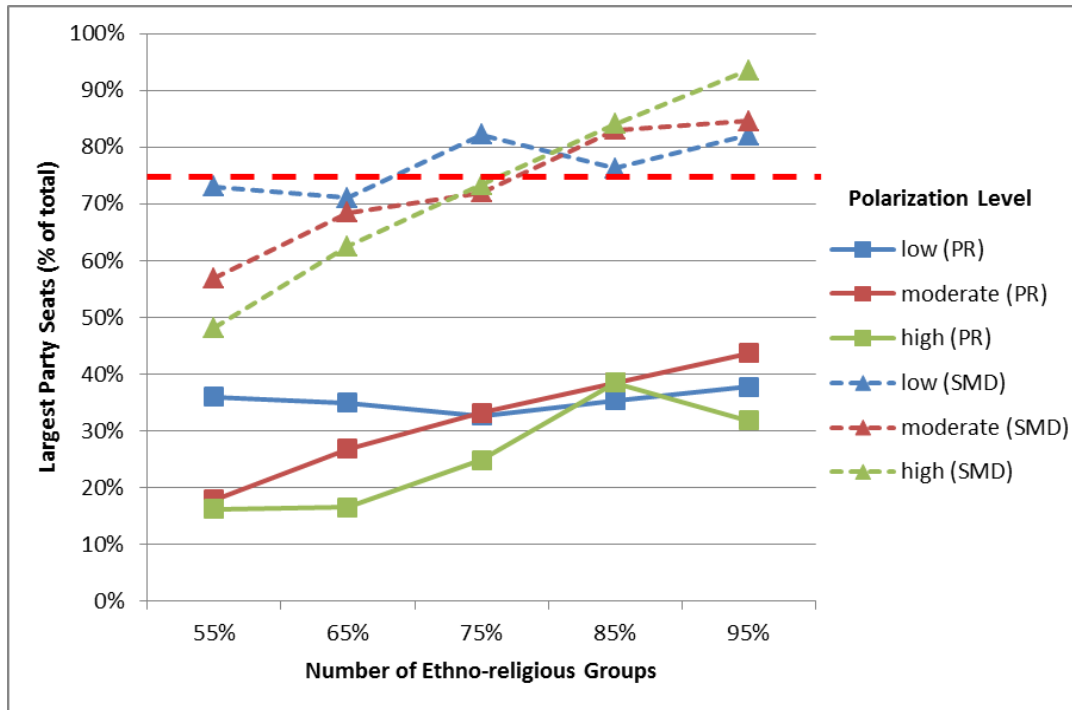


Figure 6.2 Ratio of Seats Held by the Largest Party

Yet, a quick look at the share of minor parties in the legislature points out the drawbacks of higher party competition in PR systems. While less than a fifth of seats in the legislature are held by minor parties in majoritarian systems, the ratio jumps to almost

half the seats in PR systems (see Figure 6.3). A sensitivity analysis in chapter 3 indicates that the actual ratio of minor parties in the legislature is impacted by a number of variables, including the ratio of national to local capital and the relative weight of campaign spending. Thus, the actual ratio of minor parties may vary. But the model outcomes indicate that PR systems drastically increase the level of party fragmentation. Consequently, higher level of party competition may come at the expense of party system consolidation, leading to an unstable fractured party system.

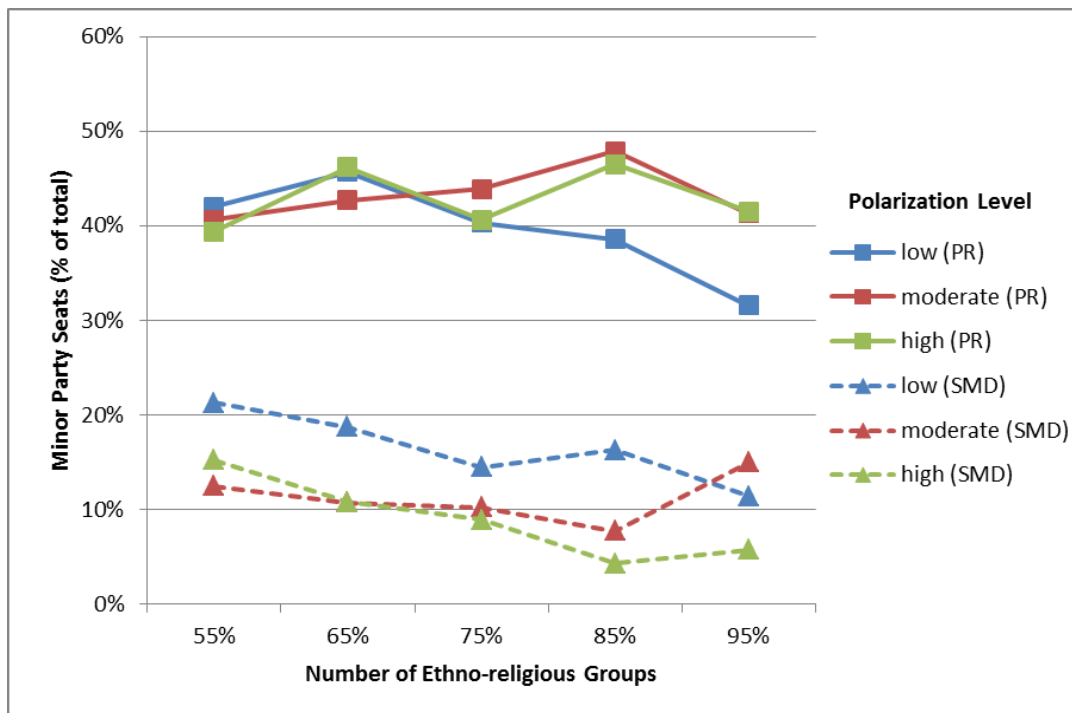


Figure 6.3 Ratio of Seats Held by Minor Parties

Unique to ethno-linguistic minority scenario is the issue of minority access to the legislature. As the graph in Figure 6.4 indicates, the ratio of seats held by minority parties in the legislature is roughly equivalent to the size of the minority population (marked as

an expected ratio in the graph). The relationship holds true regardless of institutional design but only at higher levels of polarization. At lower polarization levels, the ratio of minority party seats is considerably lower than the ratio expected based on the size of the minority. This, however, does not necessarily indicate underrepresentation of minority interests in less polarized systems. As one can see from Figure 6.5, minority factions in less polarized systems are more likely to gain access to the legislature from within majority parties. More than half of minority factions choose to join majority parties in less polarized societies. The parties they join are likely to be minority-friendly, i.e. majority parties raising issues important to minorities as part of their larger agenda. Thus, at lower levels of polarization, ethno-linguistic minorities pursue a mixed strategy of advancing their interests. They support both minority and minority-friendly parties in the legislature. As the level of polarization increases, minority-friendly parties become less competitive. Consequently, the strategy shifts to supporting minority parties only. The model outcomes are consistent with empirical findings of Birnir (2007) who argues that ethnic groups have reasonable expectation of access to government under nearly all institutional arrangements.

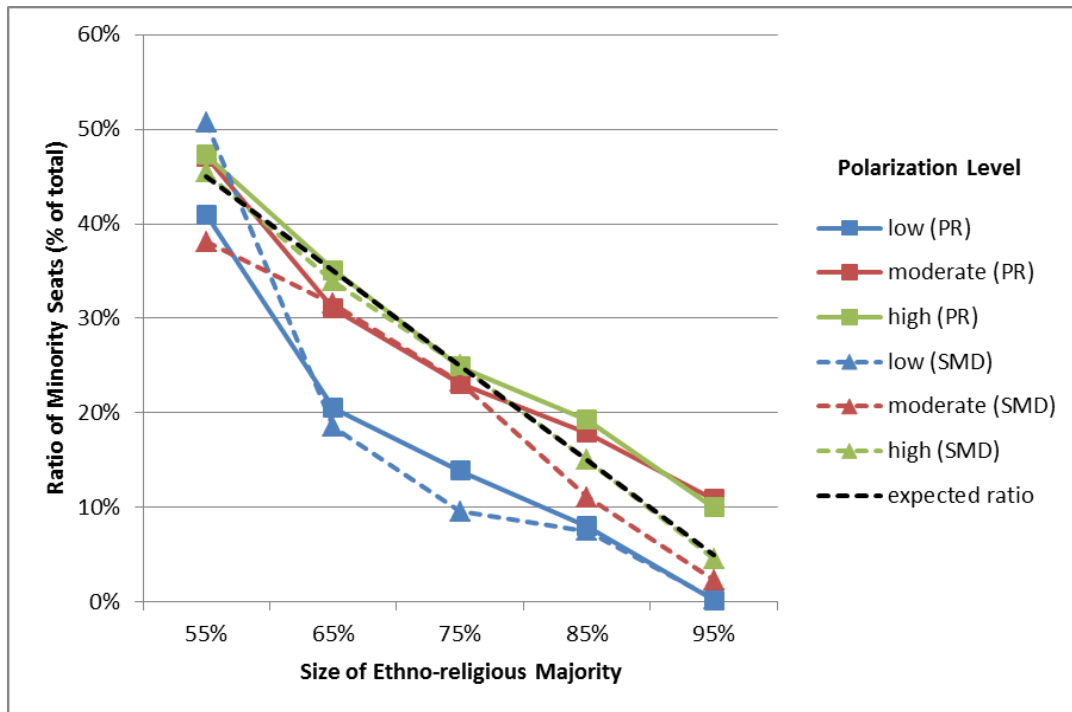


Figure 6.4 Ratio of Seats Held by Minority Parties

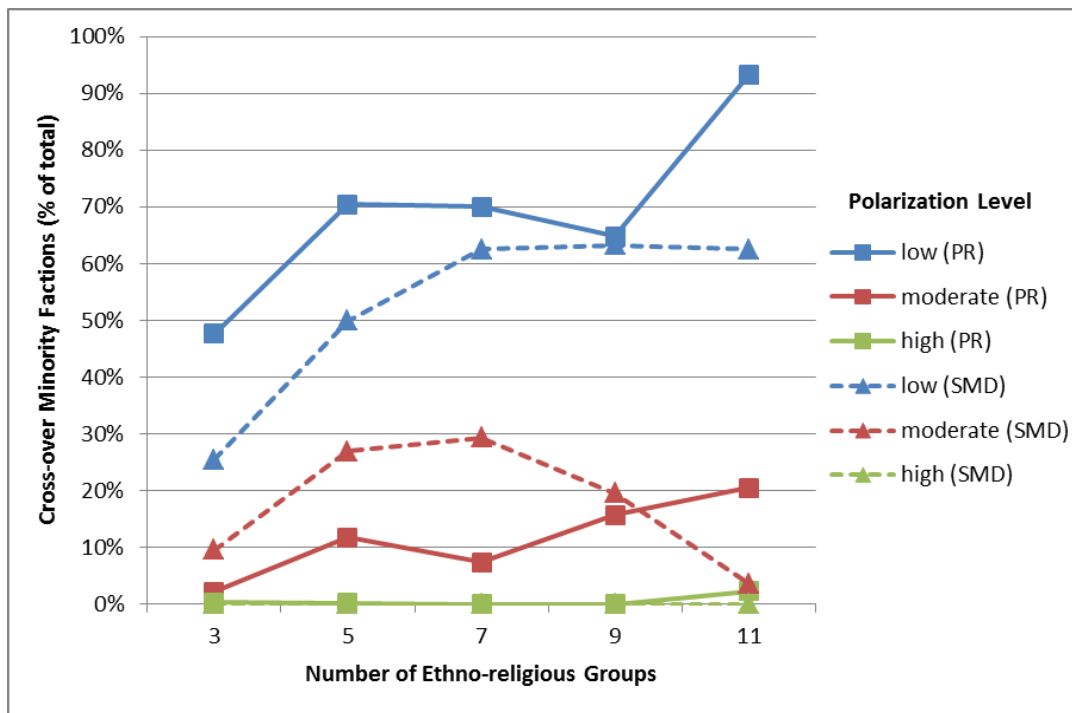


Figure 6.5 Ratio of Minority Factions Joining Majority Parties

When it comes to the mix of electoral strategies used by parties in the legislature, the different outcomes under PR and majoritarian systems present a tradeoff between rent-seeking and extremist parties. As one can see from Figures 6.6 – 6.8, there is a clear distinction between electoral strategies pursued by parties under different institutional designs. As expected, majoritarian systems are dominated by rent-seeking parties, since they force factions to consolidate into large wealthy parties. In contrast, PR systems give rise to a more diverse set of electoral strategies. Unfortunately, that includes a considerable ratio of extremist parties. The ratio of extremist parties also increases at higher levels of polarization.

Beyond the impact of the institutional design, the size of the ethno-linguistic minority has a considerable impact on the model outcomes. As the minority gets smaller, the dominance of rent-seeking parties increases. This comes primarily at the expense of extremist parties. While the ratio of programmatic parties also decreases, the reduction is not substantial. This indicates that the size of the minority has a significant impact on the tradeoff between rent-seeking and extremist parties. In the scenarios with larger minority, the high ratio of extremist parties is an overarching concern. In this case, majoritarian systems may be preferable, as they limit the ratio extremist parties. As the size of the minority decreases, the threat of extremist parties decreases as well. In this case, PR systems result in better outcomes, as they reduce the dominance of rent-seeking parties and increase the diversity of electoral strategies.

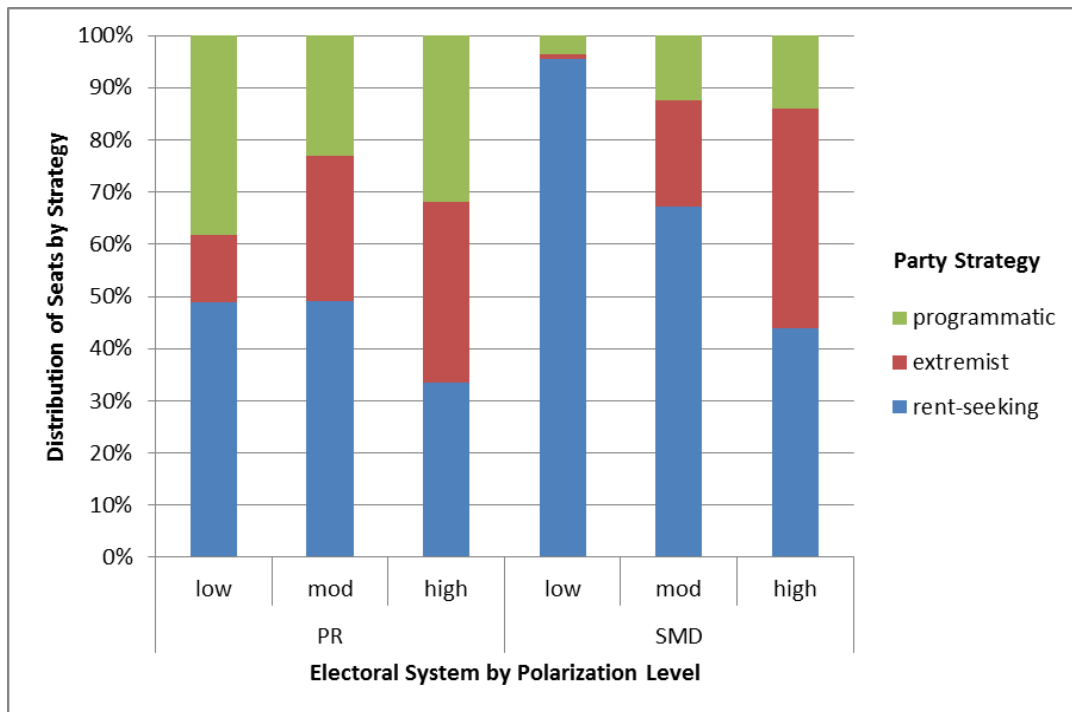


Figure 6.6 Distribution of Seats by Electoral Strategy (Minority 45%)

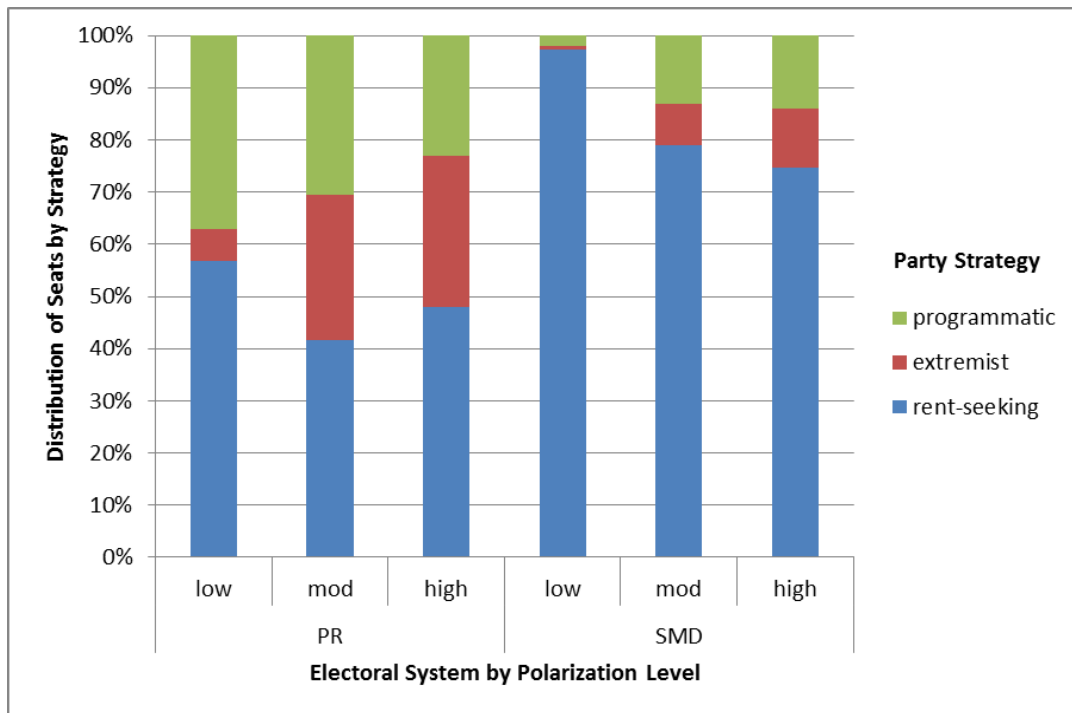


Figure 6.7 Distribution of Seats by Electoral Strategy (Minority 25%)

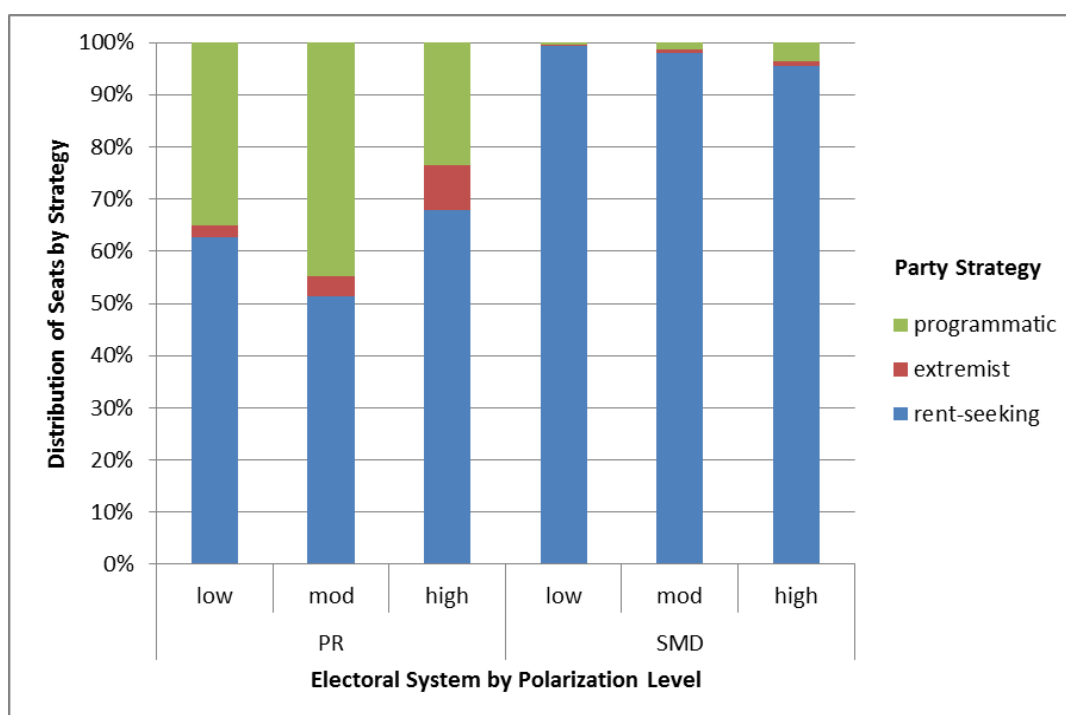


Figure 6.8 Distribution of Seats by Electoral Strategy (Minority 5%)

6.2.2 Fractionalized Polity Scenario

The results for fractionalized polity scenario are quite similar to the outcomes of ethno-linguistic minority scenario. Majoritarian and PR systems present the same basic tradeoff between excessive and insufficient party competition. Regular change of parties in power, indicated by the number of major parties, occurs mostly in PR systems as well as highly polarized majoritarian systems (see Figure 6.9); whereas less polarized majoritarian systems degenerate into dominant party systems (see Figure 6.10). Higher level of party competition in PR systems, however, comes at a cost. The ratio of minor parties in PR systems indicating party fragmentation is considerably higher, especially at higher levels of polarization. Consequently, PR party systems are more likely to be fractured.

The model outcomes in fractionalized polity scenario outline two main trends. As expected, reducing district magnitude, i.e. switching from PR to majoritarian system, reduces the level of party competition. Majoritarian systems produce large consolidated parties, which dominate the party system. In contrast, higher polarization increases the level of competition. It makes parties less reliant on campaign spending and increases the salience of ethnic pork, thereby making smaller ethnic parties more competitive. Interestingly, ethno-linguistic fractionalization has virtually no impact on the outcomes. Its only visible impact is a marginal increase in the number of minor parties in PR systems. As discussed in previous section, district magnitude limits the level of party fragmentation even in highly fractionalized societies.

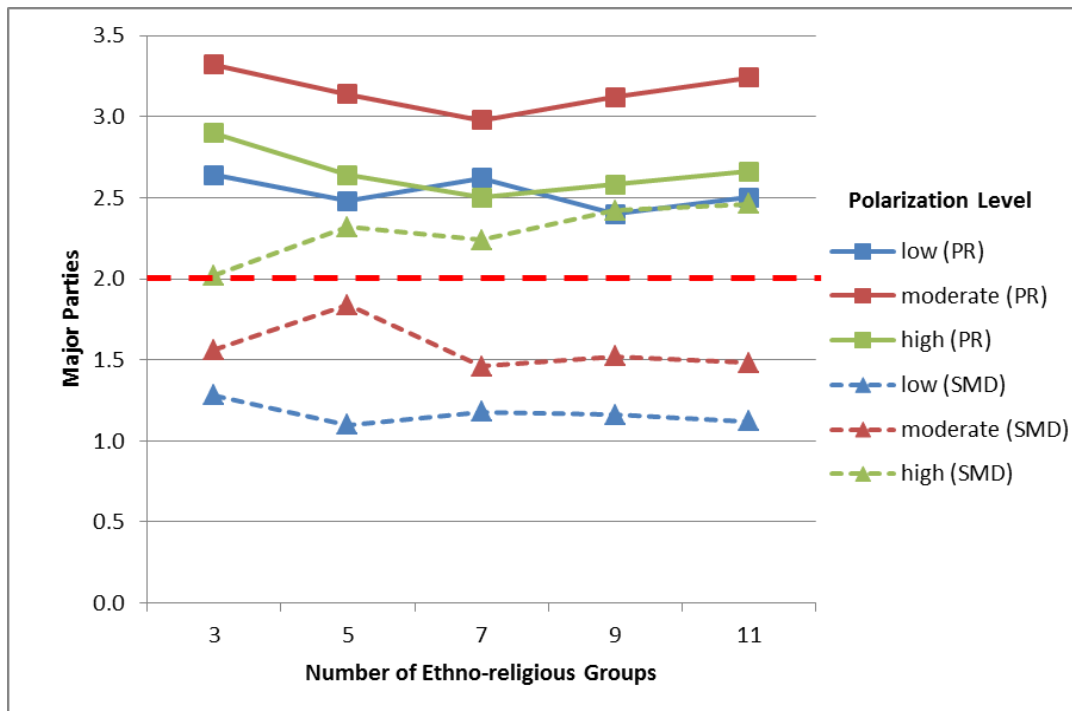


Figure 6.9 Number of Major Parties in Legislature

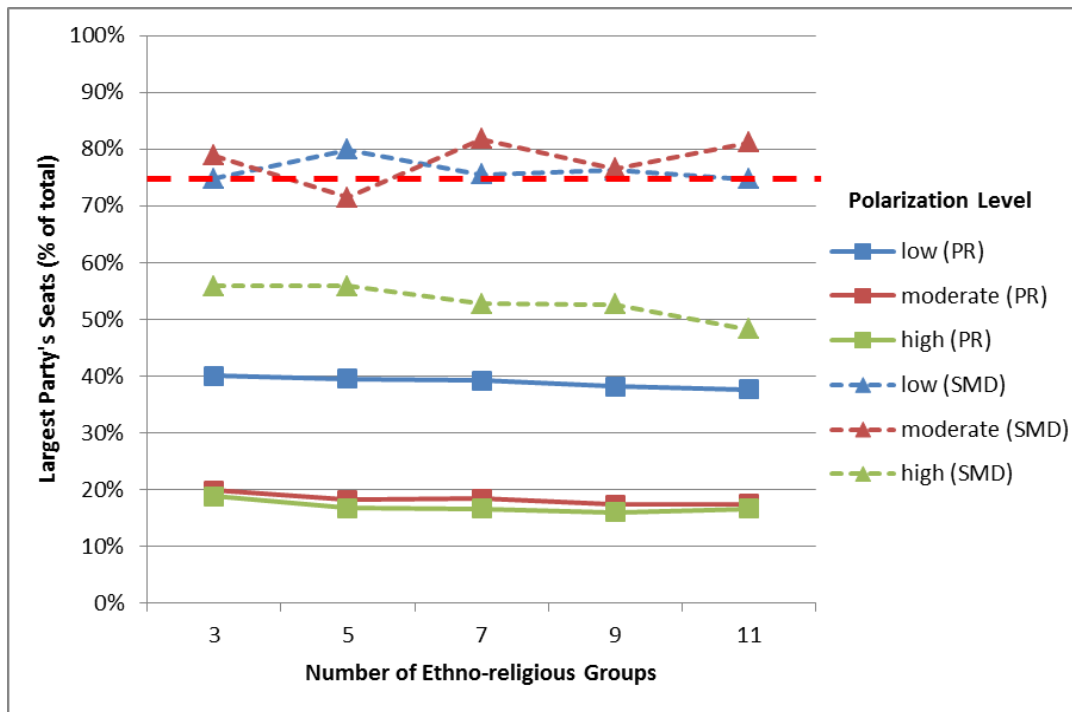


Figure 6.10 Ratio of Seats Held by the Largest Party

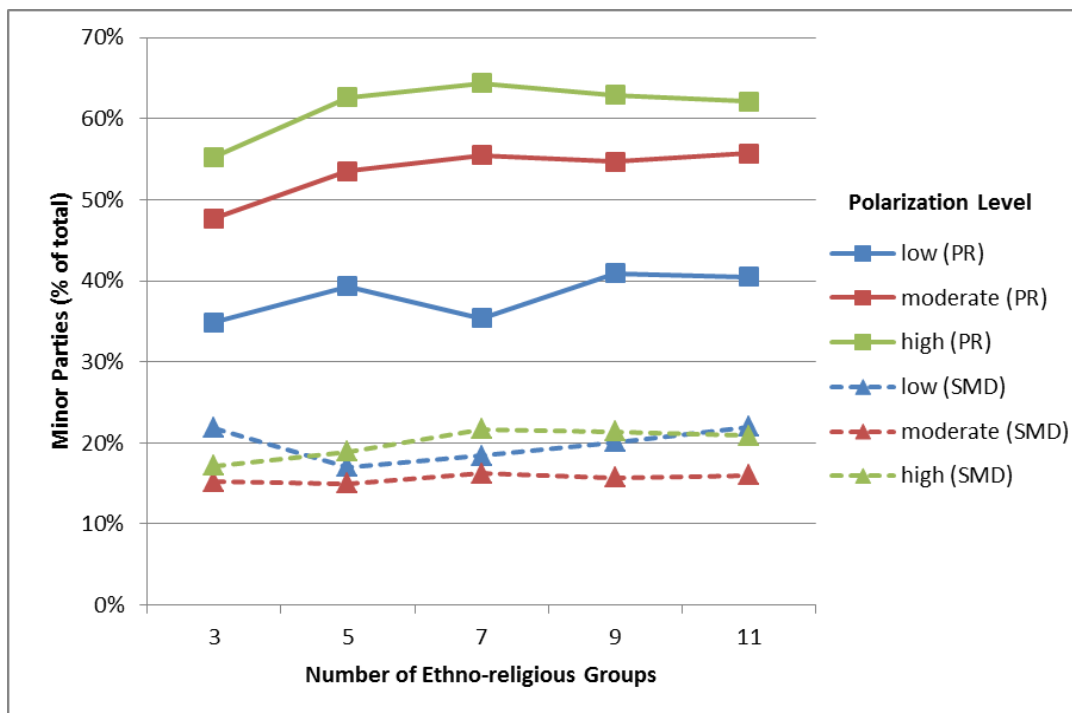


Figure 6.11 Ratio of Seats Held by Minor Parties

The mix of electoral strategies used by parties in fractionalized polity scenario is, again, quite similar to that of ethno-linguistic minority scenario. There is the same tradeoff between a party system dominated by extremist parties and one dominated by rent-seeking parties based on the institutional design and polarization. Majoritarian systems decrease the ratio of extremist parties, but the latter are displaced primarily by rent-seeking parties. In contrast, PR systems provide a more diverse mix of strategies, including higher ratio of programmatic parties. But the ratio of extremist parties increases as well. The ratio of extremist parties also increases with higher polarization. At high levels, polarization is strong enough to undo the consolidating forces of majoritarian systems. Thus, the mix of strategies looks similar under both PR and majoritarian systems in highly polarized societies. As with party system characteristics, however, ethno-linguistic fractionalization has virtually no impact on the distribution of electoral strategies.

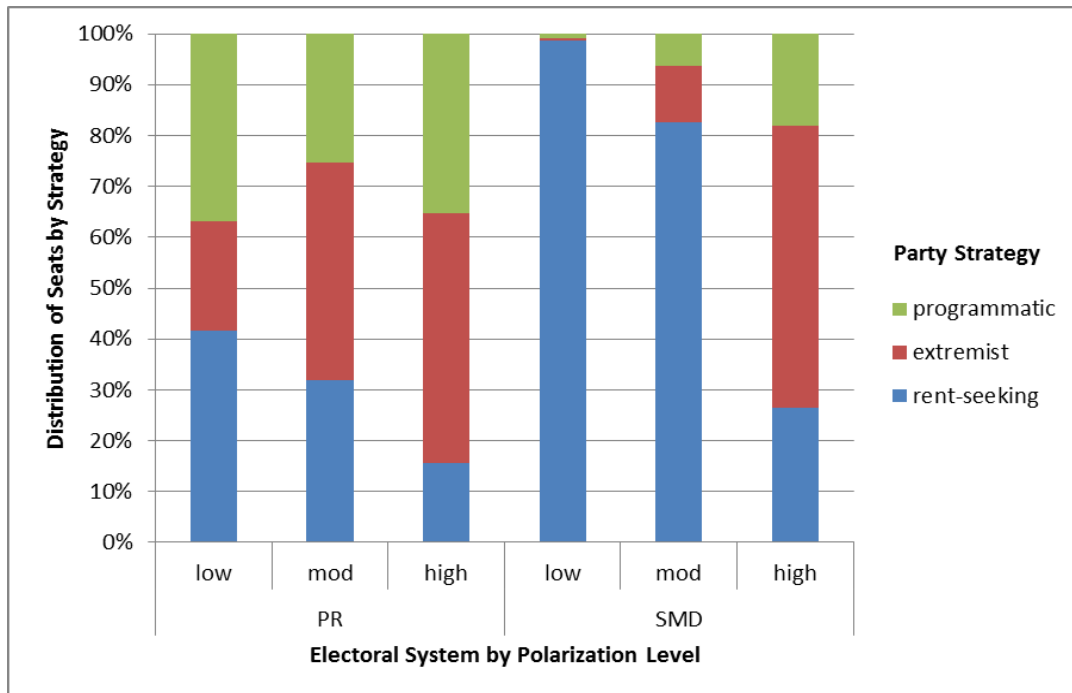


Figure 6.12 Distribution of Seats by Electoral Strategy (3 Groups)

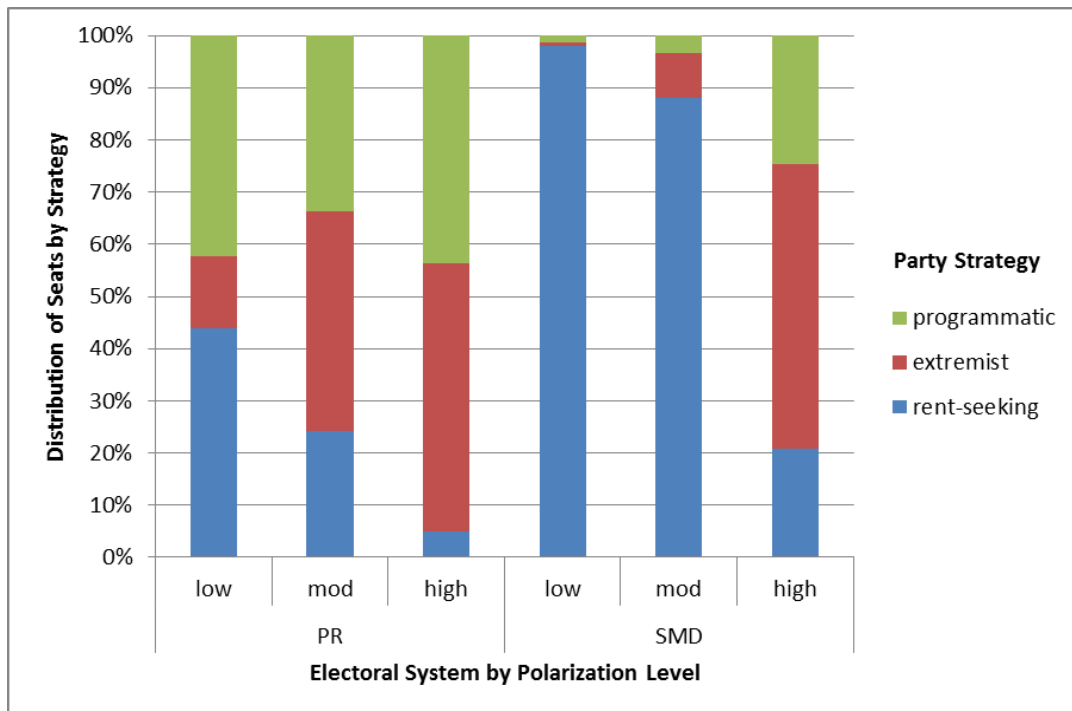


Figure 6.13 Distribution of Seats by Electoral Strategy (7 Groups)

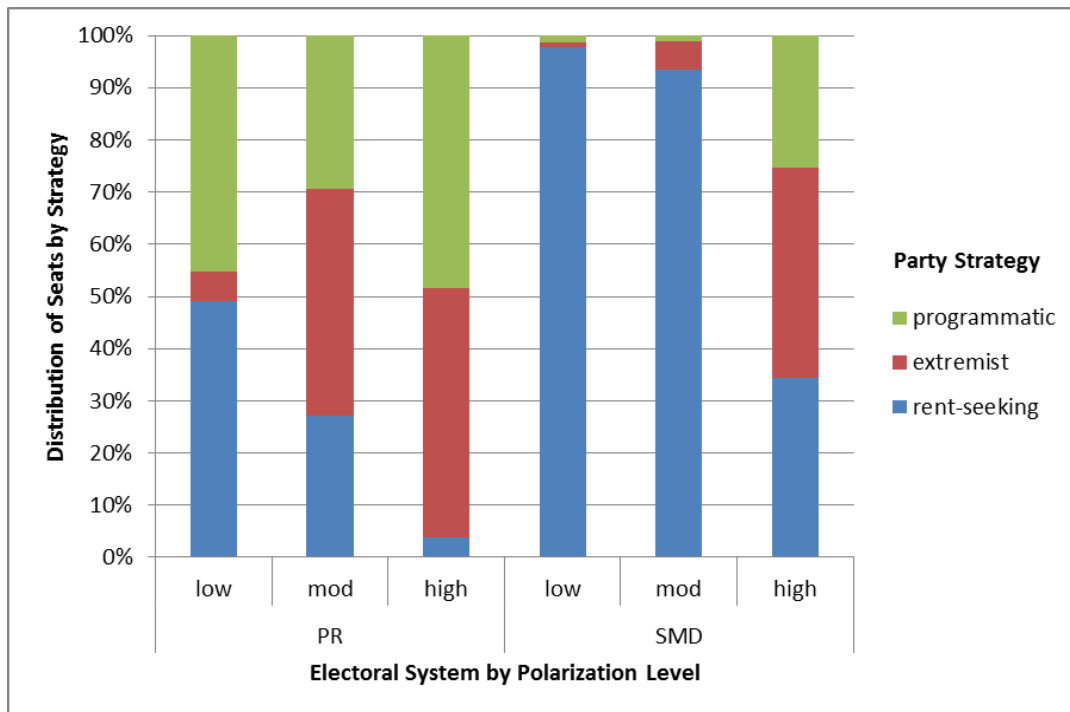


Figure 6.14 Distribution of Seats by Electoral Strategy (11 Groups)

6.3 Policy Implications

As the model outcomes described above indicate, there is a tradeoff between dominant party and fractured party systems in both scenarios. The same tradeoff is evident in the balance between rent-seeking and extremist dominated party systems. Thus, dominant party systems tend to be corrupt with high levels of rent-seeking, whereas extremist dominated party systems tend to be highly fractured. Institutional design and ethno-linguistic polarization work in opposite ways tilting the final outcome in one or the other direction. Decreasing district magnitude by switching from PR to a majoritarian system reduces the weight of extremist parties, but this comes at the expense of degenerating into a corrupt dominant party system. In contrast, increasing polarization reduces rent-seeking

and increases party competition but also leads to a highly fractured extremist party system.

Ethno-linguistic fractionalization influences the outcomes only in ethno-linguistic minority scenario. It has virtually no impact on the model outcomes in fractionalized polity scenario. Its primary effect in the former scenario is tilting the balance towards corrupt dominant party system as the size of minority gets smaller. Thus, one-party dominance is far more likely to be the primary concern in this system. Consequently, any corrective measures in ethno-linguistic minority scenario should take the relative size of the minority into consideration.

Another factor to keep in mind is that polarization level is not an exogenous variable. Given that fomenting ethno-linguistic strife involves complex behavioral mechanisms, it is omitted from the model implementation and is treated as a given by the model. But changing the level of polarization may be one of the strategies that some factions decide to pursue in order to win elections. Even if a particular scenario produces a reasonable outcome under lower levels of polarization, any policy prescription should account for the possibility of ethno-linguistic polarization increasing over time. Of the two variables, institutional design is the principal tool that policy-makers can use to achieve a more positive political outcome.

There are a few strategies that policy-makers can pursue in order to combine the consolidating power of majoritarian systems with the diversity and competition of proportional representation. One way to balance the effects of the two systems is to introduce electoral thresholds in PR systems or runoff elections in majoritarian systems

(Bordegnon, Nannicini and Tabellini 2010). An electoral threshold is a requirement to receive a minimum percentage of votes either within a district or nationally in order to qualify for legislative representation. It effectively puts a floor under the level of party fragmentation allowed in a system. Thus, it has the same consolidating impact as reducing district magnitude. But depending on the level of electoral threshold, its effect can be more measured so as not to reduce the level of party competition.

Runoff elections provide a similar lower limit to the level of party fragmentation in majoritarian systems. Parties that do not win half the votes in a district outright are forced into a runoff election with their closest competitor. Parties cannot win by relying on a very limited voter base; they have to form larger, more inclusive coalitions. While at lower polarization levels, party fragmentation and extremism are less of a concern, they do come into play in highly polarized societies. In the latter, even the consolidating effects of majoritarian systems are insufficient to stave off party fragmentation. Since the institutional design should anticipate the possibility of an increasing ethnic conflict, runoff elections provide a necessary precaution for the latter scenario.

A different strategy would be to mix the two institutional designs. In a mixed system, a portion of seats is allocated according to proportional representation principle, while the rest is contested in majoritarian fashion. Parties in a mixed system would have to hedge their bets and play both strategies. They would have to be sufficiently large in order to win majoritarian seats. But they would also need to differentiate themselves programmatically in order to secure seats allocated through proportional representation. The latter would also provide an opportunity for smaller programmatic parties to gain

seats in the legislature. Consequently, such system would provide for a healthy dose of party competition while keeping excessive fragmentation in check.

A more drastic measure would be an outright ban on parties espousing extremist ideologies. In this case, the check on the extremist tendencies within the party system would come from outside of the electoral system. The advantage of this measure is that it would allow a country to adopt a system with high level of party competition and diversity without the threat of incipient extremism. The main disadvantage, however, is that it opens up the possibility of the process being abused by parties in power to silence their opponents.

In the end, policy prescriptions should be tailored for a specific country. They should be based on the country's previous experiences and history of inter-ethnic relations. It should also account for the country's geopolitical environment. Political factions in a country surrounded by stable developed democracies are less likely to resort to extremist ideologies as an electoral strategy, since these would jeopardize the country's international alliances. In contrast, extremist ideologies are more likely in a country surrounded by neighbors who are themselves mired in ethnic conflicts. A country's dependence on international aid may also act as a constraint on the use of extremist ideologies. These and other considerations should be taken into account when advocating for a specific institutional design for a transitioning democracy.

CONCLUSIONS

In the preceding chapters, this study has developed a novel approach to modeling political competition. Its contributions are threefold. First, it fills the gap in the democratization literature by modeling political competition that accounts for the emergence of political parties in transitioning democracies. Previous models of political competition, based mostly on the Downsian economic model, have generally assumed the existence of political parties. Such assumption was often justified given that these models were developed primarily for studying political competition in established democracies with stable party systems. This allowed scholars to initialize models with typical parties based on well-researched party characteristics. Yet, the Downsian model is hardly applicable to countries transitioning to democracy as the latter do not have political parties at the beginning of the process.

In contrast, this study constructs a model of the emergence of political parties under different social contexts and constraints. In particular, it models the impact of underlying population characteristics and institutional design on the formation of political parties and election outcomes. The model begins with a blank slate and allows the parties to emerge through an adaptive evolutionary process. The main purpose of the study is to examine the probability of a stable party system arising from a given social context.

Additionally, it aims to predict the chances of extremist parties rising to power, as these are likely to threaten the process of peaceful political competition.

The model further implements the pluralistic framework of party competition based Dahl's seminal work. As such, it provides an alternative to the dominant Downsian model of party competition. The pluralistic framework conceptualizes the policy space as a competition among numerous interest groups. Such groups are generally organized over a relatively narrow set of issues and tend to be too small to advance their political goals on their own. Consequently, they coalesce into political parties in order to pursue their goals more effectively. In this view, political parties are coalitions of diverse interest groups rather than singular actors imagined in the Downsian framework.

The study's implementation of Dahl's pluralistic framework also underscores the importance of agent-based approach used to construct the model. Unlike the traditional mathematical models, agent-based models allow for composite actors and aggregate level behavior to emerge out of interaction of simple individual actors. The same task would be challenging to accomplish with non-computational means. Consequently, non-computational models of pluralistic framework are not common. This may also explain the prevalence of Downsian framework in formal modeling of party competition.

The pluralistic framework employed in the study differs from the Downsian approach in yet another aspect. Rather than emphasize party preferences along some policy continuum, the study focuses on groups coalescing around particular interests. What is important in the model is not what the preferences of a given party are but rather who they benefit. It is the winning coalitions these parties construct that are the primary

focus of the model. Various social cleavages of the voting population provide the opportunity for parties to create their coalitions in a variety of ways. Party preferences, then, determine how widely or narrowly parties define their coalitions. The resulting composition of winning coalitions constructed within the party system provides the basis for analyzing the potential for instability or conflict in the system.

Applying this framework to specific scenarios, the study goes on to test the impact of the institutional design and ethno-linguistic fractionalization and polarization on the emerging party system. The two scenarios tested in the model correspond to societies with an ethno-linguistic minority and fractionalized societies with no ethno-linguistic group dominating the others. For the most part, the study confirms the hypotheses outlined in the research framework. Furthermore, input variables impact the outcomes in both scenarios in a consistent manner.

The key variable in both scenarios is the size of the potential winning coalition. The size of ethno-linguistic minority in the first scenario and the size of a single ethno-linguistic group in the second scenario determine the size of a potential winning coalition for ethnic parties. The latter limit their coalitions to their ethno-linguistic group. As the size of an ethno-linguistic group diminishes, so do the potential winning coalitions of ethnic parties. In contrast, programmatic and rent-seeking parties appeal to a broader base that is not varied in the course of model simulations. The study examines the political viability of ethnic parties appealing to a diminishing voter base under different institutional designs.

Consistent with the hypotheses predictions, ethnic parties have higher chances of securing legislative seats in PR systems, since majoritarian systems require larger winning coalitions. Ethnic voting leads to more stable voting patterns but causes more volatility in majoritarian systems. Both higher ethno-linguistic fractionalization and polarization increase party fragmentation. The former reduces the size of a potential ethnic winning coalition, while the latter increases the salience of ethno-linguistic cleavages. Higher polarization, however, also increases the ratio of programmatic parties, indicating that its main impact is to reduce the appeal of wealthy rent-seeking parties.

The model constructed in this study has a number of limitations. In particular it traces the impact of only three variables: institutional design, ethno-linguistic fractionalization and polarization. Yet, it is possible to draw some policy implications from the findings of the study. Institutional design and ethno-linguistic polarization both impact the emerging party system, although they often push in the opposite directions. The main impact of fractionalization is to increase the effect of polarization.

Majoritarian systems increase party consolidation producing fewer parties. But they often risk degenerating into corrupt dominant-party systems. In the latter scenario, a large rent-seeking party holds more than three quarters of all legislative seats. In contrast, PR systems produce diverse multi-party systems. But they also risk increasing party fragmentation as well as increasing the appeal of extremist ethnic parties. Consequently they can degenerate into fractured party systems dominated by small extremist parties. Ethno-linguistic polarization counters the consolidating impact of majoritarian systems. It increases the overall number of parties and reduces the ratio of rent-seeking party seats in

the legislature. The downside of ethno-linguistic polarization, however, is that it increases party fragmentation. It further increases the appeal of extremist parties. Thus, paired with a PR system, ethno-linguistic polarization can drastically exacerbate its downsides.

Charting the course between these extremes, the study suggests a number of possible remedial policies. The prescriptions mostly involve combining the impacts of PR and majoritarian system in order to produce a favorable result. Introducing electoral thresholds in a PR system will lead to a higher level of party consolidation. It will move the system away from an extremist fractured party system case while maintaining the benefits of diversity and competition that PR systems provide. A mixed party system, in which parties are elected from both PR and majoritarian districts, will accomplish a similar result. An outright ban on extremist parties is also an option. In the end, however, any policy should be tailored to a particular country, taking into consideration its history of inter-ethnic relationships, political culture and geopolitical environment.

As discussed above, the model in its current state has a number of limitations and makes a few simplifying assumptions. Further research is necessary to enhance the model and its usefulness for policy applications. These developments would focus on the following areas. First, the model needs to explore in detail the relationship among factions. Currently, the model calculates party preferences as weighted averages of faction preferences. This assumes away the complex process of bargaining among factions for the control of party's policy positions. Thus, the model assumes that outcomes of the bargaining process will mirror the inputs in terms of capital and preferences of factions. Yet, as many agent-based models have demonstrated, the

aggregate level behavior frequently differs from the behavior of constituent parts.

Therefore, this process needs to be examined more carefully.

Another area for improvement of the model has already been mentioned in the previous chapters. Currently, the model assumes that all voters cast their votes in every election. In contrast, empirical evidence suggests that voter turnout can vary substantially from one election to the next. The subset of the overall population that chooses to vote also changes between elections. Consequently, the demographic profile of the voter population can differ substantially from the demographic profile of the overall population. The impact of this change on the election outcomes can be substantial. The variables and social mechanisms that affect citizens' decision to vote range from education level to peer pressure to involvement in other civic duties. And these can be easily tested within the model's framework.

The model similarly assumes that all factions in the country choose to be involved in politics. While no specific data on the ratio of politically active factions exist, the literature suggests that political involvement of factions ebbs and flows over time. A faction's decision to get into politics may be precipitated by a perception of an increased threat to its interest or an opportunity to further its goals. Similarly, disillusionment with politics or meager returns to the substantial costs of political involvement may lead some factions to withdraw from the political arena. The outcome of such decisions is a continuously changing profile of factions involved in politics with the consequent effects on political parties and the party system.

Finally, interaction of parties within the legislature is a crucial piece that needs to be explored in considerable detail. Currently, the model assumes that a given coalition's ability to defend its interests is proportional to the ratio of seats it holds in the legislature. This assumption, however, does not account for a complex bargaining process that happens within the legislature. It further does not account for a difference between parties forming a coalition government and those left out. The latter may impact not only a coalition's access to government resources but also the decisions of its constituent factions to stick with the current coalition or, perhaps, switch alliances.

The above is by no means an exhaustive list of possible future enhancements of the model. These enhancements are, however, crucial to increasing the accuracy and usability of the model. They will also allow researchers to calibrate the model with a higher degree of accuracy. Yet, even in its current format, the model provides a useful framework that researchers can utilize to study various aspects of electoral competition in transitioning countries.

APPENDIX A

Pseudo-code for the Base Model

OBJECT: **faction**

- capital;
- tax preference;
- rent preference;
- pork preference;
- economic sector;
- Create Party();
- Switch Party();

OBJECT: **party**

- factions[];
- capital;
- tax preference;
- rent preference;
- pork preference;
- economic sector;
- votes;
- seats;
- Enter Elections();
- Merge Parties();

OBJECT: **voter**

- income;
- economic sector;
- urban/rural;
- Vote();

PROGRAM: **elections**

- Initialize Factions();
- Initialize Voters();
- each faction: Create Party();
- repeat X times:
 - each party: Enter Elections();
 - each voter: Vote();
 - Allocate Seats;

each party: Merge Parties();
each faction: Switch Party();

APPENDIX B

Largest Remainder Method

In this method seats are allocated in two rounds. In the first round, each party's votes are divided by a quota. The integer of this division indicates the number of seats allocated to a party in this round. In the second round, the remaining seats are allocated to parties with the largest remainders.

There are several ways of calculating the quotas. This model implements Hare quota, which is calculated as follows:

$$Q = TV / TS$$

Where *TV* is the sum of votes of parties that have cleared the threshold;
TS is the total number of seats

REFERENCES

REFERENCES

- Acemoglu, Daron, and James A. Robinson. 2005. *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.
- Adams, James F., Samuel Merrill, and Bernard Groffman. 2005. *A Unified Theory of Party Competition: A Cross-National Analysis Integrating Spatial and Behavioral Factors*. New York: Cambridge University Press.
- Aldrich, John H. 1995. *Why parties? The Origin and Transformation of Political Parties In America*. Chicago: University of Chicago Press.
- Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg. 2003. "Fractionalization". *Journal of Economic Growth* 8: 155-194.
- Angrist, Michele Penner. 2006. *Party Building in the Modern Middle East*. Seattle, WA: University of Washington Press.
- Arrow, Kenneth J. 1951. *Social Choice and Individual Values*. New York: Wiley.
- Axelrod, Robert. 1997. *The Complexity of Cooperation: Agent-based Models of Competition and Collaboration, Princeton Studies in Complexity*. Princeton, NJ: Princeton University Press.
- . 2003. "Advancing the Art of Simulation in the Social Sciences." *Japanese Journal for Management Information System* 12 (3): 16-22.
- Axtell, Robert. 2000. Why Agents? On the Varied Motivations for Agent Computing in the Social Sciences. Presented at Proceedings of the Workshop on Agent Simulation: Applications, Models, and Tools, Chicago, IL.
- Banks, Arthur, Thomas Muller, William Overstreet, Judith F. Isacoff, eds. 2010. *Political Handbook of the World*. Washington, DC: CQ Press.
- Baumol, William J. 1990. Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy* 98 (5): 893-921.
- Birnir, Johanna K. 2007. *Ethnicity and Electoral Politics*. New York: Cambridge University Press.

- Black, Duncan. 1958. *The Theory of Committees and Elections*. Cambridge: UK Cambridge University Press.
- Boix, Carles, and Susan C. Stokes. 2003. "Endogenous Democratization." *World Politics* 55 (4): 517-549.
- Bordignon Massimo, Tommaso Nannicini, and Guido Tabellini. 2010. Moderating Political Extremism: Single Round vs. Runoff Elections under Plurality Rule. Working Paper. IGIER. University of Bocconi.
http://didattica.unibocconi.it/mypage/upload/92884_20110119_120154_BNT_OC TOBER_2010_FINAL.PDF (January 12, 2011)
- Bourguignon, Francois, and Thierry Verdier. 2000. "Oligarchy, Democracy, Inequality and Growth." *Journal of Development Economics* 62: 285-313.
- Bueno de Mesquita, Bruce. 2002. *Predicting Politics*. Columbus: OH: Ohio State University Press.
- Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. 2005. *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- Bunce, Valerie. 2000. "Comparative Democratization: Big and Bounded Generalizations." *Comparative Political Studies* 33 (6/7): 703-734.
- Carley, Kathleen M. 1996. *Validating Computational Models, Working Paper*. Pittsburgh, PA: Carnegie Mellon University.
- Carothers, Thomas. 2006. *Confronting the Weakest Link: Aiding Political Parties in New Democracies*. Washington, DC: Carnegie Endowment for International Peace.
- Center for International Development and Conflict Management, University of Maryland. 2011. *Minorities at Risk*. <http://www.cidcm.umd.edu/mar/> (January 12, 2011).
- Central Intelligence Agency. 2011. *The World Factbook*.
<https://www.cia.gov/library/publications/the-world-factbook/> (January 12, 2011).
- Chandra, Kanchan. 2005. "Ethnic Parties and Democratic Stability." *Perspectives on Politics* 3 (2): 235-252.
- Cheeseman, Nicholas and Robert Ford. 2007. *Ethnicity as a Political Cleavage*. Afrobarometer Working Paper 83. Cape Town, South Africa: IDASA POS.
- Cofman Wittes, Tamara. 2008. "Three Kinds of Movements." *Journal of Democracy* 19 (3): 7-12.

- Colomer, Josep M. 2000. *Strategic Transitions: Game Theory and Democratization*. Baltimore, MD: John Hopkins University Press.
- Dahl, Robert A. 1956. *A Preface to Democratic Theory*. Chicago, IL: University of Chicago Press.
- . 1982. *Dilemmas of Pluralist Democracy: Autonomy vs. Control*. New Haven, CT: Yale University Press.
- de Marchi, Scott 2003. A Computational Model of Voter Sophistication, Ideology, and Candidate Position Taking. In *Computational Models in Political Economy*, edited by K. Kollman, J. H. Miller and S. E. Page. Cambridge, MA: MIT Press.
- Diamond, Larry Jay. 1999. *Developing Democracy: Toward Consolidation*. Baltimore, MD: Johns Hopkins University Press.
- Dorransoro, Gilles. 2005. *Revolution Unending. Afghanistan: 1979 to the Present*. New York, NY: Columbia University Press.
- Downs, Anthony. 1957. *An Economic Theory of Democracy*. New York: Harper and Row.
- Duverger, Maurice. 1954. *Political Parties: Their Organization and Activity in the Modern State*. New York: John Wiley & Sons, Inc.
- Epstein, David L., Robert Bates, Jack Goldstone, Ida Kristensen, and Sharyn O'Halloran. 2006. "Democratic Transitions." *American Journal of Political Science* 50 (3): 551–569.
- Fearon, James D., and David D. Laitin, 2000. "Violence and the Social Construction of Ethnic Identity." *International Organization* 54 (4): 845-77.
- Field, G. Lowell, and John Higley. 1980. *Elitism*. London, UK: Routledge.
- Freedom House (2010). *Freedom in the World*. Lanham, MD: Rowman & Littlefield.
- Gates, Scott, and Brian D. Humes. 1997. *Games, Information and Politics: Applying Game Theoretic Models to Political Science*. Ann Arbor, MI: University of Michigan Press.
- Geddes, Barbara. 1999. "What Do We Know About Democratization After Twenty Years?" *Annual Review of Political Science* 2: 115-144.
- Haggard, Stephan, and Robert R. Kaufman. 1995. *The Political Economy of Democratic Transitions*. Princeton, NJ: Princeton University Press.

- Horowitz, Donald L. 1985. *Ethnic Groups in Conflict*. Berkeley, CA: University of California Press.
- . 1991. *A Democratic South Africa? Constitutional Engineering in a Divided Society*. Berkeley, CA: University of California Press.
- Huntington, Samuel P. 1991. *The Third Wave: Democratization in the Late Twentieth Century*. Norman, OK: University of Oklahoma Press.
- International Crisis Group. 2010. *The Pogroms in Kyrgyzstan, Report #193*. August 23. <http://www.crisisgroup.org/en/regions/asia/central-asia/kyrgyzstan/193-the-pogroms-in-kyrgyzstan.aspx> (January 12, 2011).
- Key, V.O. 1958. *Politics, Parties, and Pressure Groups*. New York: Crowell.
- Krouwel, Andre. 2006. Party Models. In *Handbook of Party Politics*, edited by R. S. Katz and W. Crotty. London, UK: Sage Publications.
- Kurzman, Charles. 2004. *The Unthinkable Revolution in Iran*. Cambridge, MA: Harvard University Press.
- Lijphart, Arend. 1977. *Democracy in Plural Societies: A Comparative Exploration*. New Haven, CT: Yale University Press.
- Lindberg, Staffan. 2007. "Institutionalization of Party Systems? Stability and Fluidity among Legislative Parties in Africa's Democracies." *Government and Opposition* 42 (2):215-241.
- Lipset, Seymour Martin. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review* 53 (1): 69-105.
- Lipset, Seymour M., and Stein Rokkan, eds. 1967. *Party Systems and Voter Alignments: Cross-National Perspectives*. New York: Free Press.
- Markoff, John. 1996. *Waves of Democracy: Social Movements and Political Change*. Thousand Oaks, CA: Pine Forge Press.
- McDonald, Neil A. 1967. *The Study of Political Parties*. New York: Random House.
- Mozaffar, Shaheen, James R. Scarritt, and Glen Galaich. 2003. Electoral Institutions, Ethnopolitical Cleavages, and Party Systems in Africa's Emerging Democracies. *American Political Science Review* 97 (3):379-390.
- Munck, Gerardo L. 2001. "Game Theory and Comparative Politics: New Perspectives and Old Concerns." *World Politics* 53: 173-204.

- Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1991. The Allocation of Talent: Implications for Growth. *Quarterly Journal of Economics* 106 (2): 503-530.
- Neto, Octavio Amorim, and Gary W. Cox. 1997. Electoral Institutions, Cleavage Structures, and the Number Of Parties. *American Journal of Political Science* 41 (1):149-174.
- O'Donnell, Guillermo A. 1973. *Modernization and Bureaucratic-Authoritarianism: Studies in South American Politics*. Berkeley, CA: Institute of International Studies.
- O'Donnell, Guillermo A., and Philippe C. Schmitter. 1986. *Transitions from Authoritarian Rule: Tentative Conclusions about Uncertain Democracies*. Baltimore, MD: Johns Hopkins University Press.
- Ordeshook, Peter C., and Olga V. Shvetsova. 1994. Ethnic Heterogeneity, District Magnitude, and the Number of Parties. *American Journal of Political Science* 38 (1):100-123.
- Osborne, Martin J., and Rabee Tourky. 2007. *Party Formation in Single-Issue Politics*. Department of Economics, University of Toronto.
www.economics.utoronto.ca/osborne/research/parties.pdf (January 12, 2011).
- Panbianco, Angelo. 1988. *Political Parties: Organization and Power*. New York: Cambridge University Press.
- Posner, Daniel N. 2004. "Measuring Ethnic Fractionalization in Africa". *American Journal of Political Science* 48: 849-863.
- . 2005. *Institutions and Ethnic Politics in Africa*. New York: Cambridge University Press.
- Przeworski, Adam. 1991. *Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America*. New York: Cambridge University Press.
- Przeworski, Adam, Michael E. Alvarez, Jose Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development: Political Institutions and Well-Being in the World, 1950-1990*. New York: Cambridge University Press.
- Przeworski, Adam, and Fernando Limongi. 1997. "Modernization: Theories and Facts." *World Politics* 49 (2): 155-183.
- Ranney, Austin. 1975. *Curing the Mischiefs of Faction: Party Reform in America*. Berkeley, CA: University of California Press.

- Riker, William H. 1962. *The Theory of Political Coalitions*. New Haven, CT: Yale University Press.
- . 1980. "Implications from the Disequilibrium of Majority Rule for the Study of Institutions." *American Political Science Review* 74 (2): 432-446.
- Riviere, Anouk. 1999. Citizen Candidacy, Party Formation and Duverger's Law. Mimeo. Royal Holloway, University of London.
- Roeder, Philip G. 2001. "Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985." February 16. <http://weber.ucsd.edu/~proeder/elf.htm> (January 12, 2011).
- Rosendorff, B. Peter. 2001. "Choosing Democracy." *Economics and Politics* 13 (1): 1-29.
- Rueschemeyer, Dietrich, Evelyne Huber Stephens, and John D. Stephens. 1992. *Capitalist Development and Democracy*. Chicago: University of Chicago Press.
- Rustow, Dankwart A. 1970. "Transitions to Democracy: Toward a Dynamic Model." *Comparative Politics* 2 (3): 337-363.
- Schlesinger, Joseph A. 1991. *Political Parties and the Winning of the Office*. Ann Arbor, MI: University of Michigan Press.
- Schwedler, Jillian. 2006. *Faith in Moderation: Islamist Parties in Jordan and Yemen*. New York: Cambridge University Press.
- Shepsle, Kenneth A., and Barry R. Weingast. 1981. "Structure Induced Equilibrium and Legislative Choice." *Public Choice* 37: 503-519.
- . 1987. "The Institutional Foundations of Committee Power." *American Political Science Review* 81 (1): 85-104.
- Shugart, Mathew S. 1999. "Presidentialism, Parliamentarism, and the Provision of Collective Goods in Less-Developed Countries." *Constitutional Political Economy* 10 (1): 53-88.
- Shugart, Matthew S., and John M. Carey. 1992. *Presidents and Assemblies: Constitutional Design and Electoral Dynamics*. New York: Cambridge University Press.
- Snyder, James M., and Michael M. Ting. 2002. "An Informational Rationale for Political Parties." *American Journal of Political Science* 46 (1): 90-110.

- Thorsten Beck, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh. 2001. "New Tools in Comparative Political Economy: The Database of Political Institutions." *World Bank Economic Review* 15 (1): 165-176 (Updated 2010).
- Vanhanen, Tatu. 1999. "Domestic Ethnic Conflict and Ethnic Nepotism: A Comparative Analysis." *Journal of Peace Research* 36 (1): 55-73.
- Varshney Ashutosh. 2002. *Ethnic Conflict and Civic Life: Hindus and Muslims in India*. New Haven, CT: Yale University Press.
- Waters, Mary. 1990. *Ethnic Options: Choosing Identities in America*. Berkeley, CA: University of California Press
- Zak, Paul J., and Yi Feng. 2003. "A Dynamic Theory of the Transition to Democracy." *Journal of Economic Behavior & Organization* 52: 1-25.

CURRICULUM VITAE

Sherzod Abdukadirov received his BS degree in Information Technology from Rochester Institute of Technology in 1998. After five years of working in information technology industry, he entered the School of Public Policy at George Mason University to pursue MPP and later Ph.D. degrees. His research interests include democratic transitions, autocratic governance, and social complexity. His recent research has been published in *Constitutional Political Economy*, *Studies in Conflict and Terrorism* and *Asian Journal of Political Science*.