Networks and Legislative Politics in Brazil: Exploring the Causes and Consequences of Political Networks for Parties and Legislators

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Networks for Parties and Legislators

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The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.
Do political and legislative ties matter as much as conventional partisan or institutional factors for parties, candidates, and legislative voting? Scholars frequently think of parties as more or less discrete, stable political entities which form and compete in elections. Similarly, when they talk about influence between legislators, they tend to talk about institutional sources of influence - such as leadership influence, constituent influence, or party influence; but scholars often ignore social sources of influence - influence due to actors’ embeddedness in social networks. In this dissertation, I develop theories of legislative network formation and legislative influence; and leverage network-analytic techniques to empirically test them. I address the causes and consequences of legislative networks for parties and legislative processes in four ways. First, I develop a theory of legislative network formation and use network survey data to test it. Second, I develop a theory of legislative influence and utilize mixed effects logistic regression tests to assess its validity with network survey and legislative voting data. Third, I develop a theory of party recruitment, and use records of party-switches over 20 years to test it. Finally, I develop a theory of the long-term effects of political networks on political party success, and apply duration modeling and regression techniques to assess it. Overall, I find that political and legislative networks have sizable effects on legislative coordination and party success, and that the root causes of political network formation lie in heretofore unmeasured sociopolitical processes.
Dedication

To my parents, for everything.
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Chapter 1

Introduction

1.1 Introduction

Do political and legislative ties matter as much as conventional partisan or institutional factors for parties, candidates, and legislative voting? Scholars frequently think of parties as more or less discrete, stable political entities which form and compete in elections. They tend to think that party A’s seat share is a function of competitive and system pressures in combination with party A’s electoral strategy and other factors. Similarly, when they talk about influence between legislators, they tend to talk about institutional sources of influence - such as leadership influence, constituent influence, or party influence; but scholars often ignore social sources of influence - influence due to actors’ embeddedness in social networks. Yet, we frequently see political change in clumps and clusters. The 1990’s saw Venezuela’s and Peru’s set of traditional parties collapse together (Seawright, 2012). The rise of ethnic parties in Bolivia was linked to the decline of established parties (VanCott, 2005). Party vote shares in West European major parties show evidence of ties to the policy positions of small niche parties (Meguid, 2005). The voting behaviors of legislators show evidence of influence from socially-connected peers (Kirkland, 2011). Some ties are intentionally formed and some are incidental, but the basic point is that studying parties and legislators as discrete entities may have its limits. In order to address these limitations, I develop a theory of legislative network formation and legislative influence, and leverage network-analytic techniques to develop empirical tests. The implications of this study bear on extant puzzles in political party and legislative research.
Political ties are important for understanding political parties and democracy. First, formal party linkages such as alliances are common in many party systems. But alliances are only one way that parties and partisans tie their fortunes. Parties also form government coalitions, trade members, exchange resources and information, and interact socially. Such ties could have strong impacts on how parties and partisans legislate, cooperate, compete, and run campaigns. Because parties are bridges between citizens and government, understanding these linkages is important for understanding how effectively parties translate voter interests into policy. This dissertation explores these issues in the context of Brazil.

Several puzzles related to political networks motivate this line of inquiry. First, small parties often persist for long periods of time with few votes and seats, stretching conventional explanations for their survival. Second, party changes such as party collapse have occurred in the past among several parties at a time, suggesting that failures may be linked. Third, while Brazil is considered a case in which personalism is high and party leaders have little control over member discipline, legislative voting is relatively stable and predictable (Figueiredo and Limongi, 2000). In an environment of low enforcement of voting behavior due to weak party control, how do parties and coalitions coordinate so effectively on voting decisions? Fourth, from an empirical point of view, we know little about how the social world of legislators is constructed generally, and scholars have been able to make few inferences about how legislators associate with one another. A network-centric explanation is an excellent candidate theory for why these phenomena occur. Network variables have been omitted from many analyses of party stability, and their inclusion may shed light on the puzzles above and reveal new and interesting relationships.

1.1.1 Brazil’s Puzzles

Brazil provides an excellent case study in examining the relationship between political networks and the puzzles of the previous section. Brazil has experienced a variety of challenges that face many political systems to a significant degree: political parties exiting electoral competition (party failure), inconsistent internal party composition (low levels of party-loyalty), and inconsis-
tent levels of party discipline accompanied by relatively predictable voting behavior (Figueiredo and Limongi, 2000). Brazil has in the past embodied all of these phenomena to varying degrees throughout its history, and provides a unique window on why these phenomena occur with the frequency that they do.

There are numerous puzzles that the Brazilian case brings to the fore. First, the variation of political party persistence in Brazil presents a puzzle: why do nearly 44% of parties survive with an average lifespan of 19 years and almost 66% of parties fail with an average lifespan around 8 years? What is different among these parties at the organizational level that renders them vulnerable? Second, in Brazil few rules prevented federal legislators from switching parties until 2007, when a group of opposition parties filed suit against the Brazilian government over the practice. The lawsuit followed after 16 years of persistent party-switching, in which over 36% of lower-house legislators switched parties. The lawsuit and the ensuing ban highlight an important question - why did party-switching remain so high and so persistent for so long? Third, regarding party discipline, Brazil is often framed as a weak system - the institutional configuration that allows party leaders to reward-and-punish legislators in this country is thought to be typically weaker than many other systems (Carey and Shugart, 1995). Party leaders have little control over which deputies get on party lists, they cannot mitigate levels of internal party competition, and they cannot provide party funds to support candidates interested in running for elective office. Despite supposedly weak control over party members, why does coordination of votes occur with higher-than-expected frequency (Figueiredo and Limongi, 2000)? These questions remain important for scholars of legislative politics, Latin American politics, and Brazilian politics.

The next section of this introductory chapter provides a brief literature review surrounding each of the puzzles delineated above, and also touches on the literature surrounding political networks. Following that, I introduce the basic arguments I will develop in the chapters that follow.
1.2 Literature Review

This section reviews the literature surrounding each of the puzzles discussed above, and draws on network literature to hint at how network theory helps to give us traction over them. I begin by discussing the literature surrounding network formation in legislative and social settings. I then discuss two coordination problems - party recruitment, by which I mean political parties recruiting members in the legislature, and legislative co-voting, by which I mean the rate of co-voting among among legislator dyads. I conclude by discussing the nexus between political networks and long-term political party success.

1.2.1 Network Formation

Why do network ties form among legislators? Long-established theory concerning party ontology recognized that political parties tend to form among like-minded, close-knit individuals (Key, 1958). Party unity stems from the endogenous interests of party members and the collective action problems surrounding electoral contests in democracies (Aldrich, 1995). However, it has also been shown that the institutional configurations of a party system affect a party’s internal organization, particularly their level of personal vote-seeking (Carey and Shugart, 1995; Cox, 1997). It is accepted within political science that the rules under which a party competes alters its organizational structure, via the vote-seeking behaviors of its members. We know that electoral systems affect the voting behavior of members as well - members in systems with elections held at the local level (regionally-defined districts) tend to endorse local policy against national policy (Samuels, 2000). Finally, party leaders drive cohesion in their parties through a mix of discipline and other tactics (Carey, 2007; Kreuzer and Pettai, 2009). Lack of party leader control over certain types of goods that members desire - such as electoral list positions, campaign monies, district location, and other goods - affects how highly members prioritize the party brand over their personal brand. While the parties literature has established many of the correlates of party cohesion, we lack an understanding of whether party demands or personal traits build cohesion through social networks. This means
that we know little about party cohesion, because scholars do not know the portion of variation in
party cohesion that stems from the party leadership versus the personal traits of legislators.

Longstanding theory on party formation and ontology describes the salient social dimensions
of party formation. Prominently, Morse (1896) found that political parties were primarily composed
of men seeking to advance their personal interests. Scholarship has long described party formation
as occurring along distinct social cleavages, including class cleavages (Weber, 1946), religious cleav-
ages (Kalyvas, 1998), and other sociostructural cleavages (Lipset and Rokkan, 1967; Bartolini and
Mair, 1990). It is thus logical to argue that political parties form within homogeneous groups, and
as a consequence have a higher likelihood of sharing interpersonal relationships of various types
with members of their party than with the general population. While this is a simple hypoth-
esis, scholarship can still benefit from further examination of this phenomenon (Schwartz, 1990;
Caldeira, Clark and Patterson, 1993; Arnold, Deen and Patterson, 2000).

Personalistic tendencies of legislators (i.e. personal vote-seeking) are the result of counter-
incentives to party cohesion within the institutional environment (e.g. lack of party control over
candidate lists), but relatively little is known about legislative context and tie formation (but see
Kirkland (2011); Ringe, Victor and Gross (2013)). While party leaders often impose organization
on their members from the top-down, their efforts are affected by the electoral and party rules
which incentivize personalism in candidates and elections. Large districts also produce high levels
personal brand-building, due to large electoral districts that create strong intra-party competition
(Samuels, 2008). The spatial distribution of districts across regions produces local constituencies
and local mandates (Ames, 1995; Samuels, 2000). While top-down effects of parties are covered in
the literature, we know less about how legislators build networks from the bottom-up. Candidate
entrepreneurism in the electoral environment might influence network formation on the basis of
personal traits over parties.

Scholarship has assessed the process of rewarding and punishing members by party leaders in
order to generate party discipline (Carey and Shugart, 1995; Heller and Mershon, 2009). Whether
party leaders have control over party electoral lists has a strong influence on candidate recruitment
and partisan discipline (Carey and Shugart, 1995). When parties can rank candidates on party lists, they can reward and punish loyalty accordingly, but open-list systems remove this tool from party leaders’ toolkits.

Politicians seeking political success and survival often act against the interests of their parties. Without the efforts of party leaders to deter such behavior, undisciplined politicians sometimes engage in the opposite functions as political parties by coordinating voters around personalistic brands, bucking the party vote, and diluting party brands. The degree to which politicians will pursue personal votes is a function of the extent to which leaders can disincentivize a ‘personal vote’ (Carey and Shugart, 1995).

Despite a large body of literature on party cohesion, scholarship lacks clear focus surrounding whether parties cohere more around strong leaders or homogeneous members. What is the effect of party leaders in offering particularistic incentives for cohesion/cooperation versus the individual efforts of members to build up networks with similar-minded colleagues? Because scholars know that party leaders and members play some role in party cohesion, it advances our understanding of political parties to explain what proportion of variation cohesion comes from either source. The answer to this question has important implications for our understanding of party ontology, party voting, and representation.

Research is proliferating surrounding what networks are and how they affect candidates, parties, and elections. The relationships that may form between parties and politicians are diverse - including coalitions, resource brokerage/exchange, policy discussion, information-sharing, and policy support (Laver and Shepsle, 1996; Katz and Mair, 1995; Koger, Masket and Noel, 2010b; Fowler, 2006; Bratton and Rouse, 2011; Fowler, 2006; Cho and Fowler, 2010). Legislators cultivate networks in order to gather information about policy (Carpenter, Esterling and Lazer, 2004), to pass important legislation (Cho and Fowler, 2010), or to create informal channels to those that are politically powerful; especially for groups on the social margins (Ainsworth and Akins, 1997). However, literature in this area can benefit from a better understanding of the multiple types of ties that legislators share, including better differentiation between social interactions and profes-
sional interactions. I contribute methodologically to this literature by innovating network-analytic methods that differentiate between such interactions.

In sum, there are a variety of factors that affect the need for legislators and parties to associate with one another - from the party organization to the electoral environment. While there is a growing interest in the idea that ‘parties are networks’ (Koger, Masket and Noel, 2010b), there has been a paucity of data available to analyze what legislative networks look like and how they form. I contribute to the literature by developing a theory of network formation in entrepreneurial contexts, and describe how political parties participate in and benefit from political networks. This chapter innovates from contemporary research on the subject in that it explores not only a single type of network tie, but three types of network ties among legislators.

1.2.2 Party Recruitment

Why do legislators switch political parties? By the same token, what leads parties to recruit legislative members? Literature on the topic has developed party-centric and member-centric theories for party recruitment. Broadly, party recruitment is a two-level game involving the broad interests of parties as organizations and the more narrow interests of legislators and legislative candidates. Party decisionmaking is driven by leaders who have a vested interest in maintaining a successful party with both political power and a legislative brand (Heller and Mershon, 2009). Political party leaders can influence the process of party-switching by offering incentives to lure legislators to their banner (Kato and Yamamoto, 2009). Party members, for their part, have a vested interest in office, policy, or both, and must operate within the rules of the political party and the system. Party members seek to maximize their electoral prospects, their policymaking capacity, and their future career prospects. In what follows, I elaborate both levels of this two-level game in light of the literature in the field.

How do the features of parties enter into the decision to switch parties? Party characteristics matter, as Shabad and Slomczynski (2004) find that, over time, politicians are less likely to switch to new political parties than to older established parties. These authors also find that partisans
are unlikely to switch to different party families. Parties possess varying organizational, strategic, and financial/resource features which attract candidates, and recruitment gives members access to these goods. Heller and Mershon (2005) explore the determinants of party switching in the Italian Chamber of Deputies, and find that the decision to switch is related to the level of party indiscipline and the type of electoral rules governing political competition.

Party leaders and their ambitions play a role as well. At least three separate sets of scholars have suggested that party leaders play a significant role in party-switching. Kreuzer and Pettai (2009) remark on the opportunistic behavior of party leaders in Germany to surpass specific seat thresholds, stating ‘A party that is a few seats short of a parliamentary majority will coax an opposition deputy to jump ship by either offering some bribe or promising a cabinet post.’ (276). Similarly, Kato and Yamamoto (2009) assert that the institutional thresholds that render a party capable of decisive political victories in the legislature drive party leaders to absorb members from opposition parties (240). Finally, party leaders will recruit and expel members of parties in order to move party ideal points (Heller and Mershon, 2008). Hence, party traits and leaders play a role in the party-switching process, by shaping the incentives of legislators.

Member-level determinants of party switching have been explored in a variety of contexts. Desposato (2006), exploring the Brazilian context, finds that partisan switching is primarily a function of expected future electoral gains on the part of the legislator, along with ideology and access to distributive resources. Desposato (2006) demonstrates that party switching is a strategic choice by members to maximize their electoral prospects. Desposato (2006) also finds that partisans with higher vote shares experience higher transaction costs for switching than their lower voteshare colleagues. Aldrich and Bianco (1992) find that competition for a party’s nomination is a primary determinant of party switching for members.

Literature in this area is lacking an explanation for why, even when controlling for party-level and member-level factors, party-switching can persist and even spread to new parties. Literature in this area has largely overlooked the endogenous features of party-switching/recruitment that cause a single random switching event to have a cascade effect that impacts the behaviors of parties.
and members not affected by the initial event. As such, the picture painted by existing literature is incomplete. I challenge the traditional view of party-recruitment and elaborate the problem as something like a ‘stag hunt’ game, in which all parties can do better if they act collectively to reduce party recruitment, but each can do individually better by recruiting from rivals given that others are doing the same. The model that emerges embraces the interdependent nature of party-recruitment by party leaders, and contributes to the literature by incorporating endogenous processes into our understanding of party-recruitment and party-switching.

An emerging set of network analysis lends some insight into why parties tend to be comprised of extended webs of association (Fowler, 2006; Koger, Masket and Noel, 2010a). When party members have parliamentary connections, they are more likely to find support within the legislature for pork, policy, or other resources. Fowler (2006) finds that strategies of cooperation have remained relatively stable in both US houses over time, and that legislators show a tendency toward reciprocity. While much research focuses on coordinated interparty ties (co-voting, cosponsorship, information-sharing), party-switching literature has conceived of switches as uncoordinated among political parties. Applying a network-analytic lens to the question of party recruitment allows a better understanding of the interdependent processes operating over time.

Understanding the nature of party recruitment from the perspective of the party requires theory that informs why we see intense party interaction in the form of party recruitment - a process which involves exchange of members between parties. Under a game-theoretic lens, the rationale of diffusion among parties is related to expected gains to the party. A different view, the functionalist party model, sees party strategy as primarily aimed at mobilizing members and voters (Fisher, Denver and Hands, 2006; Whiteley and Seyd, 2003; Pattie, Johnson and Fieldhouse, 1995; Clark and Stewart, 1998), which produces an active and loyal voter base from which to draw votes. A third view, the cartel model, sees parties as adaptive organizations which adjust their electoral strategies and even their platforms to survive in a dynamic competitive environment, and thus relying less on mobilization or conversion of voters (Katz and Mair, 1995). The cartel model of party formation predicts that parties will take up tasks beyond their initial purpose and adapt
to new and changing environments (see, for a good discussion of this Kalyvas (1998)). This view may very well predict that parties will be highly interconnected with one another for purposes of resource brokerage, but a game-theoretic framework allows better specification of the benefits and costs of recruitment for parties; conditional on other party strategies. A game-theoretic view allows us to specify ‘best-responses’ and, as I develop later, an ensuing process of interdependent recruitment choices.

In sum, research on party-switching discusses numerous causes of party-switching. Switches grant members access to scarce financial and electoral goods. Parties may be able to limit entry and exit of switchers, but to do so sometimes incurs costs of its own. Scholars have pointed out that incentives for party leaders to expand seatshares leads parties to recruit from rivals (Kreuzer and Pettai, 2009; Kato and Yamamoto, 2009; Heller and Mershon, 2008), but the ‘relational’ or interdependent nature of this process has not been examined either theoretically or empirically. The point of departure for this chapter is to focus on party leaders rather than predominantly on members, and draw out a rational choice logic for why switching persists across time, and why outside intervention is required to break the cycle of party-switching.

1.2.3 Legislative Voting

Why do legislators coordinate their voting decisions? There is a longstanding literature that explains variance in voting behavior among legislators. Scholars have shown that factors such as cue-taking, coalitional pressures, political parties, ideology, pork, constituencies, and institutions exert pressures on legislators to alter their voting behavior (Laver and Shepsle, 1996; Figueiredo and Limongi, 2000; Pereira, Power and Raile, 2011; Samuels, 2000). The literature on voting behavior explains how preferences, information, and rules within a legislative setting lead to effective coordination among actors. What is left largely undertheorized in voting literature is much more fundamental from a social science perspective - how the interpersonal relationships among legislators lead to coordinated behavior beyond the influences of institutional/party structures we can measure at the member and system levels.
A large segment of literature in comparative politics has sought to understand the voting patterns of parties and members. For parties, we know that there are both coalitional and distributive tools that executives use to get parties to vote together (Figueiredo and Limongi, 2000; Pereira, Power and Raile, 2011). These include ministerial posts (Laver and Shepsle, 1996), leadership positions, election funds, pork for local projects (Samuels, 2000), and many other benefits. Within parties themselves, party leaders use somewhat analogous tools when the institutional configuration of the party system allows them to - such as leadership positions, committee assignments, and electoral incentives (Carey and Shugart, 1995; Neto, 2002). These are some of the most important activities of party leaders - ensuring the behavior of their members is consistent with the party brand (Schumpeter, 1956). It also helps parties in establishing ‘responsible party government’ (Kitschelt et al., 2010).

It is established that party leaders create disincentives for voting against the party - they whip votes by doling out favors and punishments - but conditional upon the institutional environment (Mainwaring and Scully, 1995; Carey and Shugart, 1995; Figueiredo and Limongi, 2000). Carey (2007) asserts that party unity in voting is a function of three critical characteristics - cohesiveness, discipline, and agenda control. Who controls the legislative agenda, and who doles out carrots and sticks structures the incentives for members to vote for and against particular legislative initiatives (Carey, 2007). By using discipline and agenda control, the major role of the party leader is to establish consistent expectations on the part of voters vis-a-vis the policy they can expect from government - the theory of responsible party government. Crucially, they must also influence the expectations of party members such that they expect that they are not bearing the costs of discipline alone. Cohesiveness, which Carey (2007) cites as the third prong of party unity, relates to the underlying similarities among legislators that draws them to be a part of the party in the first place - legislators’ ideological leanings which lead them to vote together because they have similar policy preferences.

Literature in this area has mostly overlooked, until very recently, a very fundamental element of social life that can influence voting behavior in a legislative setting - the social relationships that
arise among legislators. This omission needs attention, because it means that we do not know whether party unity in voting behavior comes largely from self-selection of similar legislators into the same parties, or whether it stems from legislators actively influencing other legislators through their network ties.

Scholars have shown that social networks influence the expectations of interest groups from the bottom up through mechanisms of trust and reputation that arise naturally in day-to-day interaction (Heaney, 2014). We know that networks can act as systems of social exchange - social communication, deliberation, and discussion, but we know less about how they coordinate behavior. Literature on political networks and legislatures has analyzed cosponsorship networks in the US Congress (Fowler, 2006), how cosponsorship ties affect bill success (Kirkland, 2011), how networks define political parties outside the legislature (Koger, Masket and Noel, 2010a), how the behavior of opposition groups affects co-voting (Ringe, Victor and Gross, 2013), and how physical proximity in the Congressional environment affects voting patterns (Masket, 2008). Yet, there is conflicting theory about how social tie strength influences voting behavior. On one hand, scholars have shown that having many types of relationships with the same political actor (multiple overlapping ties) reveals influence of actors through trust and reputation (Granovetter, 1973; Heaney, 2014). On the other hand, others have argued that weak social ties (those established outside of normal daily interactions) bring new information, and thus produce high amounts of influence on voting behavior (Kirkland, 2011). I bring these two views into close conversation.

Legislators cultivate networks for diverse reasons, but most critically for gathering policy information (Carpenter, Esterling and Lazer, 2004). The flow of information in networks can influence the passage of important legislation (Cho and Fowler, 2010), but how can legislators be sure that such information is accurate? While any actor may obtain information from a network, they cannot always establish the veracity of the information and the credibility of the supplier of that information. Forming networks to receive and disseminate information is thought to be a helpful strategy in many settings, and especially for marginalized groups (Ainsworth and Akins, 1997), but the literature has yet to fully address the relationship between network formation and the
credibility of ties within those networks. Networks, as persistent patterns of interaction, generate opportunities for repeated social and professional interaction (Leifeld and Schneider, 2012), but we need to more fully specify how repeated interactions translate into actual policy/legislative outcomes. The key focus of this chapter is the conditions under which networks influence the voting behaviors of legislators.

The literature on weak ties (attributed in large part to Granovetter (1973)), is associated with the view that social ties between highly connected subgroups of actors generate access to new and unique information. These ties act as conduits of information exchange between different highly connected subgroups of actors where information is highly redundant. Scholars have argued that because of the new information that weak ties bring, they produce more influence than strong ties. In part, weak ties allow actors access to new information they would not otherwise have, and in part, they offer ambitious legislators a wider sphere of influence (Kirkland, 2011). These arguments stand in contrast to the work mentioned above by Heaney (2014), who suggests that influence is revealed by repeated interactions between actors in various contexts that generate reputation and trust. Intense interactions, on the weak ties view, bear little or no relationship with legislative influence, because the legislators that share strong relations are so similar that they would support one another even in the absence of a social relationship (Kirkland, 2011). By contrast, the strong ties view contends that intense interactions produce social trust and credibility among actors so that the information they receive from close members of the network is more likely to be accurate; and this state of affairs produces high levels of influence between actors.

As a result of these various strands of theory, we know that networks are important for coordinating expectations, passing information, and aiding in policy success. In voting literature, we know that executives and party leaders exert significant pressure on the rank-and-file from above, using the carrots and sticks at their disposal. I contribute to the literature by offering a theory of legislative co-voting that focuses on the building of credibility and trust based on multiple overlapping networks. I elaborate how some voting decisions are achieved through trust and cooperation developed within social networks. This chapter focuses specifically on the effects
of multiple overlapping ties on policy choices in a legislative context where legislators must use personal contacts for attaining certain political goods (e.g. policy expertise, voting support).

1.2.4 Long-Term Survival/Success

Why do some parties contest elections for long periods of time while others disappear? Literature on political systems has elaborated many of the correlates of stable vote shares within political systems, and why particular types of parties are strong and others are vulnerable to collapse (Seawright, 2012; Morgan, 2011). Electoral volatility is among the most widely studied measures of instability in party systems (Pedersen, 1979, 1983; Bova, 1991; Remmer, 1991; Roberts and Wibbels, 1999; Bielasiak, 2002; Powell and Tucker, 2013). Other scholars have examined the stability of political parties by focusing on the intersection of electoral rules and party strategy (Rose and Mackie, 1988; VanCott, 2005; Mainwaring, España and Gervasoni, 2009). However, conventional explanations reveal little about why small and marginal political parties contest elections for decades with few votes and seats, with seemingly few political and electoral resources.

Pedersen (1979) asserted that change in the party system can occur at three levels: at the level of government, at the level of the party as an organization, and at the level of the electorate. Pedersen’s electoral volatility measure was constructed in order to capture changes at all three levels simultaneously. With the introduction of his measure of electoral volatility, Pedersen (1979) and others found continuous change in party systems where previous measures detected little, and prior theory predicted none. In his analysis, Pedersen (1979) found that some party systems had declining volatility, while others had increasing volatility. Where earlier scholars had predicted freezing (Lipset and Rokkan, 1967), these patterns did not appear in the data.

What determines party success became an active area of research in the last 10 years. Mainwaring, España and Gervasoni (2009) considered the context of new party entry, particularly whether party labels were previously established or not, as an important determinant of new party success. VanCott (2005) considered a number of different explanations for new party success, from electoral rules to party resource mobilization. However, one major consideration for VanCott (2005)
is organizational - what were the organizational resources which new parties could draw on over the course of their formation? She found that dense organizational networks and organizational unity were strong contributing factors to new party success.

A number of theories explain stability in party systems (Shamir, 1984; Bartolini and Mair, 1990; Bova, 1991; Remmer, 1991; Roberts and Wibbels, 1999; Bielasiak, 2002; Madrid, 2005a; Tavits, 2005; Caramani, 2006). Bartolini and Mair (1990) argued that political systems with strong social cleavages experience less electoral volatility than political systems with weak social cleavages. Remmer (1991) found that economic shocks to Latin American countries negatively affect incumbent party success. Roberts and Wibbels (1999) found that young parties and changes governing interparty competition tend to increase electoral volatility, while party polarization tends to reduce it. So while there are social, institutional, and economic mechanisms for volatility, the age of parties in the system contributes to electoral volatility in important ways.

Scholars turned their attention more closely to the portion of the variance in electoral volatility that was due to the entry of political parties (Tavits, 2005; Madrid, 2005a; VanCott, 2005), as well as the related issue of party system fragmentation (Coppedge, 1997; Birnir and Cott, 2007). Tavits (2005) speculates that party entry and exit may be more rapid in party systems with restrictive electoral rules (low district magnitudes) compared with systems with permissive electoral rules (high district magnitudes).

Literature in this area has not addressed the longstanding puzzle surrounding why parties sometimes collapse simultaneously, and why small parties last for long periods of time with few votes or seats. While research has elaborated the interdependence of party voteshares and policy positions from a strategic perspective (Meguid, 2005), other sources of interdependence have been overlooked. In particular, interdependent outcomes may be the result of relations between political parties - social relationships among members that provide channels for striking bargains and exchanging resources. I contribute to the literature by taking interdependence more seriously, and highlight the role of party origins in affecting outcomes for political parties decades after a party’s founding.
1.2.5 Networks and Politics

There has been substantial analysis in Political Science that draws on network theory. These analyses and others from Anthropology, Sociology, and Mathematics provide a conceptual and methodological guide for a network-centered approach to parties and partisans.

Network analysis is the study of patterns of relations among entities. The entities can be people, organizations, electrical grids, etc. It is the study of the process by which entities are connected or left unconnected. The study of network analysis began through the slow evolution of methods and theories to examine the structure of social relations. It is generally linked to three main groups - a group of Gestalt psychologists, Hawthorne sociologists, and Manchester anthropologists. The Gestalt group began investigating the roots of development - how people come to develop the traits which define them. This group developed techniques to study peer influence (in fact they coined the term), and came up with ways to graph network relations. The Hawthorne group from Harvard began mapping positions of power in occupational life, developing ideas of clique and structural power. The Manchester group worked separately on questions of kinship, density, and closeness. Finally, a group at Harvard is typically credited with combining the previous techniques into what is today known as social network analysis. The Harvard breakthrough integrated the social/psychological work on networks with mathematical methods (such as matrix algebra, in part stemming from Homans) to generate a relatively coherent research paradigm (Scott, 2000).

What are the types of questions this field has asked? The answer is that there are many types. As I highlighted above, early questions were related to how an individual could be influenced through peer processes. This question has been addressed in many studies within and without political science. For example, Fowler (2005) has worked on how the peer influence process might work in the process of voting - using simulation studies to examine what the cascade effect of voting might look like. This question of peer influence has also been examined by Snijders (2001), Steglich and Snijders (2006) concerning how behavior and networks actually co-evoe. Scholars
have also explored the contours of interest group information sharing, to examine the partisan divisions which exist within the interest group community (Koger et al 2009). Questions have explored how information-sharing works within lobbying communities, exploring the implication of Granovetter (1973) that strong ties lead to more access to sensitive information while weak ties lead to more information flow. Finally, Fowler (2006) has examined the structure of legislative co-sponsorship in the House and Congress, showing that the average social distance among legislators is very small, and that partisanship matters less in the Senate than in the house for bill support.

Early network analysis was more limited with regard to data than it is today. Though egocentric data still predominate today, early analysts had difficulty constructing data of complete networks; especially of large populations like the US electorate. The best early example of work in political science which was able to make a very large contribution using egocentric data was Huckfeldt and Sprague (1987). These scholars examined the perceptions of discussion partners in different neighborhood contexts in order to test whether the effect of a broader social context affects people’s perceptions of their discussion partner’s political leanings. In many circumstances, we still must rely on egocentric data, though it may not be representative of any part of the network of the population. The reason for such an approach is that 1) scholars might not really know what the larger network of, for example, the american electorate looks like, so scholars would be unable to evaluate whether they have captured it or not, and 2) it is extremely expensive to collect complete network data. Further, the effects of missing data on networks are complex, and not perfectly understood (Kossinets 2006).

Network analysis is very similar to conventional econometric analysis in some respects and different in others. Scholars can integrate questions of network effects into conventional models by simply placing them on the right hand side of the equation. If one were interested in how the number of incoming political ties affects one’s propensity to participate in politics, one could simply use this as a predictor on the right hand side of the equation. Similarly, a state’s propensity to go
to war can be estimated using its membership in a number of relevant IGO’s (Hafner-Burton et al. 2006). However, if we are interested in how networks form, ties are established, or how ties change, then we must seek more computationally intensive models. Putting networks on the left hand side of the equation typically violates (and sometimes violates strongly) the Gauss-Markov assumption of independent observations. Networks are multiplex and often directed, implying that a tie sent can very easily initiate a tie returned. Similarly, ties can cluster into cliques or k-cores, making ties highly interdependent. As such, there are underlying dependencies among tie formations that would create problems for standard errors. It is sometimes reasonable to assume that we can model out the dependence with covariates, and sometimes we can (and do). In other cases, we may turn to bootstrapped standard errors, Quadratic Assignment Procedures (QAP’s), network ANOVA, or Exponential Random Graph Modeling. All of these methods relax the assumption of independence in some way, and allow us to examine tie formation.

Some have criticized the used of network analysis in political science. One major criticism concerns causality in political or social networks. Given the dearth of good network data, many network studies are left to make causal inferences from cross-sectional or egocentric data. Often these inferences are based on theory and supported by the data, but sometimes fail to address or control for endogeneity. For example, Christakis and Fowler (2008) use network data from a heart study to argue that people who have friends that are overweight are more likely to be overweight themselves. They suggest that friends influence people’s eating and exercise habits, which subsequently affects their weight. However, they have been strongly criticized for failing to address concerns of the reverse effect - homophily - rather than peer influence.

Modern political network analysis has analyzed webs of association/interaction within and between political parties (Fowler, 2006; Koger, Masket and Noel, 2010a). Fowler (2006) finds that legislative cosponsorship renders social distance between any two legislators quite small, with implications for understanding policymaking. Fowler (2006) finds that strategies of cooperation
(measured as cosponsorship) have remained relatively stable in both US houses over time, and that legislators show a tendency toward reciprocal ties. While much research focuses on coordinated interparty ties (co-voting, cosponsorship, information-sharing), interparty ties may also be strategically coordinated, as in the case of party-switching. This means that parties do not verbally coordinate member trades the way that sports teams do, but make recruitment choices on the basis of expected gains to the party and expectations about other parties’ behaviors; and this process creates dominant strategies that favor coordinated reciprocal recruitment of members. I elaborate these ideas in detail in later sections.

My project leverages the theory and tools of network analysis to examine the causes and consequences of political networks on parties and elections. In so doing, I try to define and explain different types of ties between parties, then connect those concepts to my research questions. I draw on the concepts of multiplexity (multiple overlapping ties), tie strength, reciprocity, transitivity, and centrality to develop the causal narrative within this dissertation. I examine the relationship between multiple overlapping ties and tie strength on the propensity of legislators to co-vote on legislation. I examine the evolution of party recruitment strategies over time, drawing on reciprocity and transitivity to develop a ‘tit-for-tat’ theory of party recruitment. Finally, I draw on the concept of network centrality to examine the importance of different parties and legislators throughout this dissertation.

1.3 Argument in Brief

How do political networks form? Once formed, do political networks help to coordinate legislative behavior? What are the long-term impacts of political networks for parties and members? In the chapters in this dissertation, I elaborate how political networks form and influence coordination between groups of actors. I elaborate the determinants of network formation among legislators using a unique survey method, highlighting the relative role of personalism versus party organization on network formation. Next, I focus on how party recruitment of members becomes coordinated through network ties, and how behaviors of legislative members become coordinated
through their interpersonal relationships. In order to demonstrate party-party coordination, I ex-
amine the endogenous process of party-recruitment to illuminate how the behavior of one party
influences the behaviors of others through network processes. In order to demonstrate member-
member coordination, I examine the effects of multiple overlapping ties and tie strength on voting
on legislative proposals. Finally, I address the role of networks in the long-term persistence and
success of political parties, highlighting how early network ties affect long-term success.

1.3.1 The Roots of Network Formation

How is the social world of legislators constructed, and why? While the idea that parties create
networks is likely under various theoretical perspectives, little is known about the empirical state
of affairs vis-a-vis network formation among legislators. Limited data availability has precluded the
extent to which scholars have examined these questions. Networks are important for coordination
among legislators. To create assurances of coordination between candidates, political parties need
to provide opportunities for candidates to communicate about legislative issues, to interact socially,
and to centralize information.

In this chapter, I elaborate a few of the reasons that parties build social networks. First,
social relations are likely to arise naturally among legislators of the same party, due to self-interest
and problems of collective action. Second, given that the party label is a collective resource within
the party organization that can be eroded by individualistic behaviors, parties develop social ties
among their members for fostering trust and transparency among members to prevent self-interested
behaviors (Ostrom, 1990). Networks foster trust among legislators in their ability to generate
repeated interactions. Networks provide the social apparatus necessary for the primary tools of
lawmaking - communication, discussion, and deliberation (Sokhey and Djupe, 2011). By looking at
the structure of interactions within and between social groups, research has shown that trust and
reputations are produced within networks (Putnam, 1992; Carpenter, Esterling and Lazer, 2004;
Heaney, 2014). Trust, as it is often defined, is when an actor takes another actor’s interests into
account when she acts, and holds expectations that other actors will do the same (Farrell, 2009).
Trust formation is central to understanding coordination, representation, and cohesion in legislative settings.

More interesting are the social ties that arise on the basis of personal traits of deputies. Similarity of traits and characteristics, such as age, education, and experience provide the substrate for forming social and professional relationships. Traits and characteristics are not simply skin deep - they represent experiences related to life stages, occupation, social class, and other features. Similarity of traits and characteristics between actors have been shown to reduce uncertainty about how an actor is likely to behave, increasing the chances that a relationship will form (Byrne, 1971). Actors with similar traits are more likely to trust one another (Golbeck, 2009). Shared experiences act as channels through which information can be shared, creating information flow across social ties.

In sum, this chapter elaborates top-down party-centric reasons for tie formation as well as bottom-up member-centric explanations. It argues that the degree to which parties or members dominate in the process of tie formation depends on the institutional and social environment.

1.3.2 Party-Party Influence: Coordination Around Party Recruitment Strategies

Do party leaders secure benefits for their parties by strategically recruiting partisans from rivals? Does this produce incentives for rival parties to adopt the same strategy? This chapter explores the relational nature of recruitments of members between parties. I argue that recruitments by one political party are endogenous to recruitments by other parties, specifically due to a collective action problem arising in contexts of low party discipline. The tendency for a party to recruit is spurred by the loss of a member to a rival party, generating a reciprocal ‘tit-for-tat’ response. A tit-for-tat strategy is any strategy in which a player mimics its opponent’s previous move (Axelrod, 1985). Tit-for-tat recruitment occurs when a party leader recruits from a party that previously recruited from her party. Transitive recruitment occurs when party leaders recruit from a party with whom a switching partner also recruited. I argue that party-switching remains high in some countries because of a collective action problem in which aggressive recruitment is damaging for all
parties but individually beneficial.

In essence, I draw on a similar idea to the ‘stag hunt’ game to elaborate the party recruitment/switching dilemma for parties. A ‘stag hunt’ game describes a situation in which members of a hunting party attempt to work as a team to hunt a stag - which they are individually incapable of bagging - but is a valuable prize which they share. Individual members of the hunting party can attempt to also hunt a hare (a less valuable prize), but would be distracted from the stag hunt, reducing the chances of the team capturing a stag. Given that members of the hunting party will hunt a hare, it is rational for all members to pursue the suboptimal outcome of hunting the hare. In recruitment, I argue, recruiting aggressively from rivals takes the place of the hare-hunting strategy, and refraining from such behaviors takes the place of the stag-hunting strategy. Party leaders end up coordinating on the suboptimal outcome of aggressive recruitment from rival parties in order to maximize legislative seatshares, but such a strategy is collectively damaging for party labels and party composition. Parties require outside help to begin coordinating on the more desired outcome of coordination on little or no recruitment.

In summary, I argue that it is individually rational but collectively damaging for party leaders to aggressively recruit from rivals. I argue that tit-for-tat and transitive party-switching produce a collective action problem for party leaders, because they see short-term individual gains from recruiting, but long-term collective losses to the party brand. I develop this logic and employ an innovative methodology applying network models to over 20 years of party-switching data from Brazil to test it.

1.3.3 Member-Member Influence: Coordination Around Voting Behavior

Coordination occurs at the intersection of preferences and information. Specifically, coordination occurs when preferences for all actors favor coordination over defection, and there is sufficient information about other actors’ expected behavior (Enemark, McCubbins and Weller, 2014). In classic coordination games, like battle of the sexes, individuals are more likely to trade off their highest preferences for proximate ones if they can be more certain their proximate preferences are
attainable through coordinated action (Downs, 1957; Duverger, 1954). A legislator is unlikely to be able to attain her most favored outcome without support from her colleagues, but her social ties may help her to facilitate coordination on outcomes that she values. Such outcomes may be even more favorable to her than those of her party. Social networks can be even more effective when they also include side payments via promised future favors (reciprocity). Hence, knowledge that network partners are likely to act in certain ways facilitates coordination outside of political parties.

Voting behavior of congresspeople on legislation, I argue, is affected by the strong and overlapping network ties (multiplexity) that compose the social fabric of deputies' lives. The theory rests on the idea that networks generate opportunities for monitoring behavior and for demonstrating capacity in various professional roles. I propose a theory of co-voting in which networks have a reputation and trust-building role. Networks in a legislative environment facilitate reputation and trust; leading to high rates of voting coordination.

1.3.4 Networks and Long-Term Party Success

While party origins encompass an array of characteristics, this chapter focuses primarily on the actors who launched the party and their social connections vis-a-vis the government. The chapter discusses the social position of founders vis-a-vis members of the current or former government or legislature compared with their social position vis-a-vis political activists in the electorate. In my view, the relations of the party arise from the social embeddedness of the actors who launched it, and such relations become sealed in the party’s organizational structure. Party founders, or the actors that launched political parties and their embeddedness in social networks, provide the basis for the ties that the party forms with other political actors/organizations. Social networks provide the context in which political entrepreneurs establish political parties.

The social linkages that political party founders build with other political actors become woven into their fledgling party’s social infrastructure. Networks can be made up of many different types of relationships at the same time. Parties that form in different social groups will naturally
be composed of different actors. Parties that form among political activists (groups active in political movements, church affiliates, union activists, etc.) should be composed primarily of political activists, whereas those parties forming primarily within the political elite (government officials, their immediate relatives, former regime officials, etc.) will be composed primarily of the political elite. The embeddedness of a party within the various social networks of its founders, I argue, determines party opportunities for political brokerage of government resources.

1.4 Methodological Approach

There are several shortcomings in the networks community regarding network measurement, though this vibrant field is quickly making progress. One of the major shortcomings in studies of political networks (and social networks more generally) has been a paucity of high-quality network data. As noted above, analysts have often had to resort to ego-centric studies of networks, which involve a respondent (an ego) reporting on her most salient network ties. Egocentric studies typically can only make inferences about the number of ties for a particular respondent, not about larger structural traits in the network, such as the closeness of an actor to other actors in the survey, or the number of shortest paths an actor lies upon. Next, when complete network data exist, they are often of relatively poor quality vis-a-vis the network of interest. For example, scholars have used co-sponsorship data to explore social/working relationships among legislators (Fowler, 2006; Alemán and Calvo, 2012). However, co-sponsorship is really a measure of revealed preferences about legislation, and only marginally a measure of working relationships or social ties. Co-sponsorship is more than likely a function of credit-claiming for one’s constituency, rather than a measure of real professional collaboration (Thomas and Grofman, 1993). Next, studies only infrequently study more than one type of relationship, relying typically on a single type of network to make their inferences. This leaves studies open to the criticism of omitted variable bias. Measurement strategies of networks are often quite tedious and demanding of respondents, asking them to rattle off the numerous actors to whom they might be tied, but giving them little ability to use memory aids. In sum, there are a variety of measurement issues in studying networks. My study
seeks to measure networks better than most previous research has done.

1.4.1 A Digital Interactive Network Survey

My primary network measurement strategy is a digital network survey. Using the emerging corpus of interactive data programming applications that are freely available and open-source, I improve on several outstanding problems in measuring networks. My approach uses an interactive survey application that aids memory, improves ease of survey response, and optimizes response speed.

The application unifies a survey instrument with an on-the-fly search function enabling quick memory aids to legislative staff when identifying their network ties. Respondents interact with a touchscreen tablet computer, where the left portion of the screen contains four search dimensions, including political party, federal state, physical office location, and leadership status (member of party leadership). The search feature appears to increase the number of nominations that a respondent will make, and to improve the accuracy of their responses\(^1\). The lower left portion of the screen outputs a list from the search and a sliding bar to allow the respondent to select the intensity of the relationship. The search function turns an open response question into a multiple choice question, in which a respondent simply has to select the relevant actors from a list. The intensity indicator allows measurement of the strength of the tie from the respondent’s perspective, adding an additional dimension to the measurement scheme. The top of the screen contains the survey question, asking the respondent to identify one specific type of network tie. The right-hand side of the screen contains an image representing the respondent’s office and the offices to which it is connected on that specific network, with linkages sized according to the selected intensity of the relationship. Respondents typically filled in each network in less than three minutes, taking less than 10 minutes to fill out the survey, on average.

In addition to the visible features of the survey, there were also background elements that

\(^1\) This is based on informal comparisons between this survey and a survey conducted in 2013 conducted on pen-and-paper.
added additional dimensions to the measurement scheme. The application recorded the interactions of the respondent with the search function, allowing the survey to measure how respondents think of their networks in the context of the legislative environment - the salient dimensions of network relationships. The survey application was able to measure whether respondents typically think of their networks in relation to political party, federal state, office location, or political leadership. Measurement of the salient dimensions of searching for networks has not been measured before.

I measured networks at the level of the deputy office in order to achieve better response rates and higher-quality data. Deputies are typically only in the Chamber one day per week - on Tuesdays - when legislation is presented and debated on the congress floor. When deputies are actually in their offices, between floor debates, they are typically overwhelmed with representatives of their districts lobbying for various legislation. Office managers (chefes de gabinete) and senior staff are frequently told to communicate or cooperate with researchers on behalf of the deputy in her absence, so they are accustomed to representing the deputy in this capacity. If a deputy agrees to participate in a study, they often pass off the responsibilities to their office managers or low-ranking staff, so by asking directly for the chief of staff I can avoid the task being passed to an underling.

In my 2014 digital survey, I was able to reach a 25% response rate across the Brazilian Congress. Lacking additional statistical treatment, the data consists of a sample of a network. But from the viewpoint of methodologists in the field of network analysis, it is impossible to sample a network the same way populations are sampled, because a network is a single unit composed of vertices and edges representing a pattern of relations (Kossinets, 2006). Therefore, a network cannot be broken into pieces without losing some essential characteristics. Missing data are problematic in networks, because ties are interdependent, and without appropriate statistical treatment there is often bias toward zero in coefficient estimates (Burt, 1987). Missing data can also cause centrality measures to be inconsistent (Kossinets, 2006). In order to address these problems, I use outside information from a prior survey and modern network imputation methods. In certain chapters I use
2013 data to supplement missing linkages in the 2014 data\(^2\). The 2013 data were collected using pen and paper, but ask two questions that are nearly identical. Doing so increases the response rate to 45%. I then utilize multiple imputation techniques developed for graph data to restore the missing data for the rest of the dataset (Hunter et al., 2008).

1.4.2 Party Recruitment Data

I evaluate my hypotheses related to coordination in this chapter using Stochastic Actor-based (SAB) models. SAB’s are used to assess the likelihood of tie changes for actors within networks (Snijders, 2001; Snijders, Van de Bunt and Steglich, 2010). In my models, I test whether the patterns of recruitment between parties over time are random (implying that party leaders do not recruit the way the theory predicts), or non-random. In particular, I examine whether recruitment occurs through endogenous tendencies consistent with tit for tat theory.

Within the recruitment market, party leaders seek to make optimal choices about whom they recruit, given other parties’ choices. By examining several iterations of the switching network over time, my modeling strategy allows me to understand the rules governing the process. The coefficients given by the model can be interpreted two ways. They can be interpreted as odds ratios of recruitment, or they can be interpreted in a ‘util’ frameworks that gives the ‘utility’, or net benefit of recruitment from a specific party versus not.

In the SAB framework, we must characterize the nature of recruitment as party leaders making ‘tie changes’ via recruitment of legislators from other parties. The networks nodes are parties and the ‘ties’ are directed recruitments from one party to another\(^3\). SAB’s conceive of this as a Markov, where leaders face an opportunity to recruit or not.

This modeling approach sees party leaders as maximizing their ‘utility’ within the network - optimizing their recruitment efforts in a competitive environment - incorporating the choices of the leaders of proximate parties into their utility functions. Unlike conventional models that do not

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\(^2\) Ask the author for details on the 2013 survey

\(^3\) I did not use a two-mode model for these data. In order to use two-mode analysis in this case, both node sets must be stable over time, which means that parties and legislators cannot enter and exit the legislature over time.
incorporate endogenous effects, my modeling strategy explicitly captures them. In my framework, a party leader’s recruitment strategy can be partially dependent on the recruitment strategies of proximate parties. Party leaders optimize their expected utility given the decisions of other party leaders (Snijders, 2001; Snijders, Van de Bunt and Steglich, 2010).

Table 1: Party-Switching In Brazil Over Time

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<td>Switches</td>
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<td>227</td>
<td>288</td>
<td>347</td>
<td>93</td>
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1.4.3 Party Success and Survival Data

The data gathering process for the party exit data consisted of collecting party biographies and using them to code parties into relevant categories of origin and exit. These data utilize the party-year as the unit of analysis. I tracked Brazilian parties through relatively long spans of time and provide a relatively consistent treatment of their organizational trajectories. I use the Political Handbook of the World to capture all parties competing with a minimal level of support in the Brazilian Congress\(^4\). Establishing an appropriate threshold for inclusion is necessary to obtain the right mix of information availability and representativeness of the parties included. The study of political parties tends to favor stronger parties, so little information exists on parties that get very small percentages of votes and seats. The threshold I set for these data is parties that reach either 1% of the vote or 1 seat in the lower/single house. This threshold is low enough to capture some small parties, but high enough to avoid a data set primarily of small parties. Such a threshold also avoids generating a data set that suffers from highly unreliable information. It is worth noting as well that including small parties does not affect my results.

The Political Handbook of the World is a source which captures parties as organizations rather than primarily focusing on central individuals and strong parties. This source is available for the entire electoral history of Brazil, so gives enormous temporal extension. Other sources have also been

\(^4\) There are numerous small party organizations in Brazil, but I avoided making the data driven by parties getting extremely small percentages of votes and seats.
used throughout, including Jairo Nicolau’s database on party performance (http://jaironicolau.iesp.uerj.br/), and Adam Carr’s electoral database (http://psephos.adam-carr.net/).

One major argument I assert in this chapter is that parties formed by members of parliament persist longer than parties forming out of other origins. I argue that parliamentary parties tend to establish strong interparty networks within the parliament which allow them to avoid costly mobilization of their voting bases for legislative support compared to less-connected parties. I argue that reciprocal interparty support gives these parties advantages relative to less-connected parties. I show a correlation between parliamentary origins and persistence. I use network models to show that different party origins lead parties to engage in different networking strategies. To do so, I use party-switching data which were collected from the Brazilian Chamber of Deputies, including all data on all party switches for all legislatures between 1987 and 2010. These data are useful for testing hypotheses about the evolution of switching patterns. Data on ideology in this chapter come from Baker and Greene (2011). I use network descriptives and simple network correlation measures to validate the data as well.

1.5 Conclusion

This project has implications for how we think about change and evolution in party systems. It focuses on strategic coordination between parties and legislators through a network-analytic lens, and sheds new light on longstanding questions. It leverages an innovative research design to show the social structure of a large and important legislative body - the Brazilian Congress. As Kitschelt et al. (2010) note, the rate of party destruction and creation has important implications for the process by which political learning occurs. This project provides potential explanations for puzzles surrounding the persistence of small parties, as well as puzzles surrounding party events that occur in clumps and clusters. The project has implications for understanding how voters might be impacted by short time horizons and uncertainty about what types of parties will participate in the party system. In the next four chapters, I develop in detail the ideas I have discussed above with additional theory and evidence. These chapters are largely self-contained, and in the format
of academic articles, so readers may easily skip around without loss of clarity. The final chapter draws together these ideas and offers some concluding remarks.
Chapter 2

Parties and Personal Traits: Analyzing Network Formation in Brazil

Why do members of congress work outside of their own parties? Are the social networks of members of congress affected more by their political parties or their personal traits? How does the party organization and distribution of leadership positions influence the tendency of members to work collectively on a day-to-day basis? In this chapter, I explore the determinants of the social relationships of legislators - in legislative communication, social communication, and information-seeking. I use exponential random graph models to evaluate the relative influence of personal traits versus party influence in generating legislator relationships. The analysis reveals that the effects of personal traits are quite strong relative to political parties in network formation.
2.1 Introduction

How is the social world of legislators constructed? Who do legislators work with on a day-to-day basis, and why? Given party-driven incentives for cohesion, we know that political parties influence the daily working relationships of legislators (Ringe, Victor and Gross, 2013). On the other hand, social theory suggests that actors build networks on the basis of shared traits (Goodreau, Kitts and Morris, 2009). Scholars know less than they think about party cohesion, the flow of information in the legislative environment, and the direction of influence between legislators, because they know very little about the day-to-day working networks of legislators in the congressional environment. The lack of understanding of social relationship formation among legislators means that scholars know very little about what proportion of the variation in party cohesion stems from political parties as organizations versus the proportion that stems from individual member characteristics. Scholars also do not have a complete grasp on how information is likely to flow across the legislative environment, and who is mostly likely to influence whom on important voting decisions. Finally, from a descriptive standpoint, scholars know almost nothing about which legislative offices deputies contact to discuss legislative issues, to socialize, or to seek relevant information on legislation. This study analyzes a new dataset on linkages between legislative offices in the Brazilian Congress, and examines three types of networks of legislators - communication networks, social networks, and information-seeking networks from an interactive digital survey.

Brazil provides a unique and interesting window on legislative networking. Brazil is a case of fragmented parties, high intraparty competition, and entrepreneurial candidates. Brazil’s proportional electoral system with very low electoral thresholds creates a large number of political parties. High district magnitudes and weak electoral list control by parties generate high levels of intraparty competition, candidate entrepreneurship, and individual brand-building (Samuels, 2008). We know that such factors increase incentives for inter-party cooperation and interaction (Carey and Shugart, 1995), but do they erode party cohesion? It is unclear from the current literature whether incentives to cultivate a personal brand using personal traits reduces party cohesion. Re-
Regional electoral districts produce candidates with regional and local policy mandates, sometimes with very small local constituencies (Ames, 1995). As a result, cross-party affiliations are crucial to form coalitions to meet local constituency demands. Given this environment, political parties might face huge challenges forging social and legislative cohesion within their parties, but little is known about whether this is actually the case. This chapter explores the empirical implications of this state of affairs, and provides a window on the conditions under which members of congress tend to work within their party versus outside.

This chapter will proceed as follows: I begin by drawing on existing literature on political networks and party cohesion. Next, I present a theory for why networks form among legislative deputies, and offer three testable hypotheses. I then test this theory in the context of the Brazilian Chamber of Deputies using exponential random graph models on an original dataset that allows for the exploration of party differences. I find that personal traits exert considerable influence on the communication, social, and information-seeking networks of legislators in the Brazilian congress.

2.2 Institutions, Party Discipline, and Networks

Why do legislators form interpersonal ties? The formation of interpersonal ties along party lines is consistent with various theoretical viewpoints. First, some of the oldest scholarship on political parties recognized that political parties are composed of groups of close-knit, like-minded individuals (Key, 1958). Unity in political parties arises endogenously from the interests of their members and the collective action problems surrounding electoral contests (Aldrich, 1995; Carey, 2007), so social network ties may arise for similar reasons. Second, because the institutional environment can affect the degree to which members seek personal votes and their voting behavior on policy issues, it follows that it should structure their personal relationships via political parties in similar and important ways. Finally, it could be that party leaders seek to build up cohesion in their parties through a mix of professional and social events to build ties among members. Leaders may use such strategies in addition to traditional top-down enforcement to ensure member discipline (Taagepera and Shugart, 1993; Carey and Shugart, 1995). While the parties literature has
established many of the institutional correlates of party cohesion, and thus party discipline (Carey and Shugart, 1995), scholarship lacks an explanation for how party demands build social networks versus personal traits. Scholars do not know what proportion of the variation in cohesion stems from the political party leadership and what proportion comes from personality and personal traits.

A broad literature on the formation of political parties describes the social origins of political parties, and their cohesion along salient social lines. Morse (1896) discusses how political parties are composed of men seeking to further their common interests in a sociopolitical group. Perhaps more prominently, numerous scholars have described parties as forming along distinct social cleavages, such as class-based social cleavages (Weber, 1946), religious cleavages (Kalyvas, 1998), and other prominent sociostructural cleavages (Lipset and Rokkan, 1967; Bartolini and Mair, 1990). Key (1958), by contrast, asserts that political parties are not even social groups, as they share no noticeable characteristics. Nonetheless, it is no stretch to argue that political parties form within homogeneous groups, and as a consequence have a higher likelihood to share interpersonal relationships with members of their parties than with the general population. It also follows that similarity of legislator traits increases the likelihood of tie formation. While these are basic empirical expectations, research is lacking that examines this question in depth (but see Schwartz (1990); Caldeira, Clark and Patterson (1993); Arnold, Deen and Patterson (2000)).

The institutional configurations of a party system influence a party’s internal organization, particularly the level of personal vote-seeking among its members (Carey and Shugart, 1995; Cox, 1997) and party cohesion measured by voting records (Carey, 2007). By now, it is accepted wisdom that the institutional conditions under which a party competes affects its internal structure, via the vote-seeking behaviors of its members. Lack of party control over certain types of goods that members desire - such as electoral list positions, campaign monies, district location, and other goods - affects how highly members prioritize the party brand over their personal brand. The degree to which politicians will pursue personal votes is a function of the larger institutional environment - the extent to which the electoral system incentivizes a ‘personal vote’ (Carey and Shugart, 1995). Similarly, we know that electoral systems affect the voting behavior of members as well - members
in systems with elections held at the local level (regionally-defined districts) tend to endorse local policy against national policy (Samuels, 2000).

Much literature considers the role of party leaders in creating unity within political parties - particularly reward and punishment of members as necessary to generate party discipline (Carey and Shugart, 1995; Carey, 2007; Heller and Mershon, 2009). This point is partially covered above, but the role of leaders is worth emphasizing. Party leaders can withhold re-election funds, ballot positions, and agenda items at their discretion in order to bring party members in line (Carey, 2007). Party leaders also make decisions about when to recruit and expel members to maintain cohesion (Kreuzer and Pettai, 2009) (see chapter 3). However, ambitious politicians often act against the interests of their party leaders at times to pursue their own ideas, interests, and policies. Undisciplined politicians sometimes engage in the opposite functions as political parties: they coordinate voters around personalistic brands, they buck the party vote, and they dilute party brands.

What literature needs to better understand, I argue, is differences in the proportion of variance in party cohesion from party-derived sources - stemming from the mix of incentives offered by party leaders - against the effects of personal traits of legislators themselves. It is not known whether the legislative context actually influences tie formation (but see Kirkland (2011); Ringe, Victor and Gross (2013)). Since personalistic linkages are the result of counter-incentives to party cohesion within the institutional environment (e.g. lack of party control over candidate lists), it is worth exploring the intersection of social linkage formation and institutions. While top-down effects of parties are covered in the literature, we know less about how legislators build networks from the bottom-up. Candidate entrepreneurism in the electoral environment might influence network formation on the basis of personal traits over parties, and as a consequence scholars might know less about party cohesion than they think. I contribute to the literature by bringing these issues into close conversation.

Research is moving closer to revealing how networks affect candidates, parties, and elections. Linkages between parties and politicians are diverse - they include alliances, coalitions (Laver and
Shepsle, 1996), resource exchanges (Katz and Mair, 1995), debating/discussing ideas, sharing information (Koger, Masket and Noel, 2010b), providing legislative support (Fowler, 2006; Bratton and Rouse, 2011), and coauthoring policy (Fowler, 2006; Cho and Fowler, 2010). Scholarship demonstrates that legislators cultivate networks in order to gather information about policy (Carpenter, Esterling and Lazer, 2004), to pass important legislation (Cho and Fowler, 2010), or to forge informal channels to those that are powerful (Ainsworth and Akins, 1997). Building thick legislative linkages may provide legislators increased access to legislative information, policy support, pork, and campaign funds.

There are numerous justifications for legislators and parties to associate with one another - from the collective needs of the party organization to the electoral environment. I contribute to the literature by elaborating how networks form within a context of entrepreneurial candidates and how political parties might both participate and benefit from the process. This chapter is unique among literature in this area in that it explores not only a single type of network tie, but three types of network ties among legislators with a fairly large sample.

2.3 A Theory of Legislative Network Formation

My theory of network formation is based on what we know about political party coordination, on the one hand, and the context of the legislative/congressional environment in which day-to-day cooperation actually occurs, on the other. Political parties, both naturally and by design, create networks among legislators and the building of working relationships in order to effectively coordinate. Such patterns arise endogenously from the interests of party members and the problems of collective action. However, social networks, in an environment of candidate entrepreneurship, are affected by day-to-day interactions and the social and physical traits of the candidates in the legislature. Personal traits (homophily) affect network formation just as strongly when candidates have incentives to build personalistic brands.

Parties have dual existences as organizations competing for elective office and as collections of individuals with competing interests. Parties have a role in generating communication linkages and
social linkages for purposes of effective coordination of behavior on voting, policy, and campaigns. Parties have numerous well-known reasons for intraparty coordination in a democratic system. Political parties organize and consolidate swaths of voters around issues, they impose constraints on legislative action for legislators, they mobilize voters, they disseminate information, and they forge long-lasting political brands (Lipset and Rokkan, 1967; Bartolini and Mair, 1990; Pattie, Johnson and Fieldhouse, 1995). Yet, it has been established that such ends must be achieved against the individualistic tendencies of members to cultivate their own brands in an effort to increase their voteshares and electoral prospects. In what follows, I develop both sides of this equation - the tension for parties to create cohesion via the social networks of members against a member's own individualistic incentives for cultivating personal ties.

2.3.1 The Role of Parties

While network formation by parties is likely under various theoretical viewpoints, networks are especially important for coordination. Coordination between political parties and voters is one of the major benefits produced by political parties in a democracy. Coordination and cooperation of candidates generate distinctive partisan groups offering contrasting policy choices. Voters, by virtue of party coordination, are able to sufficiently rank political parties according to their own ideal points, producing sensible programmatic party linkages between citizens and voters (Kitschelt et al., 2010). Brazil is a case where such coordination has not always been as effective as other Latin American countries (Kitschelt et al., 2010). Coordination among candidates occurs through some mix of of social organization, such as a social network, and institutions - organization and leadership. For effective coordination to occur, a given candidate must know that the other members of her party will make approximately the same political choices, otherwise there is no benefit to coordinating. To create assurances of coordination between candidates, political parties need to provide opportunities for candidates to communicate about legislative issues, to interact socially, and to centralize information.

Given that the party label is a collective resource within the party organization which can
be eroded by individualistic behaviors, parties must develop linkages for building trust and transparency among members (credibility and monitoring (Ostrom, 1990)) to prevent self-interested behaviors. Networks create trust among actors by virtue of their ability to generate repeated exchanges, allowing actors to monitor one another and establish credibility (Ostrom, 1990). Among network scholars, ties form the infrastructure of social communication (Sokhey and Djupe, 2011), and by looking at the structure of networks, research has demonstrated that trust and reputations are built within networks (Putnam, 1992; Carpenter, Esterling and Lazer, 2004; Heaney, 2014)\(^1\).

Monitoring of members’ behaviors is a critical reason for parties to create linkages, such that every actor’s action with regard to the group can be observed by the other group members. Expectations are essential to discipline vis-a-vis the party label. The most effective and low-cost way of generating effective monitoring among members in a group is to establish dense horizontal networks (Putnam, 1992). Such networks provide channels for continual interaction and exchange among members, providing the ability for behavior monitoring. As a result of consistent surveillance, it is more difficult for members to cheat (Covey, Saladin and Killen, 1989).

2.3.2 The Role of Personal Traits and Context

In the social world, personal traits have strong influences on tie formation (Goodreau, Kitts and Morris, 2009), but a legislative setting is a very specific environment - in which partisans and leaders may have differing incentives. As stated in the previous section, parties have strong incentives to forge cohesion within their parties in order to coordinate effectively. However, party strength in forging cohesion depends on electoral rules and other institutional features. I posit that personal traits will take on larger significance when parties and leaders take on relatively less significance. When the party organization has less ability to discipline legislators for acting contrary to the party brand, then personal traits will have important effects on network formation.

Candidate entrepreneurism occurs under conditions of poor party enforcement and high intra-

\(^1\) Trust, as I consider it, is when an actor takes another actor’s interests into account when she acts, and holds expectations that other actors will do the same (Farrell, 2009).
party (and interparty) competition (Samuels, 2008). Because Brazil is a case of few rules to enforce discipline within the party, candidates often work to create their own brands rather than follow the party line. Candidates also construct their own channels of information exchange with partisans of their choosing. Because entrepreneurial candidates eschew the overarching institutional structure of a party dictating the channels they communicate through, candidates utilize the physical and social conditions around them to form their legislative networks. They seek other candidates who are easily accessible (i.e., proximate) and similar to them. As a consequence, the personal traits of such legislators provide strong motivation for forming legislative links.

Similarity of traits and characteristics, such as age, education, and experience provide the basis for forming social and professional working relationships. Traits and characteristics go beyond the surface level - they embody experiences about stages of life, professional status, class, and life accomplishments. Shared traits and characteristics reduce uncertainty about how a potential friend is likely to act, rendering it more likely that a relationship will form (Byrne, 1971). Actors with similar traits are also more likely to trust one another (Golbeck, 2009). Shared experiences can be conduits through which other types of information can be shared, creating opportunities for information flow. As a result of these factors, members of congress should form networks based on their personal traits and characteristics.

The location of offices within a legislative setting (e.g. the congress building) should influence interactions in a mechanical fashion - those whose offices are close are simply easier to contact, and repeated interactions in the elevator or hallway make for easy relationships. Office location in Brazil is partially random - incoming deputies are assigned offices purely on their availability at the moment. While leaders typically have more choice over where their offices are located, less-experienced deputies are intermingled with deputies from other parties, states, and backgrounds as a function of chance.

Local electoral mandates produce strong pressures for legislators to coordinate with other legislators elected from the same constituency (Samuels, 2000; Lieberman, 2003). Brazil has 26 states and a federal district from which seats are awarded proportionately on the basis of the highest
voteshares. When a politician must maintain support at the state level, there is an underlying need for regional coordination among legislators from the same state (Samuels, 2000). Similar to the incentives of political parties, legislators will need to exchange information about what is demanded locally and what other politicians are willing to support. Failure to secure critical information about the expected behaviors of other politicians from the same state will result in a failure to respond appropriately (a failure to coordinate). As such, even if legislators disagree with one another, it is expected that regional constituencies should generate a high level of interaction between them.

In sum, there are party-driven and contextual factors that affect network formation in legislative settings. Party strategy should generate strong ties between partisans - including communication, socialization, and information exchange. At the same time, an entrepreneurial environment in which personal brands are important should lead to network formation related to the individual traits of the legislators - their personal characteristics and experiences. Candidates should generate their own networks in the absence of perfect party discipline. In the end, we should see both party and personal processes operating simultaneously, as they are not mutually exclusive.

2.3.3 Hypotheses

Given the incentives for parties to act collectively and therefore to coordinate and monitor their behaviors, the likelihood that two deputies of the same party develop a network tie will be higher than the likelihood that two deputies of different parties form a network tie.

The entrepreneurial and often personalistic nature of elections in Brazil will lead to network formation on the basis of personal traits and proximity. Members will tend to connect on the basis of shared experiences, traits, and proximity. Legislators of similar age levels, for example, should connect on the basis of shared experiences within their age group. Members with similar education levels will connect because they share similar knowledge and are from similar social classes. Finally, the placement of legislative offices within the congress building should create opportunities for interaction, regardless of partisanship and personal traits. The location of legislative offices, importantly, has an element of randomness. Freshman deputies are assigned offices based on what
is available when they enter the congress, and are not assigned to areas specific to their parties or states. Only later, pending availability of offices or if they are given leadership positions, are they permitted to move. Given the regional character of districts in Brazil, coordination with members of the same state should be essential to formulate policy to meet local demands.

**H1:** Legislators of the same party will be more likely to form network ties than legislators of different parties.

**H2:** Legislators with similar personal traits will be more likely to form ties than legislators with different personal traits.

**H3:** Legislators from the same state should be more likely to form ties than legislators from different states.

### 2.4 Network Analysis

#### 2.4.1 Survey Data

The primary network data come from an original interactive digital survey conducted within the Brazilian Chamber of Deputies in the summer of 2014. Between June and July of 2014, I visited every legislative office in the Brazilian Chamber of deputies, the Brazilian equivalent of the US House of Representatives.

I asked participants to fill out a survey on a tablet computer in which they were given network questions alongside a search function. The search function allowed the participants to search for the deputy offices they interact with in each type of relationship by specifying their party, state, and location in the legislature. When a participant selected a deputy office from a list produced by the search function, the survey would present an image of the ego-centric network (a network from the respondent’s own perspective) of the participant’s choices. This allowed participants to record their answers for later reference and to better understand what the office’s ego-centric network
looks like. It also had the benefit of making the survey enjoyable for the participants relative to a pen-and-paper survey.

The survey asked three questions related to communication, socializing, and information-seeking with other legislative offices. I requested participation from the office manager (chefe de gabinete), or alternatively the staff member with the most experience related to communication and cooperation between legislative offices. As such, the networks were measured at the deputy-office level as a proxy for legislator relationships.

I measured networks at the level of the deputy office for a number of reasons. First, deputies are typically only in the Chamber one day per week - on Tuesdays - when legislation is presented and debated on the floor. Second, when deputies are actually in their offices, they are typically inundated with representatives of their districts lobbying for various pieces of legislation. Third, office managers and senior staff are frequently told to communicate or cooperate with various other offices on behalf of the deputy in her absence, so they are accustomed to representing the deputy in this capacity. Finally, even when a deputy agrees to participate in a study, they often pass off the responsibilities to their office managers or low-ranking staff.

**Survey Wording: Communication Network**

Thinking about the last legislative year, which deputy offices did your office frequently communicate with about legislative issues? Please select the names of the deputies whose offices you most interacted with using the selectors to the side. ²

**Survey Wording: Social Network**

Thinking about the last legislative year, which deputy offices did your office frequently communicate with to socialize, converse casually, or discuss non-legislative issues? Please select the names of the deputies whose offices you most interacted with using the selectors to the side. ³

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² Pensando no último ano legislativo, quais são os gabinetes de deputados vocês se comunicavam frequentemente sobre assuntos legislativos? Por gentileza, selecione os nomes dos deputados cujos gabinetes que vocês mais interagiam usando um dos seletores ao lado.

³ Pensando no último ano legislativo, quais são os gabinetes de deputados vocês se comunicavam frequentemente para socializar, conversar casualmente, ou falar sobre assuntos não legislativos? Por
Survey Wording: Information-seeking Network

Thinking about the last legislative year, which deputy offices did your office frequently seek to resolve questions about legislative proposals or procedures? Please select the names of the deputies whose offices you most sought using the selectors to the side.⁴

I achieved a 25% response rate across the entire Brazilian Congress in the 2014 survey. Without further data collection, I am left with what may be described as a ‘sample’ of a network. However, from a methodological perspective, one cannot typically sample from a network, because a network is a single unit composed of vertices and edges representing a pattern of relations. Missing data are highly problematic in networks, because ties are mutually dependent or endogenous, and without adequate statistical treatment there is bias in coefficients toward zero (Burt, 1987). In addition, missing data can cause inconsistency in estimates of centrality (Kossinets, 2006). In order to solve this problem, I supplement linkages in the 2014 data with a survey from 2013 that asked nearly the same questions using a pen-and-paper survey⁵. This approach increases the response rate to 45%. I then employ multiple imputation to restore the missing data in the remainder of the data using methods designed for graph data (Hunter et al., 2008).

In figures 2.1 and 2.2, I plot the average number of incoming and outgoing connections by party in each type of network. In each graph, the parties are ordered from the most communication links to the least (dark bars). In figure 2.1, the parties with the most incoming communication links are the Communist Party of Brazil (PCdoB), the Worker’s Party (PT), and the Green Party (PV). The ranking is slightly different for outgoing communication links, with the Socialist and Freedom Party (PSOL), Party of National Mobilization (PMN), and the National Ecological Party (PEN). For social networks, the parties with the most incoming links are the PSOL, the PT, and the PCdoB, the Worker’s Party (PT), and the Green Party (PV). The ranking is slightly different for outgoing communication links, with the Socialist and Freedom Party (PSOL), Party of National Mobilization (PMN), and the National Ecological Party (PEN). For social networks, the parties with the most incoming links are the PSOL, the PT, and the PCdoB, the Worker’s Party (PT), and the Green Party (PV). The ranking is slightly different for outgoing communication links, with the Socialist and Freedom Party (PSOL), Party of National Mobilization (PMN), and the National Ecological Party (PEN).
the PPS, and the most outgoing links are the PEN, the PSOL, and the Popular Socialist Party (PPS). For information-seeking, the parties with the most incoming links are the Brazilian Worker’s Party (PTdoB), the PEN, and the PSOL, and the most outgoing are the PTdoB, the PEN, and the Social Christian Party (PSC). Interestingly, many of the most highly connected parties are the small-medium sized parties, rather than larger more powerful parties. While the successful Worker’s Party has a relatively high number of linkages, the other large Brazilian parties - the Brazilian Democratic Movement (PMDB) and the Brazilian Social Democracy Party (PSDB) - have below average numbers of linkages.

2.4.2 Deputy Data and Brazil’s System

I gathered additional data from the Brazilian Chamber website on the personal traits of congressional deputies (http://www2.camara.leg.br/) using web scraping techniques. I wrote a scraping tool that crawled the web pages of Brazilian Congressional deputies and extracted information that I did not ask in my survey, but is publicly available. From the biographical pages of each deputy, I collected each deputy’s age, number of mandates (to the congress), education (divided into categories as pre-high school, high school, college, and above college), political party, home state, and office floor. The deputies in my sample report roughly the same distribution of education and levels of Chamber experience (number of legislative mandates) as in the Chamber of deputies.

Brazil has a strong federal system composed of 26 states (27 constituencies including the federal district). Each state elects some number of deputies approximately commensurate with its population size. District magnitudes vary in size from eight to seventy deputies. In elections, voters have the option to cast a ballot for a person or for a party, but Brazil has a fairly low rate of party voting (Samuels, 2006). Voting lists are open, their order being determined by the vote totals of the candidate, rather than the party. Despite the importance of the individual in this system, Brazilian law requires candidates to run under a party label, and must have affiliated with the party for at least a year. However, partisans frequently take advantage of their ability to switch
parties. The personalistic nature of Brazil’s system render it a useful case for study on network formation, because the institutional makeup of Brazil incentivizes deputies to form networks to gather information and support for personal success.

2.4.3 Model and Results

Exponential Random Graph Models (ERGMs) are used to understand why relationships (ties) of various types form. ERGM’s provide parameter estimates via maximum likelihood techniques similar to commonly used approaches such as logit or probit. It is possible to think about a simplified ERGM model that is identical to a model for a typical binary outcome such as a logit or probit model to estimate the presence of a single network tie. Logit and probit models determine the most likely parameters given the observed data, but assume that each event is independent of all others. The major substantive difference with ERGM’s is that ERGM’s can incorporate complex interdependence among the ties, such as the tendency for ties to be reciprocal or transitive between actors. There are many structural features of the network that may be modeled, but of importance for my question here is transitivity, or the tendency for ‘friends of friends to become friends’. If members trust one another’s judgment, they are likely to trust their choice in friends and forge ties with the same people (Carpenter, Esterling and Lazer, 2004).

The ERGM framework treats an observed network as one realization among a set of possible realizations of the network. Given any set of coefficients, ERGM’s render it possible to calculate the probability of an observed graph. However, unlike logit and probit, it is more difficult to determine the distribution of possible graphs. To do this, ERGM’s make thousands of draws to simulate the distribution of possibilities that could have been observed. Using this technique, it is possible to create marginal distributions of the coefficients from which it is possible to make inferences.

The ERGM equation is

\[ P_{\theta,y}(Y = y|X) = \frac{\exp(\theta^T g(y, X))}{k(\theta, \gamma)}, y \in \gamma \]  

(2.1)
where $\theta$ is a vector of coefficients to be estimated, $g(y)$ is a vector of statistics from an adjacency matrix, and $k(\theta, \gamma)$ is a normalizing constant which defines all possible networks, $\gamma$. The log-odds of a tie is given as

$$
\text{logit}(Y_{ij} = 1) = \theta^T \delta[g(y, X)_{ij}]
$$

(2.2)

$\delta[g(y, X)_{ij}]$ is the change in network statistics $g(y, X)$ produced when $Y_{ij}$ goes from 0 to 1. This ‘changescore’ allows one to calculate the conditional log-odds of the network given any value of $g(y, X)_{ij}$ (Hunter et al., 2008; Goodreau, Kitts and Morris, 2009).

I use ERGMs to examine hypotheses related to the formation of multiplex ties among legislators in the Brazilian Chamber of Deputies. I test whether tie formation is driven by the partisanship versus the personal traits of deputies. I examine the relative strength of partisanship in comparison to experience, age, education, physical proximity within the congress building, and transitivity (whether friends of friends also become friends) on tie formation.

[Table 2.1 about here]

Taken together, personal traits exert effects that are just as strong or stronger than partisanship on network formation. First, I find that partisanship exhibits the strongest single effect on tie formation across all three types of networks. Second, I find that personal traits, taken together, also exhibit very strong impacts on tie formation among legislators, when controlling for the effects of partisanship. I find that age, education, proximity, home state, and transitivity exert strong effects on tie formation relative to the effect of partisanship across all network types. State has particularly strong effects on tie formation, such that it is nearly as strong as partisanship. Interestingly, many of the effects are roughly consistent across the various types of networks under study, suggesting that different types of relationships are associated with similar causal underpinnings.

In table 2.1 I present the results of three ERGM models, one for each type of network, estimating the effects of all partisan and personal covariates of interest.

Partisanship exerts the single strongest effect on all types of relationships of all the covariates.
in the models. Despite all the tendencies for entrepreneurism in the Brazilian context, partisanship stands as the single largest correlate of network formation across all three types of relationships under study here - leading to dense intraparty association. Relationships between members of the same party are nearly 7.5 times more likely than relationships among members of different political parties. In addition, this effect is not purely due to leaders interacting with the rank-and-file. Many of the ties formed between co-partisans are between rank-and-file members, rather than party leaders and rank-and-file members.

In figures 2.3, 2.4, and 2.5, the effect of partisanship is more directly observable. The different colors in these images represent different parties, and the size of the nodes reflects their degree centrality (the number of incoming links plus the number of outgoing links). It is visible that parties tend to cluster together, with the most central cluster in all the networks being the Worker’s Party (Partido dos Trabalhadores).

While partisanship is strong, the combined effects of age, education, and proximity suggest that legislators work, socialize, and seek information from one another based on similarity of traits among them. Legislators of the same age are 14% more likely to form a communication tie compared to legislators of different ages (for every standard deviation difference between legislators in age (approx. 11 years)). An even stronger sorting effect occurs for social ties and information-seeking ties, as legislators of the same age are 22% more likely to form ties than legislators of different ages.

For education, legislators of the same education level are roughly 14% more likely to form a communication tie relative to those of different education levels. By contrast, in social relationships, legislators of the same level of education are 21% more likely to form a tie compared to legislators of different education levels, all else constant.

For proximity, the location of legislators in the congress building is strongly correlated with tie formation. Two legislators who have offices on the same floor in the congress building are 90% more likely to form communication ties compared to legislators with offices on different floors, roughly twice as likely to form social ties, and approximately 90% more likely to form information-seeking
If both legislators are in non-leadership positions, they are less likely to form communication relationships and information-seeking relationships than if one of them is a leader. Similarly, leaders are more likely to connect with other leaders. Two deputies that are leaders are roughly 50% more likely to form all types of social relationships compared to leader-non-leader relationships.

Legislators from the same state are more likely to form all types of relationships than legislators from different states. Legislators from the same state are roughly 7 times more likely to form all types of relationships than legislators from different states.

2.4.4 Conclusion

This chapter has important implications for policy vis-a-vis cooperation and coordination among legislators. These results suggest that even in fragmented, personalistic contexts, legislators tend to sort into social networks based on party membership above all other factors individually. Party membership tends to foster dense intraparty interactions in a variety of contexts, even controlling for the tendency for leaders to communicate information to the rank-and-file. However, the right combination of personal traits can overpower the effects of partisanship.

The combined effect of personal characteristics and local mandates is enough to drown out the effect of partisanship in network formation. This suggests that party efforts to generate horizontal accountability can be undermined by the right combination of counter-incentives for a particular deputy. That is to say that proximity and similar personal traits drives deputies to associate and possibly even coordinate with one another. However, to prove that coordination on the basis of personal traits actually occurs, we would need to observe the voting behaviors of deputies as a function of their personal networks. In another chapter, I take on this task. I predict co-voting behavior among deputies on the basis of their individual communication, social, and information-seeking networks. I also examine whether or deputies utilize networks to build trust and reputations by looking at the multiplicative effect of network membership on co-voting behavior.
2.5 Tables and Figures
Incoming Links by Party

Figure 2.1: A barplot of the average incoming links by party.
Figure 2.2: A barplot of the average outgoing links by party.
Figure 2.3: A projection of the communication network. The projection algorithm is the Fruchterman-Reingold, and places central actors closer to the center of the projection. Node size is determined by $(\text{Indegree} + \text{Outdegree})^{\frac{1}{2}}$. 
Figure 2.4: A projection of the social network. The projection algorithm is the Fruchterman-Reingold, and places central actors closer to the center of the projection. Node size is determined by \((\text{Indegree} + \text{Outdegree})^5\).
Figure 2.5: A projection of the information-seeking network. The projection algorithm is the Fruchterman-Reingold, and places central actors closer to the center of the projection. Node size is determined by \((\text{Indegree} + \text{Outdegree})^{\frac{1}{2}}\).
Table 2.1: Exponential Random Graph Models

<table>
<thead>
<tr>
<th></th>
<th>Communication</th>
<th>Social</th>
<th>Information-seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edges</td>
<td>$-5.452^{***}$</td>
<td>$-5.720^{***}$</td>
<td>$-4.854^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
<td>(0.109)</td>
<td>(0.161)</td>
</tr>
<tr>
<td>$\Delta$ Mandates (i,j)</td>
<td>$-0.031$</td>
<td>$-0.025$</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.023)</td>
<td>(0.036)</td>
</tr>
<tr>
<td>$\Delta$ Age (i,j)</td>
<td>$-0.012^{***}$</td>
<td>$-0.019^{***}$</td>
<td>$-0.018^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.004)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Same Education Level</td>
<td>0.131**</td>
<td>0.188**</td>
<td>$-0.035$</td>
</tr>
<tr>
<td></td>
<td>(0.064)</td>
<td>(0.079)</td>
<td>(0.116)</td>
</tr>
<tr>
<td>Same Floor</td>
<td>0.657***</td>
<td>1.254***</td>
<td>0.659***</td>
</tr>
<tr>
<td></td>
<td>(0.091)</td>
<td>(0.088)</td>
<td>(0.156)</td>
</tr>
<tr>
<td>Both Non-leadership</td>
<td>$-0.371^{***}$</td>
<td>$-0.160^*$</td>
<td>$-0.725^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.084)</td>
<td>(0.140)</td>
</tr>
<tr>
<td>Both Leadership</td>
<td>0.486***</td>
<td>0.367***</td>
<td>0.453***</td>
</tr>
<tr>
<td></td>
<td>(0.095)</td>
<td>(0.124)</td>
<td>(0.141)</td>
</tr>
<tr>
<td>Same State</td>
<td>1.980***</td>
<td>2.106***</td>
<td>1.677***</td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.072)</td>
<td>(0.134)</td>
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<tr>
<td>Same Party</td>
<td>2.144***</td>
<td>1.819***</td>
<td>2.312***</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.086)</td>
<td>(0.138)</td>
</tr>
<tr>
<td>Transitivity</td>
<td>0.457***</td>
<td>0.569***</td>
<td>0.270**</td>
</tr>
<tr>
<td></td>
<td>(0.067)</td>
<td>(0.079)</td>
<td>(0.111)</td>
</tr>
</tbody>
</table>

Akaike Inf. Crit. 7,983.019 6,547.308 2,011.893
Bayesian Inf. Crit. 8,076.473 6,640.262 2,087.326
N 84,575 111,525 19,339

*Note:* $^*p<0.1; ^{**}p<0.05; ^{***}p<0.01$
Tit-for-Tat? Analyzing Party Recruitment Strategies Using Network Models

Do party leaders secure benefits for their parties by strategically recruiting partisans from rivals? Scholars typically approach this question at the level of the individual, rather than at the level of the party. However, it is known that parties recruit and attract members to increase their power in legislatures. I argue that such strategies are endogenous to the strategies of rival parties. Developing a tit-for-tat logic of party-switching, I use network-analytic techniques to reveal that parties engage in tit-for-tat (reciprocal) and transitive (partner of partner) strategies of member recruitment.
3.1 Introduction

By now, it is accepted wisdom that strong parties are essential for democracies to function properly. Parties are transaction points at which votes are converted and sent up the chain to governing/policymaking bodies. Parties act as bridges between the state and the electorate. For this reason, parties are necessary components of robust democratic institutions. Consequently, their instability constitutes a breakdown of crucial state-electorate linkages. Party-switching is one way in which instability manifests. Party-switching weakens party coordination with voters, because party leaders have more difficulty shaping the behaviors of legislators (Heller and Mershon, 2009). Party-switching changes the nature of political parties and their roles in political representation.

Scholars have gained substantial insight into what drives politicians to abandon their parties and join others (Beers, 2004; Heller and Mershon, 2005; Desposato, 2006; Desposato and Scheiner, 2008; Barrow, 2007). Yet, research in this area is lacking an explanation for why some party systems appear to be ‘stuck’ in patterns of party-switching. As we will see, for a long period of time Brazil was caught up in a pattern of high frequency party-switching that eludes conventional explanations and assumptions. The reason for this is that no research has systematically examined endogenous patterns of party-switching related to the efforts of party leaders to expand their seatshares relative to their rivals. In this chapter, I take up the issue of endogenous party-switching, elaborate a collective action problem inherent in it, and provide innovative network techniques to analyze it.

Brazil provides unique insight into the problem of party-switching. In Brazil, few rules prevented legislators from switching parties until 2007. For over a decade and a half, partisans switched parties at very high frequencies in comparison to Brazil’s Latin American neighbors. Finally, in 2007, a group of opposition parties filed suit against the Brazilian government about the practice of party-switching. The lawsuit followed on the heels of 16 years of persistent party-switching, in which over 36% of lower-house legislators switched parties. A new law was imposed that forbids members of Congress of switching parties during a legislative session (Laws for the Lawmakers, 2007; Eleitoral, N.d.). The lawsuit and the ensuing ban highlight the central puzzle
that motivates this chapter - why did party-switching remain so high and so persistent for so long?

Table 1: Party-switching Over Time

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Switches</td>
<td>139</td>
<td>271</td>
<td>227</td>
<td>288</td>
<td>347</td>
<td>93</td>
</tr>
</tbody>
</table>

In order to explain the persistence of party-switching over time, I contend that scholars must look not only to the strategic actions of legislators, but to the strategic actions of party leaders. I contend that it is individually rational for party leaders to aggressively recruit from party rivals in order to maximize the flow of seatshare-dependent goods that flow to the party. Consequently, parties become stuck in ‘tit-for-tat’ and ‘neighbor-of-neighbor’ patterns of recruitment across time. I further argue that tit-for-tat and transitive party-switching generate a collective action problem for party leaders as they see short-term individual gains from recruiting but neglect the long-term collective losses to the party brand. I develop this logic and employ an innovative methodology involving the application of network models (RSiena and ERGM models) to over 20 years of party-switching data from Brazil to test it. The results of the models support the notion that party-switching has evolved toward endogenous tit-for-tat and transitive patterns between parties over time.

This chapter proceeds in five further parts. In the section immediately following this, I review existing literature on party-switching. In the third section, I present my theory of tit-for-tat and transitive recruitment. In the fourth section, I present my empirical expectations based on existing theory and my theory. In the fifth section, I present my statistical model and results. In the sixth section, I discuss theoretical implications and conclude.

3.2 Existing Explanations

Why do members of the legislature switch parties? By the same token, what leads parties to recruit from some political parties and not others? Political parties can influence members to
switch parties by offering incentives to lure legislators to their banner (Kato and Yamamoto, 2009). Members, for their part, choose the best ‘deal’ in terms of the incentives they will have access to by switching parties (Desposato, 2006). Electoral rules can affect party-switching directly through law stipulating partisan affiliation, or indirectly through party discipline (Desposato, 2006; Heller and Mershon, 2005). In what follows, I elaborate the state of the current literature and my contribution.

Party-switching is most often examined as an individual-level phenomenon (Aldrich and Bianco, 1992; Heller and Mershon, 2005; Desposato, 2006; Desposato and Scheiner, 2008). Scholars have examined the likelihood of switches based on the initial conditions of the legislator and the characteristics of the potential parties into which she could switch. In so doing, scholarship has lent significant insight into how individual legislators make decisions about party-switching. From various strands of research, scholars now know that party-switching is neither aberrant nor anomalous (Heller and Mershon, 2009). Conventional wisdom that partisans are mostly loyal has been revised by recent research demonstrating that where party-switching is rare, its absence indicates the success of parties and/or constitutional rules (Heller and Mershon, 2009).

Party resources frequently drive party-switching, and there is considerable evidence consistent with this explanation. Potential switchers choose from an array of different organizational, strategic, and financial/resource features available from each party, and choose the party that gives them the most of these goods. Beers (2004) looks at incentives of party switching at the local level - among mayors in Romania. Beers (2004) asserts that dependence upon the government for resources can render local officials dependent on the party in power, which creates incentives to switch to the president’s party. Desposato (2006), exploring the Brazilian context, finds that partisan switching is primarily a function of expected future electoral gains, ideology, and access to distributive resources. Desposato (2006) also finds that partisans with higher vote shares experience higher transaction costs for switching than their lower vote share colleagues. In Brazil’s Open List PR party system, the minimum number of votes to win a seat in the Chamber of Deputies varies across parties and states, so parties with lower minimums can use this as a good to attract talented members (Desposato, 2006).
Electoral systems are another explanation for party-switching. Barrow (2007) describes how the use of lists controlled by the party give parties the ability to control entry into the party, but using them for the purpose can also limit the ability to court candidates that are in search of a nomination. Similarly, Heller and Mershon (2005) explore the determinants of party switching in the Italian Chamber of Deputies, and find that the decision to switch is related to the type of electoral rules governing political competition.

One area that has garnered too little attention is the role of party leaders in influencing the process of party-switching (Heller and Mershon, 2009; Kato and Yamamoto, 2009). Explanations of party-switching tend to focus on the goods that entice legislators to switch parties. Studies assume that such enticements are exogenous predictors of party-switching. However, party leaders seek to maximize their relative seat shares for various reasons; including legislative voting power and the allotment of public funds and committee assignments. Public political funds and legislative committee assignments are typically dependent upon the proportion of seat shares that a party holds in the legislature (Kato and Yamamoto, 2009). As a result, analyses of party-switching must treat party-switching as endogenous to the enticements of switchers. Party leaders may offer enticements for party-switchers based on real and expected changes in allotments of goods. Consequently, existing analyses may suffer severe bias with regard to the effects of enticements on party-switching, owing to the fact that enticements will not be fixed across samples.

Substantively, current literature lacks an explanation and understanding of endogenous party-switching patterns, and as a consequence cannot explain persistently high levels of party-switching over time; or the spread of the practice to different parties. The literature in this area describes how party leaders have a vested interest in maintaining seat shares and a legislative brand (Heller and Mershon, 2009), but I argue that these dual goals have different time horizons, leading to divergent actions under expectations of high and low party-recruitment by rival parties.

In sum, research on party-switching has revealed numerous determinants of party-switching. Switches grant members access to scarce financial and electoral goods of various types. Electoral rules sometimes add to the set of resources that parties may offer members, but they also alter
the capabilities of parties to mitigate switching behavior. Few existing models, however, take
into the account the inherent endogeneity in the switching process. Few studies explain why
party-switching would remain a persistent phenomenon or why new parties may adopt aggressive
recruitment strategies. Scholars have pointed out that incentives for party leaders to expand the
seatshares leads parties to aggressively recruit from rivals (Kreuzer and Pettai, 2009; Kato and
Yamamoto, 2009; Heller and Mershon, 2008), but the relational nature of this process has not been
examined either theoretically or empirically. The point of departure for this chapter is to focus
on party leaders rather than predominantly on members, and draw out a strategic logic for why
switching persists across time, and why outside intervention would be required to break the cycle
of party-switching in some cases.

3.3 Tit-For-Tat and Transitive Recruitment

Taken together, the literature on party-switching leads us to the conclusion that party-
switching and partisan recruitment are two sides of the same coin. Yet, this logic needs further
development of its theoretical and empirical implications. Partisans seek the ‘best deal’ in terms
of ideological affinity and resources of the parties they choose, while party leaders seek the ‘best
talent’, including partisan ideological similarity and talent of the partisans they recruit. The ar-
gument which follows focuses on the calculus of party leaders, and ignores partisans for the time
being. I assume that party leaders have specific incentives relating to the size and composition of
their parties. I, like other authors, also assume that party leaders can recruit and sometimes even
expel members if they so choose (Kato and Yamamoto, 2009; Heller and Mershon, 2008, 2009).

Party leaders have incentives to maximize the benefits flowing to their parties and to minimize
the costs. Such benefits include party legislative voting power, access to committee assignments,
and access to public election funds. As scholars such as Carey and Shugart (1995) have asserted,
the career trajectories of party leaders depend on the fate of the party as a collective entity (419),
so leaders have incentives to shape their parties actively. However, the open-list proportional rep-
resentation system in Brazil gives party leaders the fewest number of tools to punish defection and
reward loyalty. When it comes to the composition of the party, party leaders can use recruitment
strategies to shape their parties and maximize the goods flowing to them.

Because parties’ seat shares often determine committee assignments, access to public election funds, and bargaining power, there are significant benefits to any recruitment strategy that raises seat shares. The gain (loss) of a member means the gain (loss) of these important benefits flowing to the party. At least three separate sets of scholars have suggested that party leaders play an important role in recruitment. Kreuzer and Pettai (2009) remark on the opportunistic behavior of party leaders in Germany to surpass specific seat thresholds, stating 'A party that is a few seats short of a parliamentary majority will coax an opposition deputy to jump ship by either offering some bribe or promising a cabinet post.' (276). Similarly, Kato and Yamamoto (2009) assert that the institutional thresholds that render a party capable of decisive political victories in the legislature drive party leaders to absorb members from opposition parties (240). Finally, party leaders will recruit and expel members of parties in order to move party ideal points (Heller and Mershon, 2008). Hence, party leaders are not passive in the party-switching process, they actively shape the incentives of legislators.

The allotment of goods based on seat shares creates a relative gains problem for party leaders. Faced with increasing relative seat shares of rival parties, party leaders must find ways to raise their own party’s seat shares. The problem is even more pressing when legislators are recruited by a rival party. In such cases, the best response of a party leader is to compensate by recruiting legislators from the same rival that recruited its members. By targeting competitors’ members, a party that suffers member loss will simultaneously recover its seat share and the relative power balance prior to the loss. Given the relative gains of such aggressive recruitment, parties that can recruit more members than they lose will be more successful than parties that maintain membership or suffer losses. This is especially true in a context where members are more ‘fluid’, or tend to change parties more frequently. Where members are more fluid, it increases the expected gains to a leader of taking on an aggressive recruitment strategy. In short, the more switching that occurs, the more party leaders seek to shape it for their own ends.

Following from the logic that party leaders want to maximize seat shares, tit-for-tat and
transitive recruitment of members are rational strategies under various conditions. Let’s imagine there are three parties, two parties with \(m\) seats and one with \(m + 1\) seats. The party with \(m + 1\) seats ranks the highest among all the parties, and so enjoys all the spoils of this position. This means, however, that any party can secure a top ranking by recruiting a single member from the party with \(m+1\) seats. Let’s imagine that one of the smaller parties is able to recruit from the party with \(m + 1\) seats. This implies a relative change from the status quo for the dominant party, which must give up its spoils to its rivals and take up a more minor position. Assuming that parties value the status quo more highly when they are the once-dominant party, the once-dominant party may seek to regain its position relative to its competitors by enticing a member to switch. But there are a few different possibilities - it can recruit from the same party to which it lost a member, or recruit from another, or do nothing. Without recruiting from the same rival that poached its member, the now-smaller party would have to secure \(m + 2\) in order to regain its position as the dominant party. By doing nothing, it remains a minor-ranked party mourning the loss of its position. If it recruits from the party that poached its member, it only need to secure \(m + 1\) members, because the relative loss by the rival will again put it in the dominant position. If I can further assume that the cost of securing \(m + 2\) is greater than that of securing \(m + 1\), or that recruitment costs are fixed, then all else equal, the \(m + 1\) recruitment strategy yields a higher payoff. This logic generalizes to a system where the party with \(m + 1\) seats is ranked second against a party with \(m + 2\) seats - the loss of a single member to a rival still renders a tit-for-tat response optimal.

There are principally three reasons for party leaders to recruit members from parties from which their peers also recruit members (transitive recruitment). First, it broadens the talent pool (of legislators) available to the party, so they can more effectively increase its seat share. Second, members from a peer’s rival are likely to be more similar to it than parties with whom it bears no relationship whatever. Third, transitive recruitment against a third actor increases the seat share of the party relative to both competitor parties, and targets a competitor that could otherwise pose a threat. In a competitive member trading environment, party leaders should then seek to trade members with parties who their peers also trade with, creating a tendency toward transitivity over
3.3.1 The Collective Costs of Recruitment

Tit for tat party-switching is a collective action problem in which party leaders cannot impose discipline on their members from within unless all other parties agree to do the same. A party leader may impose exit costs on members in order to retain their loyalty, but they cannot be sure that rival parties will not offer higher incentives to switch. Similarly, parties may attempt to limit incoming switches by imposing high membership costs, such that entry into the organization is costly. However, by doing so a party makes its rivals look more attractive as switching destinations, and so a party may lose out on the opportunity to gain the seat brought by the switching legislator.

There are individual and collective costs associated with recruitment. Recruitment from rival parties hampers efforts to build coherent party labels, because members from competing parties will be associated with different party labels and different ideological positions (Heller and Mershon, 2009). The presence of members from previously competing parties may be confusing for voters for this reason, causing frustration and defection from the party. The new recruits may have heterogeneous ideological leanings in comparison to the existing membership, so new recruits may muddy the policymaking waters. Heterogeneity in ideology will also make it more difficult to reach compromise within the party, raising the possibility of schisms, and threatening party unity. Finally, it is costly to recruit, as parties must offer recruits some goods that make it advantageous to switch. Hence, while recruitment is advantageous for individual parties, most of the costs are collectively borne or externalized to voters. There is a collective action problem created by the lack of targeted costs to parties when they aggressively recruit from rivals.

3.3.2 Recruitment and Equilibrium

Why don’t party leaders fight to keep their affiliates and fight for others, creating an equilibrium in which very few members switch? My theory suggests that party leaders would fight to keep affiliates because they are averse to member loss. I assume that, similar to sports teams, parties
care about some members more than others, and are interested in winning. Parties will occasion-
ally trade off the gains of recruiting a highly-skilled legislator to keeping an ineffective legislator
in order to win. The value of a member who produces a wide seat margin over the competition is
more valuable than the one who produces a narrow one (Kato and Yamamoto, 2009; Kreuzer and
Pettai, 2009). Changing levels of talent over time destabilize a no-switching equilibrium in favor
of one in which party leaders continuously try to optimize their talent profile relative to all other
parties, producing ongoing switching patterns. Small differences in seat share may also produce
incentives to invest heavily in gaining an additional seat to produce a plurality; which should also
lead to ongoing switching. The value of a member who edges the party to a plurality seat share is
far higher than the one who produces a plurality plus or minus one. Splurging to reach a plurality
in the short term depletes party funds, which makes retaining members more difficult in the future.

It is important to clarify that I assume that party leaders adapt recruitment strategies in
the face of expectations of future switching levels. The strategies leaders adopt are contingent on
the context they are in - specifically whether switching is relatively high or not. High switching
produces expectations of high future switching patterns, which produces increased recruitment
tactics, which subsequently reproduces expectations of future switching. The process is assumed
to be partially endogenous on the basis of expectations of future behavior.

Adapting tit-for-tat and transitive recruitment strategies, I argue, has two substantively
important effects. First, it causes existing switching patterns to persist by increasing expectations of
future switches. Second, adapting recruitment strategies removes an element of randomness among
switches. Whereas early switches may have occurred somewhat arbitrarily between parties, this
theory asserts that switching evolves toward a non-random pattern of reciprocity and transitivity
over time.

In sum, switching and recruitment are two sides of the same coin. Members seek to optimize
their positions vis-a-vis particularistic and non-particularistic incentives via switching, and party
leaders seek to optimize their share of the government resources pie via recruitment. At the level
of the individual, we see ‘switching’, but at the level of the party, where this analysis takes place,
we see ‘recruitment’. In the next sections, I draw some empirical implications from the foregoing theory, then examine descriptive and inferential statistics related to switching/recruitment.

3.4 Empirical Implications

I now turn to the empirical implications of the chapter. I derive three main hypotheses to test. These relate to tit-for-tat recruitment (embodied in the network measure of reciprocity), transitive recruitment (embodied in the network measure of transitivity), and the institutionalization of such strategies.

3.4.1 Tit-For-Tat and Transitive Recruitment

In order to combat loss, party leaders try to attract members from parties into which its own members have switched, in order to balance the asymmetry that results from member loss.

Moving from a two-player to multi-player game, party leaders seek to optimize the talent profile of their party not only relative to one rival, but also to sets of rivals. Transitive recruitment against an indirect rival limits the recruitment opportunities of direct partners and raises the seat share relative to two rivals simultaneously, so it is advantageous for two ‘indirectly connected’ parties to recruit competitively from one another. An ‘indirect partner’ in a network framework is a connection that exists through another partner, such as a ‘friend of a friend’ in a friendship network.

H1: Parties leaders will demonstrate a tendency for tit-for-tat (reciprocal) recruitment.

H2: Parties will demonstrate a tendency toward transitive recruitment, or recruitment from parties with whom their direct partners have recruited.

3.4.2 Institutionalization

Central to the concept of institutionalization is the idea that party strategies become stable over time - they become relatively predictable and consistent. Institutionalized party sys-
tems have stable patterns of party competition that change only incrementally. ‘Un’ or ‘under’-institutionalized party systems are ones in which party strategies and tactics are inconsistent from election to election. In such systems, the parameters of competition are unclear to parties, either due to inexperience, volatile voting patterns, or domestic tumult. Trends in institutionalization can be examined by looking at the relative changes in the number and opportunities for change in recruitment behavior from legislature to legislature.

**H3A:** If switching is an institutionalizing process, the rates of party-switching will tend to increase, stabilize over time, and switching behavior will become more predictable as time goes on.

**H3B:** Rules imposed on parties from outside should limit the occurrence of reciprocal and transitive switching.

### 3.5 Modeling Strategy

#### 3.5.1 Origin and Construction of the Data

In order to test the hypotheses, data were collected from the Brazilian Chamber of Deputies, which contributed data on all party switches for all legislatures between 1987 and 2010\(^1\). Data on ideology comes from Baker and Greene (2011); Wiesehomeier and Benoit (2009); Coppedge (1998); Pop-Eleches (2009). I use stochastic actor-based (SAB) models for longitudinal network data and Exponential Random Graph Models (ERGM’s) to test for tit-for-tat (H1), transitivity (H2), and institutionalization (H3).

#### 3.5.2 Descriptives

In order to get a general sense of the party-switching network, I produced a table of the most

---

\(^1\) After first examining the prevalence of switches between parties, I converted the data from valued network data into binary data, similar to what the authors of the RSiena package do themselves with the Van De Bunt data. While this had the disadvantage of removing information that can be utilized in estimating the parameters, it has the benefit of simplifying the data and reducing the chances that the results are due to one or two heavily-trading parties.

\(^2\) There were two forms of missingness in the data. The first was members without parties, and these members are simply denoted as independents. The second is parties that come into and out of existence. In line with Snijders (2001), for the RSiena models I fill the links for parties that do not yet exist or who have exited as having ‘structural zeros’, in that they are incapable of producing a tie. See appendix for more description of missingness.
active switching parties for each time period. The set of all parties that have occupied the top spot for outgoing switches are the PMDB, the PTC, the PSDB, independent members (denoted S.PART), and the PFL/DEM. The set of all parties that have occupied the top spot for incoming switches are the PFL/DEM, the PSDB, and the PR. In general, the parties that have been ranked first in incoming switches and outgoing switches consistently rank in the top five positions across all time periods. This suggests that there are a small number of highly active parties that dominate central positions in the network across time. See table 2.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Out-degree</th>
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<th>Rank</th>
<th>Rank</th>
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</tr>
</thead>
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<tr>
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<td>DEM</td>
<td>PL</td>
<td>PDC</td>
<td>PDS</td>
</tr>
<tr>
<td></td>
<td>In-degree</td>
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<td>PDT</td>
<td>PDC</td>
<td>PSC</td>
</tr>
<tr>
<td>49th</td>
<td>PTC</td>
<td>PDT</td>
<td>PMDB</td>
<td>S.PART</td>
<td>DEM</td>
</tr>
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<td>PSDB</td>
<td>PTB</td>
<td>PP1</td>
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<td>PP</td>
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<td>PP</td>
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<tr>
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<td>PP</td>
</tr>
<tr>
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<td>DEM</td>
<td>PST</td>
<td>S.PART</td>
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<tr>
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<td>PTB</td>
</tr>
<tr>
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<td>PRB</td>
<td>PMDB</td>
<td>PSC</td>
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<td>DEM</td>
<td>PMDB</td>
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<td>S.PART</td>
</tr>
<tr>
<td></td>
<td>In-degree</td>
<td>PR</td>
<td>PRB</td>
<td>PMDB</td>
<td>PSC</td>
</tr>
</tbody>
</table>

How stable are switching patterns? The volatility of the network is substantively important for understanding the institutionalization of switching patterns. Network correlation measures

---

3 The volatility of the network also has methodological importance for the SAB model.
4 Low Jaccard coefficients have methodological implications for certain statistical models of longitudinal network data. In particular, Jaccard coefficients can signal a failure of actor-based network dynamic model assumptions (the
indicate whether some level of stabilization is occurring in patterns of recruitment/switching. I produce these correlations in table 3 under the column labeled ‘Jaccard Coefficient’. The correlations suggest that recruitment/switching is not a passing phenomenon, but one that persists across legislatures. Future levels of recruitment/switching are predictable on the basis of current patterns. The network correlation method I use here, the Jaccard coefficient, is a measure of the correlation between networks as a function of the number of recruitment ties that have been repeated divided by the number of possible recruitment combinations. More formally, it gives \( \frac{N_{11}}{N_{11} + N_{10} + N_{01}} \), where \( N_{11} \) gives the number of recruitments between parties that previously exchanged members, \( N_{10} \) gives the number of parties that previously exchanged members but ceased, and \( N_{01} \) gives the number of recruitments between parties for the first time. Substantively, a low Jaccard coefficient tells us that rapid changes occur in switching patterns over time, while a high Jaccard coefficient tells us that switching patterns tend to be predictable over time based on prior patterns.

To get a sense of network stabilization, I look at changes in switching prevalence across time. Specifically, table 3 (titled ‘Network Changes Between Periods’) gives the number of parties who did not exchange members (denoted 0\(\implies\)0), the number of switches between parties that did not previously exchange members (denoted 0\(\implies\)1), the number of exchanges that ceased (denoted 1\(\implies\)0), and the number of exchanges for the second or more time (denoted 1\(\implies\)1, indicated repeated switches). So, between the 48th legislature (1987-1991) and the 49th legislature (1991-1995), there were 99 switches for the first time, 40 exchanges ceased, and 22 for the second or more time. The most new exchanges occurred between the 48th legislature (1987-1991) and the 49th legislature (1991-1995) (99), while the most exchanges ceased between the 49th legislature (1991-1995) (99), while the most exchanges ceased between the 49th legislature

assumptions given in detail in a later section). Actor-based network dynamic models require relatively high Jaccard coefficients to sustain two assumptions: 1) that actors incrementally improve their lot by recruiting members, and 2) that the party can reach some ‘optimal’ state given a large enough span of time. Low coefficients suggest the network is chaotic and does not tend toward incremental optimization. Typically, Jaccard coefficients below .3 are deemed problematic unless the first wave is less dense than the second and there are many links (switches) established compared to terminated between these periods (Snijders, Van de Bunt and Steglich, 2010), which in fact is the case here. The density of the first legislature is .036, the second is .07, the third is .044, the fourth is .059, the fifth is .067, and the sixth is .034. Between periods 1 and 2, 99 links are established, but only 40 are terminated. If I use an alternative Jaccard calculation that is suitable for low density networks, where \( J = \frac{N_{11}}{N_{11} + N_{10}} \), I reach a satisfactory \( J = 0.35 \) correlation between periods 1 and 2. In addition, the fact that the Jaccard coefficients generally move upward over time does suggest that some stabilization is occurring, so my model assumptions are not wholly infeasible.
1991-1995 and the 50th legislature (1995-1999) (94), and the most ongoing switches can be seen between the 51st legislature (1999-2003) and the 52nd legislature 2003-2007 (61). This information can be used to calculate a measure of network correlation - the Jaccard Coefficient.

The descriptive evidence is broadly consistent with the idea that the practice of recruitment over time has become predictable between parties who engage in it. The lowest number of repeated exchanges is between the 48th and 49th legislatures (at 13.7% of recruitments repeated), and the highest number of repeated relationships is between periods 3 and 4 at 39.1%. If I exclude the sixth legislature, due to the fact that a law was passed that outlawed switching in 2007 and the network comprises a shorter time span than the others, I would see that the correlations between consecutive networks tend to increase over time. See table 3. The ‘average network distance’, which is a measure of how connected parties are as a result of switches, shows a significant decline over time, meaning that parties are more connected through switches in comparison to the past. The average number of ‘path lengths’, or single steps between parties in the network, declines between the 48th legislature (120 path lengths) and the 49th legislature (70) path lengths. However, the average distance does not decline further, as the distance remains between 70 and 90 thereafter.

Table 3: Network Changes Between Periods

<table>
<thead>
<tr>
<th>Periods</th>
<th>0=&gt;0</th>
<th>0=&gt;1</th>
<th>1=&gt;0</th>
<th>1=&gt;1</th>
<th>Distance</th>
<th>Jaccard</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>48th ==&gt; 49th</td>
<td>1561</td>
<td>99</td>
<td>40</td>
<td>22</td>
<td>120</td>
<td>0.137</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>49th ==&gt; 50th</td>
<td>1552</td>
<td>49</td>
<td>94</td>
<td>27</td>
<td>70</td>
<td>0.159</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>50th ==&gt; 51st</td>
<td>1594</td>
<td>52</td>
<td>26</td>
<td>50</td>
<td>78</td>
<td>0.391</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>51st ==&gt; 52nd</td>
<td>1565</td>
<td>55</td>
<td>41</td>
<td>61</td>
<td>71</td>
<td>0.389</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>5nd ==&gt; 53rd</td>
<td>1577</td>
<td>29</td>
<td>86</td>
<td>30</td>
<td>91</td>
<td>0.207</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

3.5.3 Stochastic Actor-Based (SAB) Models

I evaluate my hypotheses primarily using Stochastic Actor-based (SAB) models before conducting a secondary analysis using Exponential Random Graph Models (ERGM’s). SAB’s are longitudinal network models that examine changes in network configurations over time. They are
used to assess whether the patterns of switching between parties over time are unlikely to be random. SAB’s are well-suited to discern whether switching exhibits patterns consistent with tit for tat theory (reciprocity and transitivity), or exemplify a different evolving pattern (Snijders, 2001; Snijders, Van de Bunt and Steglich, 2010). I test whether party-switching patterns are affected by recruitment by rivals and by transitive recruitment by indirect rivals. Non-significant coefficients on reciprocity and transitivity variables would provide evidence against my theory.

SAB models are useful because they reveal the ‘rules’ that sustain and propagate further switching behavior. They take the first network as given, and examine changing patterns of recruitment in subsequent networks as a function of specified covariates. Thus, these models are not biased by initial conditions. They are indifferent to what causes high switching in the first place, as they take the initial conditions as given. They are thus optimal for revealing the factors that sustain high levels of switching over time.

In applying a network-analytic lens to this problem, one can define a ‘tie’ as a recruitment of a member by a party. The ‘nodes’ in the network are parties and the ‘ties’ are recruitments from other parties. A successful recruitment is a directed tie from the recruiter to the party that it has recruited from\(^5\). A ‘tie change’ occurs when a party recruits from another party for the first time or for the last time. This process is assumed to operate as a Markov process\(^6\).

This modeling approach assumes that party leaders maximize their ‘utility’ within the network - optimizing their recruitment efforts in a competitive environment - incorporating into their expected utility function the choices of the leaders of proximate parties. This means that, unlike conventional models that do not incorporate endogenous effects, a party leader’s recruitment strategy could be partly dependent on the recruitment strategies of proximate parties, and vice versa. Party leaders can have purposiveness in the ways that they recruit, such that they recruit in order to optimize their expected utility given the decisions of other party leaders (Snijders, 2001; Snijders, Van de Bunt and Steglich, 2010).

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\(^5\) I did not use a two-mode model for these data. In order to use two-mode analysis in this case, both node sets must be stable over time, which means that parties and legislators cannot enter and exit the legislature over time.

\(^6\) I discuss specifics of the model below, but leave the technical details to notes.
Within the recruitment market, party leaders want to make optimal choices about whom they recruit. By examining multiple iterations of the switching network over time, SAB’s allow the analyst to understand the rules and strategies governing this process. The coefficients given by the model can be interpreted in one of two ways - as an odds ratio giving the likelihood of recruitment versus not, or a ‘util’ approach which gives the net benefit of recruitment from a specific party versus not.

3.5.4 Exponential Random Graph Models (ERGM’s)

One potential critique of using SAB models to examine party-switching is that they could be picking up changes in the party in power. When a different political party gains power over the executive, legislators could be inclined to switch to the party in power in order to gain access to the spoils of the executive (Beers, 2004). If I hold the party in power constant, and look at individual models of each legislative session separately, I can eliminate the possibility that the party-in-power is interfering with my results. If aggressive recruitment is indeed driving party-switching patterns, I should see reciprocity and transitivity occurring even when looking within legislative sessions.

To address the possibilities discussed in above, I use Exponential Random Graph Models (ERGM’s) to test for reciprocal and transitive switching patterns within each legislature separately. ERGM’s use Markov Chain Monte Carlo (MCMC) to define the distribution of possible networks that could have been observed. Using this technique, it is possible to make inferences about the determinants of the formation of network ties. This technique is elaborated in Hunter et al. (2008); Goodreau, Kitts and Morris (2009). I fit a separate ERGM for each legislature between 1987 and 2010, then graph the coefficients and standard errors in figure 2.

3.5.5 Main Parameters

I now introduce the main parameters to be estimated in the Stochastic Actor-Based and Exponential Random Graph Models (ERGM) models. I estimate the likelihood of recruitment
between any two parties in both models, but there are important differences between them\(^7\). The dependent variable in both cases is a recruitment between party i and party j. The SAB analysis estimates changes in recruitment between parties over time periods, such as: given that party i recruited from party j in period t, what is the likelihood that j will recruit from i in period t+1? By contrast, the ERGM setup looks at variation in tie occurrence within one period at a time; giving the likelihood of a tie occurrence in period t given conditions x. The SAB parameters allow estimation of the effects of prior patterns and party characteristics on current network configurations, whereas the ERGM looks at individual legislative sessions. Important for my analysis, both models estimate the likelihood that reciprocal and transitive patterns observed in the data are random.

Main parameters include the average connectedness in the network (analogous to a constant term), the level of reciprocity, and the level of transitivity.

A reciprocity parameter captures the likelihood of tit-for-tat recruitment - the value of snatching back a member from a party into which a colleague has switched (hypothesis 1). That is, given a switch from party i to party j, what is the objective value or likelihood of a tit-for-tat response by party i in the following period? What is the likelihood of a reciprocal tie relative to a random tie? Positive values of the coefficient for this variable would indicate that tit-for-tat recruitment produces a benefit for a party (is more likely), and suggests that the network tends toward tit-for-tat recruitment over time, all else equal. Negative values of the coefficient would indicate that a tit-for-tat recruitment produces a net cost for the party (is less likely), all else equal.

A transitivity parameter captures the value of recruiting from an indirect partner (a partner of a partner) (hypothesis 2). That is, given an indirect relationship in period t, what is the likelihood of a recruitment relationship developing in period t+1? If the coefficient is positive and significant, it indicates that transitive recruitment produces a benefit for a party (Snijders, Van de Bunt and Steglich, 2010). Positive values of the coefficient indicate that given a member recruitment between i and j, and a member recruitment between i and h, there is a higher likelihood for a recruitment

\(^{7}\) I include notes on the coding of the variables as appropriate
3.5.6 Controls

An ‘in-degree’ parameter gives the average connectedness of parties in the network, giving the likelihood of a recruitment between any two arbitrary parties. This parameter acts as a constant term - it controls for the average density of each network, because the likelihood of any arbitrary recruitment is a function of the overall density of the recruitment network. Substantively, this term can be thought of as the transaction cost for party i of recruiting a member from any arbitrary party j, and conversely the cost for party j of losing a member to any arbitrary party i. Since the costs of recruiting a member from any arbitrary party and the costs of losing a member are typically high, this variable should be negative (Snijders, Van de Bunt and Steglich, 2010).

In the Brazilian Open-List PR system, the pooling of votes across the party incentivizes parties to maximize the number of candidates running as much as possible, so the most successful recruiters can be expected to have the highest vote shares. Parties with higher vote shares are more likely to possess competitive members (talent), so they look more attractive to party leaders who seek members to raise their electoral prospects. If party leaders want to raise the profiles of their parties or gain information about effective organizational strategy, then they should recruit members from parties with higher vote shares. Total party vote share is then a proxy for the talent profile of a party. Thus, one would expect higher recruitment from parties with high vote shares in comparison to parties with low vote shares.

Vote percentages for parties were collected from Baker and Greene (2011), but were only available for the legislatures between 1991 and 2010, and not 1987. As such, in models that included vote percentage, I was forced to drop one wave of my switching data. The effects of this variable are specified as ‘ego effects’ and ‘alter effects’, which examine the predicted average

---

8 This parameter corresponds to the transitive ties effect in (Snijders, Van de Bunt and Steglich, 2010). The particular effect included is called ‘transitive ties’, and indicates the tendency for recruitment between j and h given an intermediary i, but does not expect that additional intermediaries will increase the likelihood of closure. That is not to say the effect of additional intermediaries is not important, but only that I have not included that particular effect in the model.

9 The vote percentages are the percent of the vote received by the party prior to the legislature in which the switching network was produced. So, for the 1991-1995 legislature, the vote percentage is the percent of the vote received by each party in the 1990 election.
number of incoming switches for every percent increase in vote share for both egos and alters.

If ideologically similar parties compete for the same scarce resources, then there may be an incentive to differentiate the party from other proximate parties, and disincentivize members from switching into parties that are similar. Party leaders may seek numbers, experience, and information from wherever they can get it, so may not be picky about the ideology of members they recruit, suggesting a lesser role of ideology. Yet, it seems unlikely that two highly differentiated parties would share members, since there is probably a higher marginal benefit for information-sharing among ideologically proximate parties. Recruiting from ideologically distant parties increases the heterogeneity of the party (assuming the switching member does not alter her ideology upon switching (see (Nokken, 2009))), so ideological distance should be costly to the party brand. There is compelling evidence and theory suggesting that ideological proximity drives switching. Despite Brazil’s sometimes messy party system, party members still tend to switch into parties that share their ideological vision (Desposato, 2006).

Ideology scores for parties were used based on the Wiesehomeier and Benoit (2009) scores, updated by Baker and Greene (2011)\(^\text{10}\). The effect of this variable is specified an ego-alter effect, where the average number of incoming switches is a function of the ideological closeness between the two parties. This variable should be negative and significant if ideology is associated with changes in incoming links.

‘Cartel parties’ are controllers of state resources who are internally connected via the legislature, and are less apt to maintain a strong partisan base (Katz and Mair, 1995, 2009). Parties of this type are also more professionalized than traditional mass parties (Katz and Mair, 1995,

\(^\text{10}\) The scores originally range from 1 (furthest right) to 20 (furthest left). I turned these scores into an ideological distance matrix. In the matrix, higher scores indicate greater ideological distance, while lower scores indicate ideological closeness. The scores range from 0 to 14.3. The ideological distance matrices for each legislature contained a large amount of missing data, due to the large number of relatively small parties in the Brazilian Chamber for which ideology scores were unavailable. Since distance scores could only be calculated when both members of a dyad had a nonmissing score, the missingness of the earlier matrices was about 80%. This missingness was treated in an ad hoc manner, by creating a time-constant ideology matrix that began with the 2007 scores, and filled in missing cells with scores available from prior years. Since scores were filled in beginning with the most current scores, slight changes in distance scores across time periods are not represented in the data. In order to get a sense of the severity of this change, I calculated the absolute value of the change in ideology distances between the time-constant matrix and the 1987 ideology matrix. I found a difference in distances of about 5%. Baker and Greene (2011) note that ideological shifts in Latin America over time have been relatively minor.
Parties with cartel origins are parties formed by members of parliament and new parties forming out of citizen groups with connections to members of parliament through familiar or business channels (being in the same social network as a member of parliament). By trading favors and delivering particularistic goods to loyalists, cartel parties maintain power without brand-building. This variable should not diminish the effect of reciprocity and transitivity.

3.6 Results

My main results are in table 4\textsuperscript{11}.

Reciprocity and transitivity occur in the data with intensities that are highly unlikely to be random. Party switching patterns tend strongly toward tit-for-tat recruitment. The positive coefficient on this parameter indicates that parties have a greater likelihood to engage in tit-for-tat recruitment (as opposed to refraining from such behavior), given that they have lost a member to a rival. From the perspective of optimizing their position within the recruitment market, tit-for-tat recruitment can be interpreted as having a positive utility for a party - it is estimated to give 1.54, 1.23, and 1.35 ‘utils’ to the party (the coefficients from models 1, 2, and 3, respectively).

The first interpretation of the reciprocity parameter is in terms of the utility of tit-for-tat recruitment - optimizing the party’s position vis-a-vis recruitment (relative to a status quo of 0). On this interpretation, if a party is recruiting a member from a rival after a loss, it bears the transaction cost of recruitment and member loss (the indegree parameter). So, for model 1, the net benefit of reciprocity in model 1 is \(-1.50+1.54*1=.04\), suggesting that the costs are recouped by a single tit-for-tat recruitment. However, in models 2 and 3 I see that the cost of losing a member is considerable at about -2.8. This means that tit-for-tat in the absence of transitivity (which I discuss next) is net negative - \(-2.8+1.2*1=-1.6\) (coefficients from model 2), though still highly preferable to member loss without tit-for-tat. If transitivity also occurs, the benefit is \(-2.8+1.2*1+1.7*1=0.1\).

A second interpretation of the reciprocity coefficient gives the likelihood of tit-for-tat recruitment in comparison to refraining from such a strategy. Model 1 indicates that a party is

\textsuperscript{11} I found that the effects of one covariate changed over time. Reciprocity was found to vary significantly across network waves. Its effect increased sharply across every period for which there was complete data, and the estimated coefficient never overlapped with zero.
\(\exp(1.54) = 4.7\) times more likely to engage in tit-for-tat recruitment than doing nothing if it has lost a member to a rival (all else assumed constant zero). Model 2 indicates a party is 3.4 ties more likely to engage in tit-for-tat recruitment than doing nothing, and model 3 indicates a party is about 4 times more likely to engage in tit-for-tat recruitment than doing nothing.

The positive and significant coefficient on transitivity means that levels of transitivity in the data are unlikely to be random. Parties tend more strongly toward transitive recruitment than one would observe by chance, and again the costs of switching for the party are rendered positive by transitive recruitment. This finding supports hypothesis 2. Holding all else constant zero, the positive coefficient on this parameter indicates that parties have a much greater likelihood of competitively recruiting with indirect partners than not. The coefficient on transitivity implies that parties are between 5.7 and 6 (\(\exp(1.74)\) and \(\exp(1.79)\)) times more likely to engage in this type of behavior than to not, given an indirect peer recruits with a direct peer. The transitivity parameter gives the likelihood of recruiting from an indirect partner (the partner of a partner). Transitivity in the absence of reciprocity offers \(-2.8 + 1.7 \times 1 = -0.9\) utils, and transitivity given reciprocity yields \(-2.8 + 1.24 \times 1 + 1.7 \times 1 = 0.14\), suggesting that switching is a beneficial strategy if it is transitive and reciprocal.

Cartel parties tend to recruit from non-cartel parties more often than from within the cartel. The coefficient for cartel origin is an ‘ego effect’, signifying the likelihood of a cartel party recruiting from non-cartel parties. Ignoring all else, the positive coefficient indicates that cartel origin parties are 1.26 times more likely to recruit members from non-cartel origin parties than from within\(^{12}\).

The coefficient for ideology gives the log odds ratio of exchanging a member with another party at a particular ideological distance. This variable indicates that ideological closeness between the parties does influence the likelihood of recruitment. Further, the coefficient is similar across all three models - roughly -.05. This means substantively that each increase in ideological distance...\(^{12}\) It should be noted that the estimated effect of cartel origin is relatively small, and reduces to indistinguishable from zero when vote share is included in the model. Yet, since origin is definitionally prior to and causally related to vote share, a strong case can be made for a mediating effect of origin on vote share, thus could be excluded from the vote share model.
The indegree coefficient suggests that recruitment is costly. This finding is unsurprising. The indegree coefficient can be interpreted as the transaction cost of recruitment, or as the average probability of recruitment from any one party to another. Such an interpretation of this coefficient

<table>
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<th>Network Change</th>
</tr>
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<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Model 1</td>
<td>Model 2</td>
</tr>
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<td>Rate Period 1</td>
<td>20.893*</td>
</tr>
<tr>
<td></td>
<td>(13.238)</td>
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<td>7.721*</td>
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<td>(.12)</td>
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<td>(.103)</td>
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<td>Networks</td>
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</table>

*Note: \( p<0.05 \)
is that the net loss of a member without reciprocal or indirect recruitment is -1.50, -2.84, -2.94 suggesting that member loss produces a negative utility (transaction cost) for a party leader. For the minimal model, the probability of an arbitrary switch between parties is $exp(-1.50) = 0.22$, in the structural model $exp(-2.84) = 0.06$, and for the success model $exp(-2.94) = 0.05$, all else held constant at zero. This means substantively that switches occur randomly between parties at an estimated rate of 22% in model 1, and at a rate of ~6% in models 2 and 3.

Prior vote shares of alters and egos demonstrated no significant impacts on current switching behavior.

I produced visualizations of the six switching networks that illustrate how switching has evolved in Brazil (figure 1). In the visualization, the nodes are sized according to the vote share for each party, and the black nodes indicate parties of a cartel origin. This target visualization (See SNA package in R by Carter Butts) places parties closer to the center when they have engaged in tit-for-tat recruitment with each other, and places parties less likely to engage in tit-for-tat recruitment near the outside. First, the graphs demonstrate that high vote shares are associated with tit-for-tat recruitment. Second, recruitment cannot be explained by the president’s party attracting defectors. What these graphs substantively convey is that there is a tightening of the central cluster of parties over time, suggesting an increasing tendency for tit-for-tat recruitment over time. While Samuels (1999) demonstrated that the PT tended to be more disciplined, label-centric, and less personalistic, even the PT appears to have been slowly ensnared by incentives to engage in tit-for-tat and transitive recruitment.

3.6.1 ERGM Analysis

The results of the ERGM models hold up my expectations. The coefficients for reciprocity are all positive and significant for all pre-2007 legislatures, with the exception of the 1987 legislature. Transitivity is significant for all legislatures, including the 2007 legislature, though its coefficient is somewhat lower in the 2007 legislature. The coefficients for tit-for-tat and transitivity are also quite similar to those estimated in the RSiena models. Hence, even running separate models of
Figure 3.1: Switching in the Chamber of Deputies 1987-2010. Note: Black nodes are cartel origin parties. Node size weighted by vote share. Target visualization style and software written by Carter T. Butts - SNA in R. This visualization style emphasizes reciprocity by placing reciprocal actors closer to the center of the graph.
Figure 3.2: ERGM coefficient point estimates and 95% confidence intervals of within-legislature reciprocity and transitivity.
within-legislature variance of party-switching I see reciprocal and transitive effects.

3.7 Discussion and Implications

These results have important implications for how we understand party systems. They offer an explanation regarding why Brazil experienced such rampant party-switching which did not cease until the Supreme Court intervened. Finally, these results present us with new puzzles and directions for research.

This chapter has argued that tit-for-tat and transitive recruitment are a party leader’s best responses to member loss. The optimal strategy when switching levels are high is to recruit a member from a rival party and to recruit more members relative to one’s competitors. A leader of a party that is experiencing member loss to a rival party seeks to attract members from that rival in order to recover the costs of the loss. Party leaders also seek gains relative to competitors, and so recruit from proximate parties in order to capitalize on local indiscipline at another party’s expense. Switching is more likely to flow in both directions and to occur between proximate parties.

This chapter implies a collective action problem among political parties. Over the long term, party leaders may desire to limit or control switching for the sake of legislative collective action and ideological coherence. Leaders could use recruitment strategies to enforce discipline over the long term, were it not for a countervailing interest in increasing seat shares relative to rivals. Since short-term costs of member losses are quite high, they generate an interest in member recruitment for purposes of survival.

The results of this chapter challenge some of the results of individual party-switching models. Desposato (2006) finds that switchers are influenced by the ideologies of their potential destination parties, and I too find that ideology impacts the interparty-switching network structure, as seen from the party perspective. However, Desposato (2006) finds that higher member vote shares increase the costs of switching parties for members, while my analysis suggests that parties with higher vote shares do not have significantly different rates of switching. These results elucidate that the vote share of the party from which a member was drawn has no observable impact on the propensity to switch - consistent with the notion of Brazil as a candidate-centered system
rather than a party-centered system. After taking endogenous patterns into account, the estimated effect of voteshare is no longer statistically significant. While scholars like Samuels (1999) have demonstrated PT exceptionalism, even the PT appears to have been slowly ensnared by incentives to engage in tit-for-tat and transitive recruitment (see figure 1).

The interconnectedness of the party system and the evolution of the network structure have important implications. These results suggest that when assessing switching behavior, we should look at parties as embedded within networks of other parties who interact in a social and institutional context, and where organizational success is bound up in the actions of the rest of the parties in the system and the constraints governing interactions. This logic implies that stable levels of switching may be attributable to a collective strategic process for individual organizational survival and success. If party webs of association are related to party success, as these results suggest, this may help us to explain the phenomenon of complete party system collapse. It may be that interparty connections create the perception that there is no demonstrable difference between the parties, as occurred in Italy in the early 90’s, which may lead to the failure of the party system. The implications of this chapter thus reach beyond the borders of Brazil.
Chapter 4

Political Networks and Co-voting in the Brazilian Congress: How do Networks Coordinate Legislative Behavior?

Why and how do members of congress vote together on policy? Is there evidence that network ties increase rates of co-voting among legislators? Do multiple overlapping social relations between legislators lead to higher rates of co-voting compared to legislators that share only one type of social relation? Do legislators with particularly strong social ties vote together at higher rates than those with weak social ties? We know that political party leaders influence the votes of members on pending legislation through top-down enforcement. However, we know much less about how the informal social channels developed by legislators influence their voting patterns from the bottom up. I examine how different types and intensities of social relations coordinate legislators to vote in particular ways. In this chapter, I explore the determinants of co-voting among Brazilian deputies. I examine the effect of multiple overlapping social relations and social tie strength on the rate of co-voting between any two deputies. Using 590 pieces of legislation voted on between 2011-2014, I examine the relative influence of information exchange networks, social exchange networks, and information-seeking networks on rates of co-voting.
4.1 Introduction

Why do legislators coordinate their voting choices? Specifically, what explains variation in the rates of co-voting among legislators? We know a substantial amount about the factors that influence voting behavior among legislators, including incentives offered by coalitions, parties, and presidents (Figueiredo and Limongi, 2000; Pereira, Power and Raile, 2011; Laver and Shepsle, 1996; Samuels, 2000). Parties, in particular, have enormous influence in whipping votes among legislators by rewarding and punishing them. Party unity is driven broadly by discipline, agenda control, and cohesion (Carey, 2007). The US case, for example, is one of a highly organized party system with a legislature with strong legislative and institutional prerogative, and as a consequence, co-voting blocs are highly regular and relatively predictable (Poole and Rosenthal, 2001). However, the literature in this area has struggled to explain why rates of co-voting can be high in party systems lacking strong discipline, agenda control, or cohesion (Figueiredo and Limongi, 2000)\(^1\). I argue that a fundamental element of political life has been largely overlooked in the literature - the role of interpersonal ties/social relationships in legislative co-voting. Strong and multiple overlapping ties produce unity in voting among legislators by helping to build reputations and trust among legislators. Interpersonal ties are a fundamental element of all social life that affect myriad legislative outcomes (Fowler, 2006; Cho and Fowler, 2010; Ringe, Victor and Gross, 2013; Kirkland, 2011), but their penetration into legislative voting has been limited. In this chapter, I explore the role of social influence on legislative co-voting, which I define as a change in an actor’s legislative voting behavior as a result of some intervention by another actor or group. This chapter explores this question using new data from a legislative network survey in the Brazilian Congress.

Brazil provides an interesting window on this issue. The institutional configuration that allows party leaders to reward-and-punish legislators in this country is thought to be typically weaker compared to other systems (Carey and Shugart, 1995). Party leaders have little control

\(^1\) Though Figueiredo and Limongi do argue that agenda control by the executive is high in Brazil, there is a substantial number of pieces of legislation not offered by the executive, and as such are not subject to executive agenda control
over which deputies get on party lists, so they cannot control the candidacies of legislators. Leaders frequently cannot provide party funds to support candidates interested in running for elective office either (Samuels, 2000). Legislators in Brazil often work to attain jobs in their home states after their tenure in Congress, and so frequently appease local interests (Samuels, 2008). Agenda control lies largely in the hands of the executive, so she has the power to force voting on potentially divisive issues (Figueiredo and Limongi, 2000). Party cohesion is low relative to other Latin American countries, such that party members tend to have heterogeneous ideological leanings (Kitschelt et al., 2010). Despite these features, voting patterns in the Brazilian Chamber are surprisingly stable and predictable (Figueiredo and Limongi, 2000).

This chapter will proceed as follows: I begin by drawing on existing literature on co-voting in various contexts and institutional configurations to develop the logic of top-down (leaders) versus bottom-up (networks) on rates of legislator co-voting. Next, I present a theory for why member discipline may arise from the informal social linkages that legislators share. I then offer three testable hypotheses. I then test this theory in the context of the Brazilian Chamber of Deputies using data on 590 pieces of legislation brought up for vote since January 2011, and examine the proportion of legislation supported by legislators from the same social network, and those sharing multiple overlapping social networks.

4.2 Parties and Political Networks

Why do legislators coordinate their voting decisions? A substantial amount of the variation in rates of co-voting in the US Congress and other contexts has been explained by scholars working in this area (Ringe, Victor and Gross, 2013). Existing literature shows that cue-taking, coalitions, political parties, pork, constituencies, and electoral rules explain much of the variation in co-voting behaviors (Laver and Shepsle, 1996; Figueiredo and Limongi, 2000; Pereira, Power and Raile, 2011; Samuels, 2000). Broadly, this literature describes that co-voting occurs at the intersection of preferences, information, and rules. However, some of the findings and assumptions of prior work remain in doubt. The issue involves one of the fundamental features of human life - the contours of
Social relations and how they affect the workings of legislative processes. While very recent work has made advances in our understanding of interpersonal ties and legislative behavior, we still lack a good understanding of covoting rates because of variance stemming from a fundamental source - the multiple overlapping interpersonal relations of legislators.

Scholars of both American and Comparative politics have sought to understand the voting patterns of political parties and their members. For parties, we know that leaders and executives use coalitional and distributive tools to get parties to vote together (Figueiredo and Limongi, 2000; Pereira, Power and Raile, 2011). These include ministerial posts (Laver and Shepsle, 1996), leadership positions, election funds, pork for local projects (Samuels, 2000), and many other benefits. Within parties, party leaders use leadership positions, committee assignments, and electoral incentives to get members in line (Carey and Shugart, 1995; Neto, 2002). These activities are very important because they ensure that the behavior of members is consistent with the party brand (Schumpeter, 1956). It also helps parties to establish ‘responsible party government’ (Kitschelt et al., 2010).

Political party scholars have established that when electoral rules give a leader the tools to reward and punish legislators, leaders will whip votes and impose consistent voting patterns (Mainwaring and Scully, 1995; Carey and Shugart, 1995; Figueiredo and Limongi, 2000). However, party voting is also a function of cohesiveness, or the degree of similarity in ideological preferences among members, and agenda control, or the ability introduce legislation and roll-call (Carey, 2007). Discipline, cohesion, and agenda control all help to establish consistent voting behaviors, and as a consequence, consistent expectations on the part of voters vis-a-vis the policy they can expect from government - the theory of responsible party government. Crucially, consistent voting behaviors must also influence the expectations of party members such that they know that they are not bearing the costs of coordinating alone.

Of course, when it comes to networks, there is a substantial literature to bring into the conversation, though research on political networks is an emerging field. Forming networks to receive and pass information is thought to be a helpful strategy in many settings, and especially for
marginalized groups (Ainsworth and Akins, 1997). There has been some evidence that repeated interactions are not as important as ‘weak’ ties in influencing voting behavior (Kirkland, 2011). However, it is not known if repeated interactions translate into policy/legislative outcomes when examining more directly measured, and therefore more accurate, valued network data.

In the political networks field, the literature has shown that networks are important systems of social exchange - social communication, deliberation, and discussion, but we know less about how they are actually used to coordinate behavior. Literature on political networks and legislatures has analyzed how congress is connected (Fowler, 2006), how cosponsorship relations affect bill success (Kirkland, 2011), how networks define political parties outside the legislature (Koger, Masket and Noel, 2010a), how observing behavior of opposing groups affects voting behavior (Ringe, Victor and Gross, 2013), and how physical proximity affects voting patterns (Masket, 2008).

There is contradictory theory about how the strength of social ties might affect voting behavior among legislators. On one hand, scholars have argued that having many types relationships with the same political actor (multiple overlapping ties) reveals influence through trust and reputation (Granovetter, 1973; Heaney, 2014). On the other hand, others have argued that weak social ties (those established outside of normal daily interactions) bring new information, and thus produce high amounts of influence on voting behavior (Kirkland, 2011). I bring these two views into close conversation.

Theories of reputation provide a picture of how networks might help to establish political influence (Banfield, 1961; Laumann and Knoke, 1987; Leifeld and Schneider, 2012; Heaney, 2014). In this school of thought, a group can become recognized for having influence within a network, and different avenues for tie formation can be explored by actors seeking the cheapest access to new information (Leifeld and Schneider, 2012). Banfield (1961) explores how actors circumvent barriers to policy implementation in an environment with many veto players, using informal linkages to do so. Heaney (2014) examines whether reputation tends to generate influence among interest groups in the US context. Heaney (2014) finds that when actors interact in more than one political network, they are multiplicatively more likely to cite one another as an influential actor.
The weak ties literature (spawned in large part by Granovetter (1973)), suggests that social ties which spring up between highly connected subgroups of actors generate access to new and unique information for members of those subgroups. These ties bridge different highly connected subgroups of actors, and bring the wisdom of an outside group to the decisionmaking process. Some scholars have argued that, because of the new information that weak ties bring, weak ties produce more influence than strong ties, because they allow actors access to new information they would not otherwise have (Kirkland, 2011). On this view, close legislators will typically have the same information, and so access to a legislator that is more socially distant could provide new information. In addition, weak ties provide the chance to influence a legislator outside of her close circle (Kirkland, 2011). This claim contrasts with the work mentioned above by Heaney (2014), who suggests that influence is more observable when there are repeated interactions between actors in various contexts. Such interactions, Heaney argues, generate reputations and trust. Intense interactions, on the weak ties view, should be inversely associated with influence, whereas the latter argues that intense interactions produce social trust and credibility, and consequently high levels of influence between actors.

Literature in the area of covoting and party unity has not illuminated, until very recently, one of the central aspects of social life - the role of interpersonal ties in coordinating voting behavior among legislators. With a few notable exceptions, there is little work that sheds light on how ordinary day-to-day social processes produce trust and reputations among legislators, and consequently how such ties explain variation in co-voting behaviors along social lines. This means that we do not know whether cohesion in voting within political parties is a function of similar legislators joining the same parties, or a function of social influence among legislators. Network literature explains that legislators cultivate networks for purposes of gathering policy information (Carpenter, Esterling and Lazer, 2004), but how can legislators be sure that such information is accurate? The flow of information across networks influences bill passage (Cho and Fowler, 2010), but what are the specific mechanisms types of social relationships that make this happen? While any actor may obtain information from a network, it is difficult to establish the veracity of the
information and the credibility of the supplier of that information. The networks literature has yet to fully address the relationship between network formation and the credibility of ties within those networks. To contribute to the literature on co-voting, I put forth a theory to explain the conditions under which tie strength and overlapping network ties influence the co-voting rates of legislators.

In sum, we know that executives and party leaders exert significant pressure on the rank-and-file from above, using the carrots and sticks at their disposal. We also know that agenda control and legislator similarity in ideological leaning produce unity in party voting. I contribute to the literature by offering a theory of legislative co-voting that focuses on the building of credibility and trust from within the interpersonal ties of legislators, focusing specifically on tie strength and multiple overlapping ties. We know that networks are important for coordinating expectations, passing information, and aiding in policy success. I elaborate how high rates of co-voting can be achieved through trust and reputation developed within social networks. I add to the existing literature by examining the effects of tie strength and multiple overlapping ties on policy choices in a legislative context where legislators must use personal contacts for attaining certain political goods (e.g. policy expertise, voting support).

4.3 A Network Theory of Legislative Co-Voting

Voting behavior, I argue, is affected by the intense and overlapping network ties (multiplexity) that compose social life. I propose a theory of voting in which networks in a legislative environment aid in establishing reputations and trust between legislators; leading to high rates of voting coordination. The theory rests on the idea that networks generate repeated opportunities for monitoring behavior and for demonstrating capacity in a variety of professional roles. Overlapping social ties and repeated interactions produce trust and reputation, leading to common expectations about voting and coordination. Below, I define network multiplexity before outlining my theory of legislative voting behavior.

What is network multiplexity? Multiplexity is the idea that there are numerous types of
relationships that define the social interactions between actors in the social world; and that such relationships can overlap among actors. Actors interact for different reasons and in different social contexts. Each social context produces a particular type of relationship in which each actor assumes a different role relative to other actors. However, these roles do not stop and start when the context arises, but persist across contexts. In other words, actors accumulate social roles when they relate in multiple ways with the same actors. This accumulation of social roles, I argue, along with strong relationships, generates conditions for high rates of co-voting behavior.

Repeated interactions among actors provide opportunities for members to observe each others’ behaviors and establish reputations. Opportunities for monitoring, others have argued, render networks powerful tools for building expectations of appropriate behaviors among members in the network (Putnam, 1992; Ostrom, 1990). As behaviors of individuals are observed over time, their track record is recorded in the minds of the people they interact with and expectations of future behavior are created. The same logic applies to legislators working in a legislative context and considering whether to vote their personal inclinations against the inclinations of some group with which they are socially connected; or against voting with their party. The loss of one’s reputation could mean that not only those to whom one is socially connected will no longer coordinate, but that actors at two or three degrees of separation will not coordinate either.

Intense ties and overlapping ties provide the social infrastructure to establish trust among actors; and ensure the veracity of the information they disseminate. Repeated interactions among socially connected legislators increase the amount of information actors have about one another, and the time horizons over which they will interact. We know that there are incentives for actors to defect in certain types of ‘one-shot’ games - specifically where the benefits of defecting are higher than the benefits of coordinating when another actor coordinates, but the opposite is true when time horizons are longer (Axelrod, 2006). Legislators that are socially close will interact hundreds, if not thousands of times. Such a situation guarantees long time horizons for socially proximate legislators, such that the expected long-term costs of defection when another actor coordinates exceed the short-term gains. Given this, legislators can trust that socially-close partners will
coordinate. If repeated interactions were not enough, scholars have established that interaction across multiple contexts produces trust among actors because the same information can come from multiple paths (Granovetter, 1973, 1985; Carpenter, Esterling and Lazer, 2004). Repeated contact and network multiplexity thus create the conditions for trust among socially-close legislators.

Coordination occurs at the intersection of preferences and information about other actors’ expected behavior. Individuals are more likely to trade off their sincere preferences for proximate ones if they can be more certain their proximate preferences are attainable through coordinated action (Downs, 1957; Duverger, 1954). A legislator is unlikely to be able to attain her most favored outcome on her own, but her social relations facilitate coordination on outcomes that are more favorable than those of her party, and as a consequence she may coordinate with her social group in order to achieve it. Social networks can be even more effective when they also include side payments via promised future favors (reciprocity). Hence, knowledge that network partners are likely to act in certain ways helps actors to coordinate outside of party boundaries.

Given the above discussion, the nature of each type of interaction and the frequency of interaction should affect the level of coordination among actors. Actors with any kind of connection should co-vote at higher rates than unconnected actors, but increasing intensity and multiple overlapping ties should have stronger effects on coordination. Actors that interact more intensely should have longer time horizons, and therefore coordinate at higher rates. Higher intensity relationships should thus be associated with higher rates of co-voting. Next, observing the same actor in various contexts should multiply the reputational benefits afforded to each actor. Legislators who establish professional, working relationships can observe the working habits of other legislators, and to monitor other legislators’ behavior. Further relationships, such as social relationships add another context in which to observe actors behave and through which to receive the same information through another pathway. As a result, multiple overlapping ties should be associated with increased voting influence.
4.3.1 Hypotheses

**H1:** Members with network ties should have higher rates of co-voting compared to members lacking network ties.

**H2:** Multiple overlapping ties should multiplicatively increase the rate of co-voting among members compared to members with individual ties or no ties.

**H3:** Higher intensity relationships should be associated with higher rates of co-voting among members compared to members with lower-intensity relationships.

4.4 Research Design

Analyzing co-voting data presents some important challenges. First, it is a binary dyadic phenomenon between deputies, in which two deputies co-vote or they do not, rendering it inappropriate for most ordinary linear models. Second, co-voting on individual pieces of legislation is not as interesting as the overall rate of co-voting between two legislators. As such, I model the proportion of legislation that two legislators agree on against the proportion they do not. Third, and most important, if there is indeed social influence between legislators in terms of the co-voting patterns observed, then it is important to control for the strength of particular legislators in affecting the votes of others. As such, following on the work of Ringe, Victor and Gross (2013), I first logit transform the proportion of co-voting and non-co-voting \( \log(\frac{\text{agree}_{ij}}{\text{disagree}_{ij}}) \), then I implement crossed random effects for the actors on either side of the social relationship (the egos and the alters). To see why this is necessary, imagine there are actors a, b, and c. I must control for the heterogeneity of actor a (e.g. if she is powerful), for instance, but also the combination of actor a with actor b and actor a with actor c. This crossed random effects strategy ensures that particularly influential individuals and pairs of individuals are removed from the error term (Ringe, Victor and Gross, 2013). The model that I fit is a linear mixed effects model.

I model the main network covariates of the model in two different ways in order to separately
capture multiple overlapping ties and tie intensity. In the first iteration, I measure networks as a binary phenomenon, as most network analysts typically do. This indicator takes the value of ‘1’ if an actor indicated there was a relationship of the specified type between the two actors, ‘0’ otherwise.

In the second iteration, I take advantage of the fact that one wave of my survey instrument asked respondents to put a value between 1 and 10 on the intensity of the relationship - the strength of the tie. I take advantage of the variation in relationship intensity that the respondents indicate in the survey\(^2\).

I analyze the effects of legislator dyads being members of the same political party, the same state, and whether differences in their experience generate disincentives to vote together. Because we know that parties have incentives to impose discipline and incentives to create multiplex networks (chapter 3), the effect of party may wash out some of the effect of network ties on co-voting. However, even controlling for partisanship, networks should still be associated with high-levels of co-voting and in the ways elaborated above.

The study of influence as a function of network ties is fraught with a problem well-known to network scholars - the problem of selection versus influence. The crux of the problem is that it is very difficult to empirically differentiate between the tendency for actors with similar proclivities to form network ties, and the tendency for connected actors to influence one another’s behavior to act similarly. I conceive of this issue as an omitted variable bias problem, and supplement my main analysis with an additional set of models to curtail this problem.

4.4.1 Voting Data

Data on voting patterns were collected from the Brazilian Chamber of Deputies web site. Each deputy has a page devoted to their voting decisions on all of the provisions brought for a vote in the Chamber of Deputies, some of which are secret. The totality of such votes amounted to 590 provisions voted on between January 2011 and September 2014. In order to measure agreement, I follow approaches similar to Ringe, Victor and Gross (2013), and count co-yes votes as agreement,

\(^2\) However, the second iteration uses a more reduced sample compared to the first one.
and count all other outcomes as non-agreement, including abstentions, absences, and secret votes. There were no unanimous votes in this, so there were no non-contentious votes. By using all of the votes, I am able to get a more accurate measure of the proportion of legislation that any two legislators support. In order to create my ultimate measure of co-voting agreement, I turn the data into dyadic data, and take the proportion of the total votes in which each dyad agrees divided by the proportion of the total votes in which the dyad disagrees. As explained in the model and results section, I ultimately take the log of this co-voting measure, in line with Ringe, Victor and Gross (2013).

4.4.2 Survey Network Data

Network data come from an original survey conducted within the Brazilian Chamber of Deputies in the summer of 2014. Between June and August 2014, I visited all of the legislative office in the Brazilian Chamber of deputies. I administered a digital survey asking about three types of relationships - legislative communication, social communication, and information-seeking. The survey was administered to the office manager (chefe de gabinete) or the staff member with the most experience related to communication and cooperation between legislative offices. These network survey data are identical to those used in chapter 2. Survey wording is given below.

Participants were asked to fill out the survey on a touchscreen computer on which they were given network questions alongside a search feature which allowed the participants to search for the deputy offices they interact with for each type of relationship. When a participant selects a legislator’s office in response to a question, the program presents an image of the ego-centric network of the participant’s relationships. This allowed participants to record their answers and to get a better sense of what the office’s ego-centric network looks like.

There were concerns of small samples in the 2014 data, so some samples analyzed were supplemented with a 2013 wave of survey data. Missing respondents in the 2014 wave were back-filled using their linkages from a 2013 survey wave. In the 2013 wave, I used a pen-and-paper survey rather than a digital one, and slightly different question wording. The 2013 survey asked
three questions about different types of communication/cooperation between legislative offices, and
a small battery of questions about the participant. Participants were then asked to fill out the
survey either on paper or on the internet, and to return it to the researchers within two weeks. The
first two questions of the 2013 survey were almost identical to the first two questions of the 2014
survey, and so missing respondents for questions 1 and 2 in the 2014 data were back-filled using
the 2013 data.

Survey Wording: Communication Network

Thinking about the last legislative year, which deputy offices did your office
frequently communicate with about legislative issues? Please select the names of the
deputies whose offices you most interacted with using the selectors to the side. 3

Survey Wording: Social Network

Thinking about the last legislative year, which deputy offices did your office
frequently communicate with to socialize, converse casually, or discuss non-legislative
issues? Please select the names of the deputies whose offices you most interacted with
using the selectors to the side. 4

Survey Wording: Information-seeking Network

Thinking about the last legislative year, which deputy offices did your office
frequently seek to resolve questions about legislative proposals or procedures? Please
select the names of the deputies whose offices you most sought using the selectors to
the side. 5

3 Pensando no último ano legislativo, quais são os gabinetes de deputados vocês se comunicavam
frequentemente sobre assuntos legislativos? Por gentileza, selecione os nomes dos deputados cujos
gabinetes vocês mais interagiam usando um dos seletores ao lado.

4 Pensando no último ano legislativo, quais são os gabinetes de deputados vocês se comunicavam
frequentemente para socializar, conversar casualmente, ou falar sobre assuntos não legislativos? Por
gentileza, selecione os nomes dos deputados cujos gabinetes vocês mais interagiam usando um dos
seletores ao lado.

5 Pensando no último ano legislativo, quais são os gabinetes de deputados vocês se buscavam fre-
quentemente para resolver qualquer pergunta sobre proposições legislativas ou processos legislativos?
Por gentileza, selecione os nomes dos deputados cujos gabinetes vocês mais buscavam usando um
dos seletores ao lado.
4.4.3 Deputy Data and Brazil’s System

I gathered additional data from the Brazilian Chamber website’s biographies of congressional deputies (http://www2.camara.leg.br/) using web scraping techniques. I wrote an R script that crawled the web pages of Brazilian Congressional deputies and extracted additional information that we did not ask in our survey, but is publicly available. From the biographical pages of each deputy, I collected each deputy’s age, number of mandates, education, party, home state, and office location.

4.4.4 Model Results

The main model results are in table 4.1 and table 4.2

I find a number of interesting relationships. First, I find that membership in each type of network increases the likelihood that two legislators vote together, even controlling for the effects of political party and home state. More interestingly, I find that overlapping networks have a multiplicative effect on co-voting behavior. In particular, I find that when two legislators are in multiple, overlapping networks they are much more likely to vote together than if they are in one network individually. Finally, I find that members that are involved in higher-intensity relationships are more likely to vote together than members in lower-intensity relationships.

In table 4.1, I present the results of model 1, which measures networks as binary-valued. I interpret the coefficients from the third and most comprehensive model, see table 4.1. Overall, being in three overlapping networks exhibits a large and substantively important effect on the rate of co-voting among legislators. Being in three overlapping networks increases the expected rate of co-voting by about 21% compared to members that share no network connections, and between 10% and 15% over those in one or two overlapping networks.

Two legislators sharing a network tie increases their expected rate of co-voting by between 4% and 6%, depending on the type of relationship. For communication networks, members in
the same communication network or information-seeking networks are about 6% more likely to vote similarly on policy proposals compared to those that share no network relations. For social networks, the rate of increase is a little bit less at around 4%. Sharing in two of the same networks, when including the three-way network interaction, does not multiplicatively increase the rate of co-voting among legislators, and in the case of overlapping social and information-seeking networks, the interaction effect is slightly negative. However, being in all three networks creates a strong positive effect on the rate of co-voting, increasing the rate of co-voting by 10% to 15% over the expected rate when sharing a single network tie.

Looking at other effects in the model for comparison, partisanship, state, and experience affect co-voting behavior as well. Members that are in the same political party are roughly 17% more likely to vote together than members of different political parties. For states, members of the same state are roughly 4% more likely to vote together compared to members of different states. Finally, differences in experience reduces rate of co-voting by a very small margin for every unit difference in the number of legislative mandates.

[Table 4.2 about here]

In table 4.2, I present the results of the second set of models, which take advantage of the valued ties in the network. After scaling the data to means, I interpret the effect of a unit change for each interactive network effect while all else is at its mean. The results are quite similar to the binary case - the effect of multiplex network formation strongly increases the rate of co-voting. A one unit change in one network, given that an actor has ties with another member in two other networks, is much stronger than the effect of a unit change when an actor is only in zero or one other networks with another member. The expected increase in the rate of co-voting for a unit change in the intensity of communication ties, given that a member is already in average-valued relationships with that member in two other networks is 1.7%. In other words, a single unit change in the communication network from the mean, given average intensity relationships in the other networks, increases the rate of co-voting by nearly 2%. Because intensity can range from 0 to 10, the effect could be quite large for some deputies.
Increasing intensity of ties in one or two networks exhibits a weaker effect than ties across all three networks. The effect of increasing intensity in a communication network increases the rate of co-voting by between .5% and .7%, all else equal. For Communication and information-seeking ties, a unit change in relationship intensity increases the rate of co-voting by about .7%, but is about .5% for social communication.

Other effects in the model operate similarly to the first model as well. Being in the same party increases the co-voting rate by approximately 20% compared to members of different political parties. Being in the same state increases the rate of co-voting by about 4.5% compared to members in different states. Finally, differences in experience slightly decrease rates of co-voting by only a substantively small margin (<1%).

### 4.4.5 Robustness Against Endogeneity and Omitted Variable Bias

A common issue in analyzing the effects of networks on behavior (influence) is that influence is very difficult to differentiate empirically from similarity (selection). Actors who behave similarly - who have similar proclivities, interests, and traits, will often form network connections (Snijders, Van de Bunt and Steglich, 2010; Lazer et al., 2008). With only a cross-sectional network, it is nearly impossible to discern whether actors connected in the network act similarly because of influence within the network, or whether actors are connected with one another because they act similarly.

In the data at hand from the Brazilian Congress, the crucial problem is that the network connections and the co-voting behavior may both be caused by an unmeasured variable - agreement. Legislators who agree on legislative and political issues should be more likely to form network ties, and when presented with legislation will co-vote at a high rate. Hence, what looks like social influence due to network ties could actually be the result of selection into networks.

The selection-influence problem can be modeled as an omitted variable bias problem. In order to solve the omitted variable bias problem, one must account for the correlation between network ties and agreement, so that only the portion of the effect of network ties due to influence is observed. Thus, I chose to model political agreement and influence on the right-hand side of the
equation so that the effects of selection-influence can be modeled without bias.

In this case, I need a valid measure of agreement between legislators on legislative issues, one which captures the legislative preferences of individuals apart from their social influences. I have chosen to do this using W-Nominate scores (Poole and Rosenthal, 2001). W-Nominate scores measure the ideal points of legislators based on observed votes on legislation. They provide an estimate of the ideologies of legislators apart from their social networks, and one of the best estimates we have of legislator preferences. I generate W-Nominate scores from the 2011-2014 voting record in the Brazilian Chamber of Deputies for all legislators in the Brazilian Congress during the time I administered my survey. Using these scores, I calculate the absolute difference in W-Nominate scores for each legislator dyad, yielding an agreement score.

Inclusion of agreement scores based on W-Nominate, while aiding the omitted variable bias problem, creates an endogeneity issue. This is due to the fact that the W-Nominate scores are calculated from the same data as the co-voting dependent variable. As a result, the equation will suffer some level of bias, because the error term will be correlated with the agreement scores. However, I am not interested in a perfect estimate of agreement, but rather an unbiased estimate of influence. If the coefficient of the agreement scores is estimated with some bias, but it allows us to estimate influence without bias, then this is sufficient. However, if the agreement scores are correlated with the error term and with the measure of influence (the networks), then I am still left with a problem. Fortunately, the correlation between the agreement scores and the networks is a very small -.032, -.025, -.022 (communication, social, and information-seeking, respectively).

The results for the models with the agreement scores included are in tables 4.3 and 4.4. Table 4.3 contains models with the binary network measures, and table 4.4 contains models with the valued network measures.

The results of the models with agreements scores remain substantively similar to the set of results that do not include the agreement scores. Multiple overlapping ties and tie strength are still highly correlated with the expected co-voting rate among legislators of similar size and significance as in the previously displayed models. In sum, the results provide robust evidence that influence
operates through social networks - that legislators are influenced to vote in particular ways by the peers with whom they are socially connected.

[Table 4.3]
[Table 4.4]

4.4.6 Conclusion

These findings are substantively important for both network and legislative behavioral literature. These results suggest that even controlling for the effects of partisanship, which are ordinarily very strong, the effects of social network connections are very strong - even stronger than the effects of partisanship in some cases. These results support the contention in the literature that repeated interactions in multiple contexts produce reputations and trust among legislators. As the results demonstrate, increasing intensity of interactions (strong relationships), increases the rate of co-voting by a significant margin. I find that higher intensity relationships are associated with more legislative influence than lower intensity relationships. In the legislative environment, trust matters, and cannot be easily established. Trust relationships are built by intense and repeated interactions in a variety of contexts, and have real influence on member behavior.
### 4.5 Tables and Figures

**Table 4.1: Models of Co-voting**

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<td>0.157***</td>
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**Network Interactions**

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*Note:* *p<0.1; **p<0.05; ***p<0.01
Table 4.2: Models of Co-voting

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Network Interactions

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Note: *p<0.1; **p<0.05; ***p<0.01
Table 4.3: Co-voting with Agreement Scores

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Note: *p<0.1; **p<0.05; ***p<0.01
Table 4.4: Co-voting with Valued Networks and Agreement Scores

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<td>−45,101.580</td>
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Note: *p<0.1; **p<0.05; ***p<0.01
Chapter 5


Why do small parties sometimes persist for long periods of time, and why do established parties sometimes collapse? While political scientists know a substantial amount about party formation, they know far less about party failure. I argue that political origins and party networks influence party success and failure across time. I examine the impact of political party origins on long-term party votes, party-switching, and ultimately party survival. I use a new measure of party exit and data from Brazil to test my claims.
5.1 Introduction

Why do some parties persist while others fail? Political origins, from an historical institutionalist perspective, imbue a party with many characteristics that influence its future long-term trajectory. For Duverger (1954), the origins of a political party were tremendously important, “It is the whole life of a party which bears the mark of its origin...” (xxxv). For Panebianco (1988), “the crucial choices made by its founding fathers, the first struggles for organizational control, and the way in which the organization was formed, will leave an indelible mark...” (xiii).

Stable political parties are vital for democracy. Since political parties act as linkages between the state and the electorate, party instability is troublesome for democratic systems. Political parties exiting electoral competition produces instability for voter and party expectations. Scholars are increasingly discovering instability of party voteshares, membership, and organizations in political systems. Explaining instability in party systems remains an important task for party research. Stable parties in government give citizens more certainty over the types of policy outputs they can expect from government. For this reason, electoral volatility is among the most widely studied measures of instability in party systems (Pedersen, 1979, 1983; Bova, 1991; Remmer, 1991; Roberts and Wibbels, 1999; Bielasiak, 2002; Powell and Tucker, 2013). One well-known example is the Pedersen measure, which captures aggregate changes in votes for parties and is considered a good indicator of uncertainty over who will occupy government among existing parties.

Brazil is an interesting case study on party survival/stability. First, Brazil’s electoral system has very low electoral thresholds, rendering it easy for small, entrepreneurial, political parties to enter the party system. This allows political entrepreneurs to try their hand at forming new political organizations. There have been numerous political parties that have successfully gained representation in the legislature, survived for a time, but ultimately failed. Second, it has traditionally been characterized as a weak party system (Mainwaring and Scully, 1995; Figueiredo and Limongi, 2000), so the question arises what makes parties strong in a weak system? There is considerable variation in party persistence in this country where over 60 parties have competed in elections.
The variation of party persistence in Brazil presents the puzzle: what determines such variation in party persistence? Why in a system that has been prone to party failure and instability do nearly 44% of parties survive with an average lifespan of 19 years and almost 66% of parties fail with an average lifespan around 8 years? What is different among these parties at the organizational level that keeps them afloat?

In this chapter, I add to the conversation concerning party stability by examining political party survival in the context of Brazil’s system. In order to understand political party survival, I propose a theoretical model which focuses on networks between parties and how networks impact the opportunity costs of parties to contest elections. I argue that the organizational origins of a party bear a relationship to a party’s connectedness vis-a-vis other political parties, its long-term voteshare, and ultimately its survival. In particular, I argue that party origins bestow political networks that can be used to exchange resources, gain information, form alliances, and funnel patronage to clients. I evaluate my claims using party entry and exit data from Brazil. I consider party failure as when parties exit electoral competition entirely, rather than fuse with other parties or split. In my analysis, I find that origins tend to produce thick associative links between political parties, which subsequently increases long-term voteshares and reduces the likelihood of party failure. I also find that political parties that foster dense linkages regardless of their origins increase their voteshares and reduce their likelihoods of failure. I estimate OLS models to examine how origins and networks affect party voteshares. Finally, I deploy a hazard model to estimate the likelihood of party failure as a function of origins and party linkages. I estimate rates of party disappearance in Brazil between 1988-2010.

In the next sections, I discuss my contribution and the broader relevance of my research question in light of current research and evidence. I then outline and defend my methods for the empirical portion of the study. Following that, I present my data and empirical results. In the final section I discuss implications and conclude.
5.2 Literature Review

Why do some political parties persist, while other disappear? Numerous large parties in Latin America and elsewhere have failed after successfully contesting elections, while other small parties have persisted for years with few votes and seats (Seawright, 2012; Morgan, 2011; Rose and Mackie, 1988; VanCott, 2005; Mainwaring, España and Gervasoni, 2009; Lupu, 2015). Literature has established the factors that produce stable voteshares within party systems, why dominant political parties decline, and why political parties collapse altogether. We know from this literature that parties can collapse at three levels: at the level of government, at the level of the party as an organization, and at the level of the electorate (Pedersen, 1979). We know that certain parties are vulnerable to collapse, and that electoral rules and party strategy can create the conditions necessary for party collapse (Seawright, 2012; Morgan, 2011; Rose and Mackie, 1988; VanCott, 2005; Mainwaring, España and Gervasoni, 2009). However, one of the central puzzles of political party research in Latin America has left mostly unaddressed in existing literature: why do some small parties persist for years with few votes and seats in the legislature? Why do groups of parties sometimes collapse at the same time? A network-centric explanation does an excellent job of accounting for both of these phenomena simultaneously, and improves our knowledge of political parties and party failure.

A number of theories cropped up to explain electoral instability across party systems after the introduction of Pedersen’s measure (Shamir, 1984; Bartolini and Mair, 1990; Bova, 1991; Remmer, 1991; Roberts and Wibbels, 1999; Bielasiak, 2002; Madrid, 2005a; Tavits, 2005; Caramani, 2006). Bartolini and Mair (1990) argued that political systems with strong social cleavages experience less electoral volatility than political systems with weak social cleavages. Remmer (1991) revealed that economic shocks to Latin American countries negatively affect incumbent parties, and thus produce electoral volatility. Later works asserted that there are institutional sources of volatility (Roberts and Wibbels, 1999). Roberts and Wibbels (1999) found that young parties and changes governing interparty competition tend to increase electoral volatility, while party polarization tends to reduce
it. So the literature established that there are social, institutional, and economic mechanisms for volatility. What soon became apparent was that this broad measure was capturing the entry and exit of political parties, as well as party-switching and party exit/entry.

Because electoral volatility was perceived as an aggregate measure of instability in the government, parties, and the electorate, scholars turned their attention more closely to the portion of the variance in electoral volatility that was due to the entry of political parties (Tavits, 2005; Madrid, 2005a; VanCott, 2005), as well as the related issue of party system fragmentation (Coppedge, 1997; Birnir and Cott, 2007). Party entry surged as an area of research in the period from 2005-2013 (see, for instance, (Meguid, 2005; VanCott, 2005; Golder, 2003; Madrid, 2005b; Rice and Van Cott, 2006)). It became more clear that while new parties might garner small amounts of the total vote, they still have a strong impact on the party system as a whole (Meguid, 2005). Tavits (2005) speculates that party entry and exit may be more rapid in party systems with restrictive electoral rules (low district magnitudes) compared with systems with permissive electoral rules (high district magnitudes).

Scholars recognized that political party exit (or more optimistically, party success) matters too. Small parties persist for years without significant seat shares, vote shares, access to office, access to the policymaking process, or significant electoral bases. Meguid (2005) found that small parties survive because they can take votes from larger parties at the margins, and in so doing influence politics at a larger scale. Small parties thus adopt effective strategies for competing against larger parties. Other scholars found that strong organizations that foster repeated contact with voters induces party survival (Tavits, 2012). Political party exit and entry are often referred to as ‘extra-systemic volatility, and are considered more serious types of instability/uncertainty than shifts in voteshare because they indicate shifts in the overall composition of the party system (Mainwaring, España and Gervasoni, 2009; Tavits, 2012; Powell and Tucker, 2013). But do party strategies arise adaptively over time, or are they a function of the party’s organizational origins?

What determines party success is still an active area of research. Mainwaring, España and Gervasoni (2009) considered the context of new party entry, particularly whether party labels were
previously established or not, as an important determinant of new party success. VanCott (2005) considered a number of different explanations for new party success, from electoral rules to party resource mobilization. However, one major consideration for VanCott (2005) is organizational - what were the organizational resources which new parties could draw on over the course of their formation? She found that dense organizational networks and organizational unity were strong contributing factors to new party success. I contribute to this literature by delving further into the idea that dense organizational networks help small parties thrive, grow, and survive, by offering quantitative evidence of this phenomenon from Brazil.

In sum, scholarship has demonstrated that the stability of political parties is substantively important and operates by a variety of institutional, behavioral, and organizational determinants. However, the majority of literature conceives of political party change as either mostly independent, and hence bearing no relational dependency with other parties, or mostly contextual, and hence bearing dependency on the party system and its attendant rules, norms, and culture. I seek to place political party change in the framework of embeddedness, in which change depends upon a party’s position within a larger social network of political actors.

5.3 Theory

In this section, I begin with some conceptual clarification, then proceed to the primary theoretical argument. I define what party survival means in the context of a fluid multiparty system, what political origins refer to, and finally what role political origins play in determining party structure.

5.3.1 Concepts

I conceive of parties as composed of relations among actors - networks (Schwartz, 1990) - accompanied by formal and informal party rules that constrain how actors operate within the network (Carey and Siavelis, 2006). Networks provide the social infrastructure for deliberation, decisionmaking, and various types of resource exchange (Sokhey and Djupe, 2011), and the party
rules provide the directives for effectively carrying out party goals. Hence, I conceive of parties as both socially based and institutionally bound.

Parties are institutions with agents that establish and enforce its rules (North, 1990), and this has important implications for party persistence. Social networks are very difficult to destroy, but the party as an organization, residing under a political label and facing changing political conditions, is vulnerable to destruction (Rose and Mackie, 1988). The party organization operates within a larger set of constitutional rules and a competitive environment which constrains its own rules and behavior (North, 1990). If the internal rules of the party no longer suit the larger constitutional/competitive environment in which it operates, the rules of the organization can be destroyed or re-configured.

The concept of political party change versus failure is crucially important for the theory of survival advanced here. Political parties are not static - their organizations can and do change over time (Harmel and Janda, 1994; Janda et al., 1995), as a function of leadership changes, factions within the party, the electoral context, and constraints of the political system (Hunter, 2010). Political parties alter their policy positions, their bases of electoral support, and their organizational structure when necessity demands it (Harmel and Janda, 1994; Lupu, 2015). Yet, despite the pressure that repeated electoral competition places on parties to change over time, political parties frequently retain significant elements of their early organizational selves. The PT in Brazil is a good example of this. The PT faced intense pressure to change its internal processes of candidate nomination to compete with more established (and less disciplined) political parties. While the PT did change, it remained loyal to its early organizational structure in many ways (Hunter, 2010).

5.3.2 Theoretical Argument

Political origins consist of the group of political entrepreneurs that launched the party, the early organizational structure (to whom party decisionmaking is delegated, how party decisions get made, how party leaders are selected), and the political orientation of the party (the substantive
policy proposals that the party espouses). While party origins encompass an array of characteristics, my argument focuses primarily on the actors which launched the party - their social position vis-a-vis members of the current or former government or legislature versus their social position vis-a-vis political activists in the electorate. In my view, the relations of the party arise from the social embeddedness of the actors who launched it, and such relations become entangled in the party’s organizational structure. Party founders, or the actors that launch political parties, are embedded in social networks, and their networks provide the basis for the ties that the party forms with other political actors/organizations. Social networks provide increased access to legislative information, resource-sharing, and clientelism.

Scholars, particularly network scholars, are frequently interested in the concept of embeddedness. Embeddedness is the idea that the decisions that an individual makes are not wholly a product of rational, atomistic decisionmaking, nor wholly a product of the context/culture in which they live, but that choices must be understood as constrained by a social structure in which an individual is embedded (Granovetter, 1985). Embeddedness defines how individuals and organizations access information and resources from their environments. Political party founders and members, I argue, are influenced by the social networks in which they are embedded. Zooming out from the individual level, the embeddedness of a party is a product of the combined social networks of its founders and members.

The social linkages that political entrepreneurs hold provide the basis for their fledgling party’s composition - its ‘web’ of association. Networks are composed of many different types of actors and different types of relationships that co-occur simultaneously. While scholars employ models to simplify networks by limiting the number of actor types and actor relations to just a few, social reality is exceedingly complex. Parties forming within differing social groups naturally have different compositions of actors. Parties forming primarily among networks of political activists (those active in political movements, church affiliates, union activists, etc.) will be composed primarily of political activists going forward, whereas those parties forming primarily among the political elite (government officials, their immediate relatives, former regime officials, etc.) will be
composed primarily of the political elite. The actors that founded a party have a crucial influence on the composition of the party. I find it useful to consider the party as embedded within the various social networks of its founders.

The social ties of founding members of a party can be self-reinforcing vis-a-vis the party. Social networks generate brokerage relationships, where some political actors mediate resources, information, and relationships between other actors (Carpenter, Esterling and Lazer, 2004). Party founders with social ties to government and/or other party leaders convert their personal social ties into interparty political linkages. Party founders use their personal social ties to secure favors, share/disburse resources, find new clients, and spread information from existing political actors in order to secure important benefits for the party. Actors that mediate relationships with others will frequently have access to essential information or resources passing across the network (Bonacich, 1972, 1987). Resources, in turn, can be used to stimulate the creation of network ties among partisans (Hennessy, 1967). Thus, political networks in the context of legislatures can be self-reinforcing. Hence, the political networks of founding members may become institutionalized in the composition of the party over extended periods of time.

Political networks, by virtue of the social closeness they produce between actors, affect the costs of legislative action, clientelism and patronage, and legislative survival. If parties are socially proximate, meaning the social distance that must be bridged in order to discuss possible legislative coordination/cooperation/resource-sharing is low, then parties face lower costs of cooperating for legislative action than if social distance is large. Political networks provide the basis for resource diffusion, by providing a large number of potential sources of information, money, and talent (Koger, Masket and Noel, 2010a). By exchanging resources, parties can disperse risk and reduce the costs of competition in a volatile environment.

Networks help a political party survive across time through the network mechanisms discussed above. Networks, by affecting the social distance between parties and the ease of transmission of information and resources, dense networks give parties easier access than parties with sparse networks. Networks, by allowing for problem-solving within the legislature, reduce the costs for
parties seeking to pursue a contentious legislative agenda. Strategic action between parties can operate through an existing network structure - cosponsorship and alliances can be established via existing interparty network connections.

5.3.3 Hypotheses

H1: I expect political parties whose founders are embedded in legislative or governmental social contexts will tend to form denser networks with other political actors and political parties than parties whose founders are not embedded in legislative or governmental contexts.

H2: I expect political parties whose founders are embedded in legislative or governmental social contexts will tend to have higher voteshares than parties whose founders are not embedded in legislative or governmental contexts.

H3: I expect political parties with dense political networks will tend to have higher voteshares than parties with sparse networks.

H4: I expect political parties whose founders are embedded in legislative or governmental social networks will be more likely to survive over time in comparison to parties whose founders are not embedded in legislative/governmental networks.

H5: I expect political parties with dense political networks will be more likely survive over time in comparison to parties with sparse networks.

5.4 Measurement

It is important to explain what, empirically, political party failure looks like, and how it connects conceptually with existing literature on political parties. The following section discusses the measurement strategy taken in this chapter vis-a-vis political party survival, political party
failure, political party origins, and political party networks.

### 5.4.1 Survival and Disappearance

A party can be said to have survived (did not fail) if it changed its name, and sometimes if it significantly changed its organization or revised its policy positions, but not if it does all three (Katz and Mair, 1995; Harmel and Janda, 1994; Michels, 1915; Panebianco, 1988). If a party changes its name, its organization, its membership, and its policy positions all at once, then it is certainly a ‘new party’. However, a party that changes its name but retains a significant portion of its leadership and membership can still be considered the same party. Similarly, a party that changes its policy positions significantly, but not its organization, name, or primary membership can still be considered to be the same party, as in the case of the PT in Brazil (Hunter, 2010). Thus, whether a party is considered continuous turns upon whether it changes some versus all of its features. \(^1\)

Parties, of course, transform themselves through mergers and absorptions with other parties (Shabad and Slomczynski, 2004). These cannot be considered to be failures, rather strategic transformations. Absorption occurs when one independent party fuses itself with a (usually larger) independent party, and drops most or all of its own organizational features. The absorbed party is dependent upon the organizational resources of the party into which it was absorbed, and ceases to compete in any fashion on its own. Party merger refers to situations where two formerly independent parties combine their organizational resources into one new party. I will consider these outcomes along with party disappearance in the analysis.

In referring to party survival, I focus on a very specific form of organizational change, party disappearance, in which a party ceases to contest elections and has no identifiable electoral successors. Party disappearance refers to parties that exit the party system and make no further attempts to compete in the party system. The organization no longer fields candidates, and is not considered

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\(^1\) For simplicity, I only consider parties that have gained at least one seat in the lower house, of which Brazil has seen 64 by my count since 1988.
to have fused with any existing parties.

5.4.2 Networks

Party-switching networks provide the best measure of cross-temporal interparty networks available. As stated above, political parties whose founders are embedded in legislative or governmental social contexts will tend to form networks with other political actors and political parties. While the structure of such political networks may take many forms, and many of such measures will be immeasurable, parties forming out of particular origins are expected to be more likely to associate with a range of other political actors and engage in different types of exchange with them. Party-switching data reveal these associations and approximate the underlying network structure across which information, resources, and ideas flow.

Partisans must have information about a party before they switch, and they are more likely to have such information if members of that party comprise their social network. Party-switching also creates social networks, by moving partisans from one party to another, partisans act as conduits for information. Centrality in switching networks gives parties superior bargaining positions and access to more partisans than parties on the periphery. Parties which lie central to the network will have increased access to information and resources from other parties (Bonacich, 1987). Little research has been able to examine the structure of party networks using affiliation data (but see Koger, Masket and Noel (2010a,b)), despite a large amount of network theory.

The reason that party-switching networks provide approximations of networks between political parties is because underlying social networks will render it easier for potential switchers to identify the ‘right’ party to switch into. Partisans will be more likely to observe the potential benefits of switching into a party that is socially proximate in the ‘true’ underlying network than one that is socially distant. The latent connections between political actors provide greater access to information for potential switchers, and render it more likely they will switch into such a party. Hence, I see party-switching relations as a relevant way to measure underlying interparty networks.

Party-switching makes a much better measure of network connections than, for instance,
party alliances. In Brazil, alliances are a function of incentives at the state level and the national level. At the state level, parties tend to form alliances around winning gubernatorial candidates, in order to have access to funds that governor’s control within the state (Samuels, 2000). However, alliances among parties also form along different lines at the national level, in order to form government coalitions following general elections (Neto, 2006; Cheibub, 2007). National-level alliances consist of only a few parties in fully connected subgroups with no directional ties (meaning the direction of flow of information and influence cannot be measured). On the other hand, party-switching networks show the directions in which information and resources are flowing, and vary consistently across time. Thus, switching networks provide a richer, more dynamic proxy of party networks.

The party-switching data used in the empirical analysis are based on data from the Brazilian Chamber of Deputies’ own records of party-switches between 1987 and 2007. The data provide a record for every partisan switch in the six Congresses between 1987 and 2007. The data give the member’s name, the party she switched from, the party she switched to, and the date. By taking each switching instance as a link from the party losing a member to the party gaining a member, it is possible to construct a directed network of relations between parties for each Congress. These links are valued by the number of switches between parties, thus creating a valued network. The network density in these networks, or the proportion of ties that exist over the number possible is .036 in the first legislature, .07 in the second, .044 in the third, .059 in the fourth, .067 in the fifth, and .034 in the sixth. While party-switching is not a perfect measure of network structure, as there are many other factors leading to party-switching (Heller and Mershon, 2009), it does provide a useful approximation of the connections between political parties, and I empirically validate it with the political party origins measure - a measure based on social networks themselves.

5.4.3 Origins

To incorporate party origins into the network analysis, I produce a dichotomous variable that gives a ‘1’ to parties whose founders possessed some known connection to parliament - either
direct or mediated, and ‘0’ for parties that formed with no known connection to parliament (the reader will note that mergers and splinters constitute parliamentary connections as well if one of the constituent parties of the merge or split had previously acquired seats in Congress). I established these connections using descriptions of party origins from the Political Handbook of the World (A.S. Banks, et al., 1988-2010). I test whether parties forming out of legislative origins demonstrate a systematic tendency for tie formation that is greater than parties forming out of other origins (e.g. political activism or a charismatic leader).

5.4.4 Controls

In order to account for endogenous tie formation in the network, I include a measure of reciprocity. Reciprocity adds a statistic to the network for the frequency with which ties are reciprocated between parties. If one party loses a member to another party via a party-switch, it may render it more likely that the party attempts to balance the loss by recruiting from that party in the following period (Kato and Yamamoto, 2009).

In addition, I include party ideology and party voteshare as control variables. I expect that parties that are ideologically proximate to be more likely to form ties. I also expect that larger parties will be more likely to form ties with other parties. The party ideology data come from Wiesehomeier and Benoit (2009); Baker and Greene (2011), and involves a four-step process. First, parties are assigned a 1-20 mean score based on expert placements (see Wiesehomeier and Benoit (2009)). Those not covered by the first step are filled in based on the Pop-Eleches (2009) and Coppedge (1998) data sets. Baker and Greene (2011) coded many of the remaining small parties. Parties that are ideologically proximate should be more likely to form ties with one another.

5.4.5 Network Model and Results

Do parties with connected founders form more ties throughout their lifespans? In order to examine whether parties of legislative origins are more likely to form ties than parties of other origins, I use exponential random graph models (ERGMs). ERGMs are used to understand why relation-
ships (ties) of various types form. ERGM’s provide advantages over logit or probit approaches, because they can incorporate complex (endogenous) processes in network formation, such as the tendency for ties to be mutual or reciprocal between actors. The ERGM framework sees a network as one realization among a set of possible realizations of the network - counterfactuals. ERGM’s make thousands of draws from a distribution based on the observed network to simulate the distribution of possibilities that could have been observed. Using this technique, it is possible to make inferences about the determinants of the formation of network ties.

The ERGM equation is given as

\[ P_{\theta,y}(Y = y|X) = \frac{\exp(\theta^T g(y,X))}{k(\theta, \gamma)}, y \in \gamma \]  

(5.1)

where \( \theta \) is a vector of model coefficients, \( g(y) \) is a vector of statistics from the adjacency matrix, and \( k(\theta, \gamma) \) is a normalizing constant defining all possible networks, \( \gamma \). The log-odds of a tie is

\[ \text{logit}(Y_{ij} = 1) = \theta^T \delta[g(y,X)_{ij}] \]  

(5.2)

\( \delta[g(y,X)_{ij}] \) is the change in network statistics \( g(y,X) \) produced when \( Y_{ij} \) goes from 0 to 1. This ‘changescore’ allows us to calculate the conditional log-odds of the network given any value of \( g(y,X)_{ij} \) (Hunter et al., 2008; Goodreau, Kitts and Morris, 2009).

Because I am using party-switching data to tap underlying networks, multiple ties are possible between the same actors in a network, because more than one partisan can switch between any two parties. Ties of this type are frequently referred to as ‘valued’. ERGM’s can struggle to model such data, and eliminating the values (binarizing the ties) can be problematic because it eliminates information concerning the intensity of tie formation among actors and may produce biased estimates (Alemán and Calvo, 2012; Krivitsky et al., 2012). The problem is most frequently thought
of as one of ‘thinning’, because networks of this type are often very dense - as in cosponsorship networks - and the analyst must decide upon a number of ties above which a tie is allowed (Alemán and Calvo, 2012).

Estimation techniques for dealing with valued network data can be impractical for most researchers, as in the case of B-ERGM (bootstrapped ERGM, see Alemán and Calvo (2012)), which can amplify the number of calculations required to produce estimates by a factor of 1000. Because my data consist of six legislative networks of low-moderate density which I model separately, and the median tie value of each network is zero (median = 1 after excluding all the zeros), the tie values do not add much information to my analysis. In addition, because there are a few large outliers (with tie values greater than 10), and most of them are legislative origins parties, I risk pinning my results on a few influential data points. Thus, in my case, by binarizing the data I make a ‘tough test’ for significance. I turn the valued ties to binary using a threshold equal to 1, such that any cell greater than or equal to one is taken as one, else zero. This also allows us to keep the random and unexpected ties that occur between parties which would otherwise share no connections whatsoever.

I estimated an ERGM model for each of my six legislative networks, and present the best-fit and worst-fit results in table 5.1 for comparison. I also graph the coefficients for the party legislative origins variable from each model with 95% confidence intervals around the point estimates (see figure 5.2). Table 5.1 presents the best-fit and worst-fit models (fit measured by the Bayesian Information Criterion (BIC))\(^2\). In figure 5.2, all the coefficients and their 95% confidence intervals are positive, significant, and in roughly the same neighborhood - generally within the .5 to 1 interval.

[Table 5.1 about here]

But what do the ERGM coefficients tell us substantively? I calculate the odd-ratios and accompanying probabilities of tie formation between party pairs where at least one party is of legislative origins, and compare them to pairs in which neither party is of legislative origins. Parties

\(^2\) Model specifications including statistics for geometrically-weighted edgewise shared partners with \(\alpha = .1\) and the number of isolates were also run, with better model fit. However, the substantive effect of party origins remained substantively similar and statistically significant.
of legislative origins demonstrate a greater tendency for tie formation with other parties compared to parties of other origins. The odds of a party of legislative origins forming a tie with another party varies across the six models, but the best-fit ERGM model (see table 5.1) suggests that legislative origin parties are almost two times as likely to form ties with other parties than parties of other origins ($1.8=\exp(.6)$), all else equal. For the worst-fit model, the coefficient for legislative origins suggests that parties of legislative origins are 2.7 times more likely to form ties with other parties in comparison to parties of other origins. Odds-ratios can be deceiving if the substantive probabilities are small, so I calculated the probabilities of a tie between two average non-legislative origin parties and two average parties in which one of them is of legislative origins. Taking the average of all six ERGM models I ran, the probability of a tie between any two average parties of non-legislative origins is roughly 4%, while in party pairs where at least one party is of legislative origins, the probability of a tie between them is roughly 8%.

Other variables in the model demonstrate important impacts on the probability of tie formation between political parties. The ‘Edges’ variable gives the probability of tie formation when all other variables equal zero, which is roughly 6% in both models. Greater ideological distance decreases the likelihood of tie formation. For parties that occupy the same ideological space, a one-unit movement in ideological distance decreases the likelihood of tie formation between them by nearly 1% (ideology ranges between 1 and 15). Finally, the presence of a tie directed from one party to another increases the likelihood of the second party reciprocating the tie by an average probability of 66%.

I produced a visualization of the party network of the worst-fit model, in order to demonstrate that the effects of origins are visible even in the model with the worst fit. In figure 5.3, one can see that parties of legislative origins are central in the network. In figure 5.3, I plot the dependent variable for the worst-fit model (1991-95 Brazilian Chamber of Deputies switching network), and size the party nodes according to the total number of linkages they have with other parties. I then color the nodes according to their party origins, with darker nodes being of legislative origins and
white being of other origins. Finally, I used a network projection algorithm that places nodes with a high number of linkages with other parties closer to the middle of the graph. I see that parties of legislative origins indeed tend to lie at the center of the network, with considerably more linkages than parties of other origins.

In sum, political parties whose founders had ties with the legislature or government tend to have more network connections with other political parties than parties which formed out of other origins. The effect of political origins exerts a substantively important effect on the tendency for political parties to form ties with other parties, even controlling for voteshares, ideology, and tie reciprocity.

5.5 Analysis of Party Survival and Success

5.5.1 Voteshares

Do connected parties have higher voteshares? In order examine the impacts of origins and networks on party voteshares, I conduct a simple OLS regression of party voteshares as a function of organizational origins, network ties, and a few controls. To do this, I first took the log of party voteshares from (Baker and Greene, 2011) as the dependent variable. Ideology scores came from the same source, but I control for extreme ideology scores by computing the square of ideology. I took the total number of incoming and outgoing party-switching linkages from the switching data I used in the ERGM analysis. Party origins is measured identically as in the ERGM models as well, indicating parties whose founders had linkages to the legislature or government. Finally, to control for time effects, I include time fixed effects.

I present my OLS results in table 5.2. Party linkages and party origins were estimated to have positive impacts on party voteshares in both of the OLS models. A single outgoing linkage with another political party produces a roughly 11% increase in the expected voteshare of a party over one with no outgoing linkages. An increase of three outgoing linkages (the maximum observed is 15, the mean is roughly 3), increases the expected voteshare by roughly 36% over a party with
no outgoing linkages. Turning to the effect of party origins, the effects are even more pronounced. Parties whose founders were embedded in legislative networks have voteshares 60% higher than parties whose founders were not embedded in legislative networks.

Model fit for my OLS models was reasonable even with only two significant predictors. my models account for roughly 16% of the variance in the log of party voteshares. I did not find significant changes on voteshares for incoming linkages, ideology, or time. Thus, incoming network ties (party-switches into a political party) were not associated with increased voteshares. This may seem counterintuitive, but consider how this state of affairs is consistent with information about other political parties. A member will switch into a political party if she has information about that political party, their positions, and what benefits she will receive. Hence, outgoing switches imply that at least one member of a party has knowledge about another political party before she switches, suggesting that there are unseen political ties supplying that information. Incoming switches, apriori, do not imply the possession of knowledge about a political party. The insignificant time and ideology variables imply that particular points in time and points on the ideological spectrum are not correlated with higher voteshares.

5.5.2 Survival

What accounts for variation in party survival? Figure 5.1 depicts the likelihood of the three types of exit in Brazil at each point in a party’s lifespan - starting from the first election it contested until it exits\(^3\). In these data, of the 64 parties that contested elections in Brazil, 4 parties have been absorbed (6.2%), 7 have merged (10.9%), 25 have disappeared (39%), and 28 have not undergone exit of any type (43.7%). The mean survival time for all parties is about 19 years, but the mean lifespan for disappeared parties is about 3 years, 10 years for merged parties, and 12 years for absorbed parties. What is most notable is that the likelihood of party disappearance increases substantially in the first years of party competition, but levels off near the 10-year mark\(^4\). By

\(^3\) Or is right-censored. Right censoring occurs when a party survives past the last observation in the data - the party may undergo exit after the last observation, but it will not be observed.

\(^4\) The curved line ends where there are too few observations to give a valid estimate of the probability. However, some statistical packages, such as timereg in R display a flat line at this point.
contrast, merger and absorption are relatively constant - not rising or leveling off substantially over a party’s lifespan. In the next sections, I present my model and data in an attempt to understand these patterns.

[figure 5.1 about here]

Do network ties influence party survival? I estimate Cox Proportional Hazards Models to analyze the rate of risk for disappearance of parties with varying linkages and legislative origins\(^5\) Cox proportional hazards models, which control for temporal dependence with fewer distributional assumptions than other models, are often considered superior. Traditional Cox models model an event of interest whose likelihood is proportional to a vector of covariates, with individuals undergoing all other outcomes considered as censored.

\[
\lambda(t) = \lim_{\Delta t \to 0} \frac{Pr(T < t + \Delta t | T \geq t)}{\Delta t}
\]

\[
\lambda(t; x) = \lambda_0(t) \exp\{x^T \beta\}
\]

The equation above gives the instantaneous rate of risk for a particular event at an infinitely small interval. \(\lambda(t)\) is the hazard rate of failure, and T corresponds to some number of years in which a party existed as an organization. The result is the conditional rate of risk dependent upon \(x\). \(\lambda_0(t)\) is the baseline rate of risk at time \(t\) which, multiplied by the exponentiated \(x^T \beta\) gives the conditional rate of risk. This is a standard approach to Cox Proportional regression (Box-Steffensmeier and Jones, 2004).

I collected data covering all elections of the most recent democratic period in Brazil. \(^6\) I

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\(^5\) As a robustness check, I also combined disappearance, merger, and absorption as the outcome, with similar results. I considered a variety of modeling approaches. First among other modeling approaches was logit. Logit models do not control for time dependency among events. Every event is considered independent of other events in most logit frameworks, so correlated events can generate biased and misleading estimates. There are some fixes within the logit framework, such as splines, that can flexibly model baseline hazards and control for the problem of time dependence (Beck, Katz and Tucker, 1998). The use of splines, however, can force one to make assumptions about distributions. Exponential models, alternatively, can be quite useful to assess hazard processes, and are one of the primary parametric approaches to event history modeling. Such models, though, assume constant risk. Weibull models allow risks to increase or decrease monotonically, but not in nonmonotonic waves or spells (Box-Steffensmeier and Jones, 2004).

\(^6\) The data gathering process consisted of collecting party biographies and using them to code parties as disap-
exclude political parties that did not achieve 1% of the vote or one seat in the lower house. This threshold is lenient enough to capture some small parties, but not so lenient as to generate a data set primarily of small parties. Such a threshold also avoids generating a data set that suffers from highly unreliable information.

Data on party-switching is used again to determine the density of network connections, though I use a simple measure of the average number of incoming and outgoing connections across a party’s lifespan. I again use a measure of legislative origins identical to the ERGM model. Finally, I include a dummy variable for whether a party achieved a 1% voteshare over the course of its lifespan.

[table 5.3]

My findings support my expectations with regard to political party survival. See table 5.3. Looking at the simplest possible model that includes a dummy variable for parties forming out of legislative origins, I find that such parties are 78% less likely to disappear in comparison to parties that formed out of other origins. In practice, this means that non-legislative origins parties face a roughly 47% likelihood of disappearance while those of legislative origins face a roughly 16% chance of disappearance.

When considering both party origins and connectedness in the same model, party origins are no longer significant at the 5% level. However, for every unit increase in the average connectedness of a party, it reduces its likelihood of disappearance by roughly 6% in comparison to parties without linkages. A movement from zero to the mean number of average linkages (8) yields a roughly 40% reduction in the likelihood of disappearance in comparison to parties without linkages. This amounts to going from a 27% overall likelihood of failing to a 16% likelihood. In sum, the effects of origins and linkages are substantively very large.

peared, merged, or absorbed. (see table 1 in the appendix for a list of the parties included). In order to track party trajectories through relatively long spans of time and provide a relatively consistent treatment of them, I use the Political Handbook of the World. The Political Handbook of the World is a source which captures parties as organizations rather than primarily focusing on central individuals. This source also is available for the entire electoral history of Latin America, so gives enormous temporal extension. Other sources have also been used throughout, including Jairo Nicolau’s database on party performance (http://jaironicolau.iesp.uerj.br/, and Adam Carr’s electoral database (http://psephos.adam-carr.net/).
5.5.3 Conclusion

This chapter makes various contributions to research on party success and survival. First, it offers new theory regarding party success - focusing mainly on mechanisms related to interparty connections. It bridges literatures on party systems in Western Europe with Latin American democracies, by formulating and testing a theoretically broad explanation of party stability. Second, it evaluates party success and survival using new data and a variety of empirical techniques. Using these new data and measures, it explores this persistent yet largely unknown process. Third, it leverages data at the organizational level, so the data have the resolution to examine organizational-level explanations.

These results suggest that emergent parties with direct or mediated connections persist longer than parties that lack such connections. The interconnectedness of the party system and its effect on party persistence have substantive implications. Parties that form with networks connections to the legislature tend to persist as long or longer than parties formed only by parliamentary members, which suggests that party systems are less inimical to new parties than some models would predict. These results suggest that when assessing rates of party exit, scholars should look at parties as embedded within networks of other parties who interact in the context of institutions, and whose individual survival is bound up in the survival of the rest of the parties in the system. This logic implies that high levels of party exit may not be attributable to parties individually or country-level institutions, but may be caused by the exit of a few parties with high centrality which initiate a cascade effect across the network. This may help us to explain the phenomenon of complete party system collapse which has occurred in countries like Bolivia. Stable party systems may rest on just a few crucially important parties that are central to the network.
Table 5.1: Best and Worst ERGM Results

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<th>2007-10 (Best Model)</th>
<th>1991-95 (Worst Model)</th>
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<tr>
<td><strong>Party-Switching Networks</strong></td>
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<tr>
<td>Edges</td>
<td>−2.704***</td>
<td>−2.726***</td>
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<tr>
<td></td>
<td>(0.288)</td>
<td>(0.258)</td>
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<tr>
<td>Legislative Origins</td>
<td>0.600***</td>
<td>0.989***</td>
</tr>
<tr>
<td></td>
<td>(0.168)</td>
<td>(0.158)</td>
</tr>
<tr>
<td><em>Ideology</em>$<em>i − Ideology</em>*$$_j$</td>
<td>−0.066*</td>
<td>−0.094***</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.033)</td>
</tr>
<tr>
<td><em>Vote</em>$<em>i − Vote</em>*$$_j$</td>
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<td>0.039</td>
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<td></td>
<td>(3.007)</td>
<td>(1.953)</td>
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<td>Reciprocity</td>
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<td>1.715***</td>
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<td>(0.345)</td>
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<tr>
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<td>300.3</td>
<td>488.2</td>
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<tr>
<td>BIC</td>
<td>320.9</td>
<td>510.5</td>
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*Note:*  *p*<0.1; **p**<0.05; ***p***<0.01
Figure 5.1: Competing Risk Curves

Figure 5.2: Coefficient plot from six ERGM models with model fit BIC’s.
Figure 5.3: Party-switching network 1991-95 (Worst ERGM fit model). The nodes are sized according to their number of links with other parties. Darker shaded nodes are parties of legislative origins. Nodes placed nearest center have higher network centrality using algorithm from (Butts, 2008).
Table 5.2

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Note: *p<0.1; **p<0.05; ***p<0.01
Table 5.3: Cox Proportional Hazards Models

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<td>−1.545**</td>
<td>−0.911</td>
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<td>(0.610)</td>
<td>(0.662)</td>
<td>(0.660)</td>
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<td>Average Connectedness</td>
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<td>Max. Possible R²</td>
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<td>Log Likelihood</td>
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<td>13.100*** (df = 2)</td>
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<td>LR Test</td>
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<td>17.686*** (df = 2)</td>
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<td>Score (Logrank) Test</td>
<td>7.723*** (df = 1)</td>
<td>15.832*** (df = 2)</td>
<td>20.368*** (df = 3)</td>
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*Note: *p*<0.1; **p*<0.05; ***p*<0.01
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<th>Party Abbr.</th>
<th>First Elec.</th>
<th>Last Elec.</th>
<th>1% of Vote</th>
<th>Seat</th>
<th>Origin</th>
<th>Exit Type</th>
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Table 4: Parties continued...

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Chapter 6

Conclusion

In the previous chapters, I theorize about how networks form, how networks facilitate coordination, and how the early networks of party founders affect long-term party success. These chapters demonstrate that the study of political networks provides new and interesting insights into the study of political parties, legislatures, and elections. These chapters seek to convince the reader that social networks are fundamental phenomena of social life and are correlated with many important factors in the literature - partisanship, ideology, and experience among legislators. In sum, this dissertation describes how political networks, far from being epiphenomenal features of legislatures, have considerable impacts for parties and elections and reshape our understanding of important outcomes.

I conclude this dissertation by reflecting on the implications of the major theoretical arguments I presented in this dissertation. I follow that by addressing some potential critiques that may be made against my theoretical arguments and my empirical analysis. I ultimately conclude this final chapter by reflecting on larger picture of political networks in the discipline at the time of writing.

6.1 Network Formation

To illustrate the contours of the networks of Brazilian legislators in my study, and the correlates of network formation, this chapter presents theory and analysis of network formation among legislators. In this chapter, I contend that the social world of legislators is strongly affected by
their proximity to other legislators and their personal, non-political traits. Legislators tend to form relationships for a variety of reasons, and many of them outside of their formal institutional roles as partisans and elected officials.

This chapter is aimed at describing several major correlates of network formation among Brazilian deputies. It theorizes about the personal and institutional factors leading to network formation, and derives critical empirical implications from them. It highlights how legislators have incentives to form working relationships in the same way that they conduct their campaigns - on the basis of their personalities and the skills they can offer directly to their professional peers. The empirical analysis estimates exponential random graph models to examine the effects of age, education, experience, and proximity relative to institutional features like the state from which a deputy was elected and her political party. The results suggest that the combined effect of personal characteristics and local mandates is enough to overpower the effect of partisanship on network formation.

This chapter raises interesting questions surrounding institutional context and the roots of professional/social interaction. These results suggest that in fragmented, personalistic contexts, legislators tend to sort into social networks based on personalistic traits more readily than political parties. Importantly, the right combination of personal traits can overpower the effects of partisanship. Party membership tends to foster intraparty interactions as well, however, even after controlling for the tendency for leaders to communicate information to the rank-and-file.

Another implication of this chapter is that party efforts to generate horizontal accountability in their parties can be undermined by the right combination of personal traits. That is to say that traits such as physical proximity, education, and age spur deputies to associate and perhaps even coordinate with one another. If parties seek cohesion within their ranks, then they should make more efforts to place their offices in close proximity, and create working groups that are sensitive to assortative mixing among deputies (sorting along similar traits). Given that political networks impact legislative co-voting and recruitment, then party leaders should pay careful attention to network formation to ensure cohesion and discipline within party ranks.
A few potential critiques are worth addressing. First, ideology is not introduced as a control in the ERGM model, straining credibility that the personal traits of legislators actually overpower political variables in network formation. Second, I do not use network controls - I do not include the two legislative networks that are not the dependent variable as independent variables. For ideology, it is certainly the case that ideological proclivities will tend to produce linkages among legislators and political actors (see referenced literature in the chapter itself), but ideology is a messy phenomenon produced posthoc by a mix of personal inclinations/preferences and pressure from the party itself. Hence, there is post-treatment bias when including ideology in the model - inclusion of ideology risks controlling away any treatment effect of personal traits because ideology is a consequence of several other variables in the model. With regard to the critique about network variables in the model, it would not be surprising that network ties are correlated with each other. Here, as with ideology, inclusion is likely to control away the treatment effect of personal and party traits which are the central focus of the model. Networks, like ideology, should causally follow immutable or stable traits such as age, education, and experience. As such, the model with the least bias in estimating real effects will include partisan and personal traits and omit networks and ideology, though modeling these effect separately is certainly a worthwhile endeavor.

In conclusion, this chapter provides theory and analysis to better understand the proportion of variance due to personal traits versus party leaders in producing party-cohesion (network ties) among legislators in the context of personalistic legislators and fragmented political parties. It examines the ‘top-down’ effects of political parties in tandem with the ‘bottom-up’ effects of personality among legislators. It contributes to literature on legislatures and political parties by exploring the determinants of cohesion among legislators as a network phenomenon, and showing that while both matter, personal traits are critical to understanding legislator cohesion.

6.2 Tit for Tat Party Recruitment

To illustrate the role of networks in coordinating behavior, I show how the recruitment behaviors of a particular party are likely to affect the recruitment behaviors of others via incentives to
increase legislative seat shares. This chapter puts forward a tit-for-tat account of partisan recruitment, in which party leaders make choices about who they will recruit (and from which parties) based on the decisions of other party leaders making the same decision. The argument asserts that a party leader can compensate for disloyal partisans fleeing to other parties by seeking partisans from the same rival parties to which they have lost partisans. It asserts that such strategies propagate when tools to punish disloyalty are weak or nonexistent, and rules against switching parties result in few negative consequences for partisans. It develops a similar logic with regard to proximate parties, wherein the optimal strategy for party leaders when switching levels are high is to recruit from parties that their rivals have also recruited from.

The tit-for-tat logic rests on a relative gains argument. A leader of a party that is experiencing member loss to a rival party seeks to attract members from that rival in order to recover the costs of the loss. Party leaders also seek gains relative to competitors, and so recruit from proximate parties in order to capitalize on local indiscipline at another party’s expense. Switching is more likely to flow in both directions and to occur between proximate parties.

The implications of this chapter are important from a collective action perspective. The nature of relative gains in this argument implies there is a collective action problem among political parties that evolves as recruitment and switching increase in regularity. Over the long term, party leaders would prefer to limit or control switching for the sake of consistent party composition and ideological coherence, but the short-term gains from recruitment render such an outcome unlikely without outside intervention. As we observed in the case of Brazil, it was not until a Supreme Court Ruling instated a ban on party-switching and ended the recruitment collective action problem.

The results of this chapter contribute significantly to the literature on party-switching. While scholars have suggested that incentives to recruit partisans stem from the relative gains problem of limited seats in the legislature (Kreuzer and Pettai, 2009), little or no work has elaborated theory or empirical tests to capture the strategic and endogenous implications of it. This chapter also raises interesting questions vis-a-vis other existing work. I, like other researchers in this area find that ideology affects the interparty-switching network structure. However, while others find that
higher member vote shares increase the costs of switching parties for members, my analysis suggests that parties with higher vote shares do not have different rates of switching (Desposato, 2006). My results suggest that the vote share of the party from which a member was drawn has no observable impact on the propensity to switch - consistent with the notion of Brazil as a candidate-centered system rather than a party-centered system.

If the party system is defined as an interconnected web of parties and partisans interacting, then the evolution of that structure has important implications for legislative behavior. These results suggest that we should look at parties as embedded actors within networks. Parties act strategically within their institutional context, and their decisions are interdependent. Organizational success, I find, rests in the actions of the rest of the parties in the system and the rules governing interparty interactions. This logic implies that stable levels of party-switching are produced by a collective rational choice process for party seatshares. If the actions of political parties are interdependent and related to party success over the long term, as these results suggest, we may be able to better understand the phenomenon of complete party system collapse. It may be that very inconsistent party compositions degrade party brands so immensely that parties in power collapse, which occurred in Italy in the early 1990’s. The implications of this chapter thus reach to other countries and contexts.

6.3 Co-Voting

I show in this chapter how overlapping political network ties affect the voting behaviors of legislators. Legislators with multiple overlapping ties vote together at multiplicatively higher rates than legislators with only one tie. This chapter sets out to demonstrate that network connections can have observable impacts on legislative behavior. Its central goal is to establish that strong and overlapping network ties lead to changes in legislator behavior apart from their interests in policy per se. It asserts that strong and overlapping network ties generate trust and reputation among legislators, such that they become more inclined to act collectively (coordinate) on voting decisions.

While I must remain cognizant of the limitations of the analysis - given the difficulties of
modeling influence and selection - the results still provide good evidence that networks influence behavior. Even controlling for agreement among legislators, the effects of social network connections on rates of co-voting were sizable. In particular, multiple overlapping connections are very strong - even stronger than the effects of partisanship. The results demonstrate that increasing intensity of interactions (strong relationships), increases the rate of co-voting by a significant margin.

These findings are substantively important for both political network and legislative behavioral literature. Without examining the effects of social networks on rates of co-voting, literature misses insights at a fundamental level. In the network literature, there has been rich theory concerning the effects of weak ties versus strong ties on influence; with one set of scholars primarily interested in weak ties, (e.g. Granovetter (1973); Kirkland (2011)) and asserting that weak ties bring in new information and potential influence of new actors; and a second group (e.g. Heaney (2014)) interested in whether redundant ties produce reliable, trustworthy information. My project lies in the strong social ties group with its focus on intense and overlapping ties and their influence on legislative behavior. In contribution to this literature, I find that the highest intensity and/or multiple overlapping ties produce more influence than the lowest intensity ties and/or individual network ties. In the legislative context, trust affects coordinated actions and is difficult to establish. Trust relationships are ultimately constructed by repeating and intense interactions in a variety of contexts, and have measurable effects on legislative voting behavior.

6.4 Party Success

In the final empirical chapter, I analyze the long-term effects of networks on party success and survival. This chapter highlights how the embeddedness of party founders in social networks influence the trajectories and successes of political parties decades after their founding. This chapter elucidates that networks not only have have short-term effects for parties, but long-term effects lasting years or even decades.

This chapter has implications for how we think about connectedness, change, and evolution in party systems. As Kitschelt et al. (2010) note, the rate of party destruction and creation has
important implications for the process by which political learning occurs. This chapter has implications for understanding how voters might be impacted by short time horizons and uncertainty about what types of parties will participate in the party system. This chapter provides potential explanations for puzzles surrounding the persistence of small parties, as well as puzzles surrounding party events that occur in clumps and clusters. Most important, this chapter provides evidence in support of the view that political networks do not have merely short-term impacts, but long-term effects.

This chapter contributes to research on party survival/disappearance in a number of ways. First, it provides new explanations of party success and failure, bridging literatures on party systems in Western Europe with Latin American democracies, and formulating and testing a theoretically general explanation of party stability. Most important, it forces scholars to rethink the conventional wisdom surrounding party survival. Parties do not survive on votes and seats alone, but rely on structures of exchange with other political parties. Second, it contributes to the literature by evaluating why parties disappear using a new dataset on party survival. Using these data and other new measures, it explores this common yet relatively unknown process. It steps down to the organizational level so the data have the resolution to examine organizational-level processes.

In conclusion, emergent parties with interparty connections persist longer than parties that form without interparty connections. The interconnectedness of the party system, as I discuss earlier, has substantively important implications for party persistence. Parties that are born with specific network connections to the legislature are more likely to persist than parties formed out of social or civic origins. This suggests that party systems are more prone to new party entry than some prior scholarship has found. Here, I find that the founder plays a sizable role relative to the age of the party. Scholars should look at parties as embedded within networks of other parties who interact in specific institutional contexts. Like other chapters in this dissertation, I find that individual party survival is a function of the survival of the rest of the parties in the system. The line of reasoning I have proposed here implies that high levels of party exit may not be due necessarily to individual parties or country-level institutions, but may be caused by the disappearance of parties
with high centrality vis-a-vis the network. When these central parties disappear, they initiate a cascade effect across the network. This may help us to explain the phenomenon of complete party system collapse.

6.5 Do Networks Really Matter?

The major hurdle facing political network analysts in political science is demonstrating that networks matter for politics, and that their substantive effects are large enough to warrant highly complex data and modeling strategies. I have presented evidence that networks matter in substantively important ways in the foregoing chapters, which I briefly review below. However, qualitative evidence also confirms many of my explanations of the role and importance of networks. In qualitative discussions asking high-ranking staff to speculate on why legislators forge legislative ties, they stated how interpersonal ties in the legislature are highly political, and serve to create strategic channels of information and exchange with other legislators.

In the foregoing empirical chapters, I seek to demonstrate to the reader that the political networks of legislators are the result of important political phenomena and have important political implications - that networks ‘matter’. I show in the preceding chapters that the sources of political network formation in Brazil are the political parties in which legislators are embedded, along with their personal traits and characteristics. I also show that political networks have important political implications. I show in the preceding chapters that political networks are important coordinators of legislator behavior and long-term outcomes for political parties. Political network relationships - either prior switches between political parties or legislator’s working relationships, affect party or legislator expectations about important political behaviors in the form of ongoing switches or legislative voting. Early political network relationships of party founders affect the long-term success of political parties.

Do qualitative discussions with legislators and staff confirm that networks matter? In my own informal discussions with legislators and office staff, they confirmed many of the theoretical propositions I assert in this dissertation. When asked, ‘why do legislators make connections?’,
respondents stated that legislators want to interact with legislators whom they trust, so they form their connections with others on the basis of their ability to trust them. According to chiefs of staff I spoke with, legislators often want to exchange ideas, and their connections with other legislators serve this purpose. Respondents stated that legislators must ‘play the game’ in order to guarantee their survival, so they make connections in order to serve these ends. When asked if such connections were simply a function of extroverted personalities, or that they might not matter for actual politics, one respondent strongly denied this, claiming that interpersonal connections are very political, and that it is an advantage for legislators to seek and be sought by others. Similarity of traits were mentioned as well - legislators want to interact with legislators that are similar to them. Similarity in educational status among legislators in particular was cited as a factor. While such discussions are only informal chats about networks with high-ranking legislative staff, they serve to alleviate concerns that the empirical findings in the foregoing chapters are merely statistical artifacts. Networks are important tools that legislators use to achieve their ends, and are formed for strategic political purposes.

6.6 Concluding Remarks

At the time of writing this dissertation, political network analysis is coming of age. The theories of network formation and their substantive effects have existed for some time, but the underlying methodologies are growing at a breakneck pace. While social network theory and much of the underlying mathematics has been developing for some time, there is a proliferation of computers and software capable of estimating models that can accurately estimate the substantive effects of determinants of network formation. At the same time, digital survey technology is growing in both its methodological rigor and user-friendliness. The confluence of these events has made this dissertation possible.

Starting with the Harvard breakthrough and the early social networks analysts, the study of social networks entered into the academic consciousness. Social network analysis, from the beginning of the Harvard breakthrough was able to integrate theories about social interactions and
rigorous mathematical treatments of social dynamics into a powerful field of study. In the 1970’s and 1980’s, Nobel Laureate Mark Granovetter contributed to significant advances in the field with his theory of ‘weak ties’. In the late 1970’s and 1980’s Huckfeldt (1979); Huckfeldt and Sprague (1987) began to bring these powerful insights into political science. This came at a time when the field of political science was beginning to become more concerned with sensitivity to social context and generalizability.

While network-analytic tools and theories were trickling into political science, Linton Freeman began working on UCINET, a suite of tools to analyze social network graphs. UCINET continued development by Steve Borgatti in the late 1980’s, and became a user-friendly tool in 2002, with its integration with the Windows operating system (Borgatti, N.d.). The R statistical system expanded the set of tools available to network analysts even beyond what was available with UCINET. With the Statnet suite of tools (Handcock et al., 2003), analysts were able to incorporate flexible tools of estimation and visualization into a complete package.

Today, the capability of network analysts in analyzing graph data is evolving by the month. New packages and tutorials spring up on a regular basis on statistical and software-specific blogs. The speed at which the software is evolving at times appears to outstrip the capacity of researchers to adopt it, leading to the need for lunchtime tutorials and conferences led by software developers.

While network analysis has trickled into political science over time, there is still confusion and trepidation over what political networks actually mean and do for politics. The single biggest hurdle for network analysts is proving that networks are meaningful beyond sociological accounts of human interaction. Political network analysts must show that their data have political implications or are caused by important political phenomena. If political network analysts cannot convince their readers that networks have important political causes and consequences, then the tools and data serve little purpose, and the study of political networks may fade from academic consciousness within political science.

It is my hope that the study of political network analysis will continue to grow with time and become a commonly used framework for analyzing politics. Similar to other commonly-employed
frameworks such a game-theoretic analysis or decision theory, network analysis recognizes individual agency in decisionmaking. Network-analytic frameworks, however, place the individual in an embedded social context where the boundaries of her decisionmaking and rationality can be identified. The proliferation of methods as a subfield and an ever-growing body of graduate students seeking to toe a line between generalizeable models and context-sensitive research designs will make the study of political networks an increasing fruitful area of research.
Bibliography


Borgatti, Steve. N.d. “UCINET Software: History.” URL: https://sites.google.com/site/ucinetsoftware/history


Byrne, Donn Erwin. 1971. The attraction paradigm. Vol. 11 Academic Pr.


Laws for the Lawmakers. 2007.

Lazer, David, Brian Rubineau, Carol Chetkovich, Nancy Katz and Michael Neblo. 2008. “Networks and political attitudes: Structure, influence, and co-evolution.”.


URL: http://www.jstor.org/stable/4490462


Appendix A

Appendix to Party Recruitment

A.1 How the Recruitment Data were constructed

I first split the data into the six legislatures, and make the affiliation matrices one at a time. The data were originally constructed such that each legislator was a row, with one column identifying the legislator’s party of origin, and another column indicating the legislator’s party of destination. I generate a series of dummy variables for the ‘origin’ parties, then for the ‘destination’ parties, and save these as separate matrices. The result is two $n \times m$ matrices. The resulting matrices are named ‘S’ and ‘P’, and can be observed below.\footnote{I refer to the destination matrix as ‘S’ for ‘switching’ and to the origin matrix as ‘P’ for ‘party’.} I then transpose the switching matrix and multiply it by the party matrix. The result is one $m \times m$ matrix of party affiliation. By transposing and multiplying, I essentially sum number of members coming and going from each party, and the result is an asymmetric affiliation matrix that can be easily converted into a digraph. I repeat this procedure for all six legislatures. See figure 7 below. I reduce the data to binary format (switch=1, no switch=0), in order to conduct longitudinal analysis in RSiena.

Two forms of missing data are worth addressing. The first form is the case of members without parties. I take into account members who become independent or shed their independence by creating a unique group in the affiliation matrix. This group is denoted S. PART (Portuguese for ‘sem partido’, or ‘without party’). Treating this group as another party is imperfect, since there is by definition no leadership structure, but it is superior to eliminating it. The second form of missingness I take into account is the case of parties that do not yet exist or who have exited...
in subsequent networks. Longitudinal network models typically use a fixed node set and examine changes in these ties over time. In this case, I lack a fixed node set. So, I generate a fixed node set based on all the parties that have competed in Brazil and for which reliable data exist. In the estimation procedure, the simulation procedure allows the links of these actors are allowed to changed randomly, but the effect of them on the ultimate parameters is minimized.

$$S \mathbf{I} \times P = A$$

Figure A.1: Producing the Adjacency Matrix - An Example.

A.1.1 Additional Stochastic Actor Model Assumptions

The model assumes that time is continuous, but that each observation of the network is taken at a discrete time point. Between observations, the network may change enormously, but changes in the state of the network between the first point and the second point in time are assumed to be a function of the network structure and the characteristics of the parties at the first point. These data are collected at relatively regular intervals, and observations are not too far apart to render earlier network structure irrelevant for current actors.

The model imposes the assumption that a Markov process correctly describes the data
generating process. Markov processes specify the conditional distribution of the future only on current states of affairs. This means substantively that if one is interested in predicting where a actor will be at any time in the network, the most information they can gain about the distribution of possible choices is given from the position of the actor at the prior time point. In theory, this assumption can be tested by examining the conditional distribution of the future period given the state of the network in the current period. This assumption is not infeasible, since parties are likely to be constrained in their choices by their current recruitment choices.

The model assumes that tie changes are made sequentially and incrementally, rather than in a singular coordinated fashion. This means substantively that a change made at a particular time point can trigger a response from another actor at a second time point, and the sum of their actions can lead to network structures that tend toward configurations over time. However, it excludes the possibility in this case of coordinated party switches between multiple parties. This assumption is tenable in these data, since there is little evidence to show that parties coordinate member switches.

A.1.2 Time Heterogeneity

Do the effects of the covariates vary over time? I tested for temporal heterogeneity of the effects using the specification from model 2. I found that the effects of one covariate did change over time. Reciprocity was found to vary significantly across network waves. Its effect increased sharply across every period for which there was complete data, and the estimated coefficient never overlapped with zero. The only period where its effect was not larger than the previous period was for period 6, for which only partial data was available. See Ripley, Snijders and Lopez (2011).
Figure A.2: Effects demonstrating time heterogeneity.