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Where you sit matters: diplomatic networks and international conflict

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WHERE YOU SIT MATTERS: DIPLOMATIC NETWORKS AND INTERNATIONAL CONFLICT

by

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ABSTRACT

Where You Sit Matters: Diplomatic Networks and International Conflict examines how a state's structural position within diplomatic networks influences its foreign policy behaviors, particularly in the domain of international security. Despite the established understanding in International Relations (IR) that relationships among countries matter, there is little empirical knowledge on what exactly the complicated web of those relationships looks like and how it impacts state behavior. Much IR literature tends to focus only on dyadic or multilateral relationships and treat networks as background, which has left a gap in our understanding of how the structures of international networks affect international outcomes. To address this gap, my dissertation uses network analysis and a variety of statistical methods to reveal key structures of diplomatic networks and examine their impacts on a state's foreign policy behavior.

My argument extends in three directions. The first part uses a large-n, cross-sectional analysis to examine the impacts of a state's broker position within diplomatic networks on its decision to initiate and escalate militarized interstate disputes (MIDs). By using the rare events logit and Heckman selection models, I find that

occupying a broker position in diplomatic networks increases a state's decision to initiate MIDs over the nearly 200-year period from 1817 to 2001; its marginal impact is nearly twice that of military capability. The second part employs a separable temporal exponential random graph model (STERMG) to examine how key structures of diplomatic networks influence a state's decision to terminate diplomatic ties. My findings show that the breakdown of diplomatic ties is not a rare event and network dynamics play a role in terminating ties: states take cues from other countries in the network to decide whether or not to terminate diplomatic ties. The last part uses a community detection method, specifically a link communities method, to reveal latent communities of the diplomatic network and identify key countries that belong to multiple communities. I find that the diplomatic network resembles a hierarchical structure in that diplomatic communities tend to overlap; only a small number of major powers simultaneously belong to multiple communities and few communities are independent from those major powers.

Contents

List of Tables

List of Figures

List of Abbreviations

CINC	.....	Composite Index of National Capability
CLM	.....	Conditional maximum likelihood
ERGM	.....	Exponential Random Graph Models
GWIDegree	.....	Geometrically Weighted In-degree Distribution
GWODegree	.....	Geometrically Weighted Out-degree Distribution
IR	.....	International Relations
MID	.....	Militarized Interstate Disputes
STERGM	.....	Separable Temporal Exponential Random Graph Model

Chapter 1

Introduction

The field of International Relations (IR) is fundamentally about relationships among nations, yet ironically little is systematically and empirically known about the complex patterns of relationships that encompass all member states. Most IR literature tends to focus only on dyadic or multilateral ties, treating the network itself more as background rather than an empirically crucial variable capable of causing meaningful variations in state conflict behavior. However, an exclusive focus on dyadic or multilateral links tends to oversimplify the complexity of interdependence and overlooks the ways in which the complex nature of interdependence can embolden or restrain a state's conflict behavior (Lupu and Traag, 2013). [1]

To address the gap, my dissertation aims to reveal key characteristics of diplomatic networks and examines their impact on a state's behavior in the domain of international security. For the remainder of the introduction chapter, I provide a basic overview of network analysis and suggest unique advantages that network lenses can bring to the study of international relations. I introduce diplomatic networks and their significance and then offer an overview of each chapter, outlining the respective theoretical arguments and methods.

[1] To resolve the problem, a spate of recent studies have started to explore several international networks – such as alliance, trade, and IGO networks – and present a growing body of evidence that extra-dyadic factors play a crucial role in conflict behavior (Dorussen and Ward, 2008, 2010; Hafner-Burton and Montgomery, 2006, 2008; Haim, 2016; Kinne, 2012, 2013; Maoz, 2010; Maoz et al., 2004, 2006). However, previous research has paid surprisingly little attention to the structure of diplomatic networks, which are fundamental information channels among countries.

1.1 Network Analysis in the Study of International Relations

Networks are defined as any set of ties between any set of nodes. In other words, nodes and ties are the building blocks of networks. Nodes represent any actors or social structures, such as individuals, terrorist groups, international organizations, or states. Ties, also known as edges, links, connections, or relationships, can represent different types of relationships between two nodes.[2] The most unique contribution that network analysis can make in the field of IR is changing the analytic focus from a state's attribute characteristics to its relationships. Network analysis focuses on the connections that bind countries together, not exclusively on countries' internal characteristics. From a network perspective, countries and the international system in which all countries are embedded never independently exist; instead, they mutually depend on each other. International networks create a structure that can define, enable, or constrain embedded countries' behavior (Hafner-Burton, Kahler, Montgomery 2009).

Network analysis makes both theoretical and empirical contributions to the study of international relations. On the theoretical side, network analysis can provide alternative lenses to address and answer the core problems of international relations. For instance, IR scholars have long argued that the structure of the international system guides a wide range of state conflict behavior. Kenneth Waltz (1979), a primary figure of structural realism, particularly emphasizes the structure of the international system as a key factor in explaining variations of war and peace. He defines the structure of the international system based mainly on the distribution of capabilities among major countries. Since then, many scholars have examined the question of which distribution of power—such as unipolar, bipolar, or multipolar—is more conducive to the outbreak of war and peace (Mansfield 1993; Midlarsky and Hopf 1993) . However, network analysis tends to view Waltz's understanding of the international

[2]Ties can be either a binary variable measuring the presence or absence of interaction between two nodes, or a count variable measuring the strength or frequency of interaction between two nodes.

system as too static and deterministic. Structural realism tends to overemphasize the distribution of material capabilities among major countries, missing alternative pathways by which countries can shape the structure of the international system via their ties. From a network perspective, the international system in part depends on the distribution of ties among all countries, not exclusively on the distribution of material capabilities. This change in focus provides a more dynamic and nuanced understanding of the international system itself as well as the dynamics between the system and state behavior.

On the empirical side, network analysis can provide empirically rigorous tools to reveal key characteristics of networks. Network analysis allows us to visualize key structures of networks and calculate precise measures of these structures. The measures include the size, shape, and density of the network as a whole, as well as a structural position that each node occupies within the network. Network analysis can also overcome key limitations of the dyadic statistical approach commonly used in IR literature. A fundamental assumption of dyadic statistical analysis is that dyads exist in isolation from any other dynamics occurring in the international system when it comes to the outcome variable. However, as Cranmer and Desmarais (2016) argue, the dyadic design only proves appropriate in the context of two conditions: (1) that dyads do not depend upon each other and (2) that no confounding impacts exist between extra-dyadic dependence and the dyadic covariates of interest. But, given the highly integrated nature of international relations, neither of these assumptions is likely to hold in the real world. It is almost impossible to expect that the interaction between state i and j is independent of the interaction between j and k, or other dyads of states in the international system. In contrast to dyadic research design, network analysis can take into consideration the likelihood of all state interactions given underlying network structures and allow us to estimate unobserved extra-dyadic

dependence. Accordingly, network analysis not only overcomes the problem of the dyadic research approach but also uncovers the important yet complicated web of interdependence among countries that might yield interesting findings.

1.2 Diplomatic Networks

Among numerous international networks, this dissertation particularly focuses on diplomatic networks because diplomatic ties are primary communication channels in which states can collect, interpret, and disseminate information about and with each other. Despite the significance and volume of diplomatic ties, they have long been marginalized in the study of international relations (Lebovic and Saunders 2016; Pouliot and Cornut 2015; Sharp 2009; Trager 2016). Scholars often view diplomatic ties as epiphenomenal, inessential or an inexpensive undertaking, and thus believe that those ties do not generate meaningful variations in terms of state behavior (Maoz et al. 2004). In a similar vein, network scholars in IR have rarely focused on the structure of diplomatic networks, although they have examined a wide variety of international networks, such as alliances, trades, or international governmental organizations (IGO).

However, this dissertation argues that diplomatic ties are crucial for both their practical *and* symbolic value. A diplomatic tie has an important practical value because it is the most fundamental communication channel between states, allowing for the routinized exchange of information and resources. As Berridge (1995:41) summarizes, "gathering information on the local scene and reporting it home has long been recognized as one of the most important functions of the resident embassy." States routinely exchange a great deal of information through ambassadorial ties, such as which domestic concerns are most salient, which foreign threats are the most pressing, which potential allies are the most reliable, and which countries are the

most willing to provide support and in exchange for what (Henke 2017; Trager 2016). Therefore, states can benefit from exchanging diplomatic ties to gather a wide range of intelligence on counterparts. The information they gather through diplomatic ties in turn enables the country to craft highly tailored policy tools against opponents if and when needed. Some argue that technological development has reduced the importance of the information-gathering function, but information available via other means is merely a complement to, not a substitute for, information gathered through diplomatic channels (Jonsson and Hall 2003). Diplomatic channels remain extremely valuable in their strategic or practical value.

The exchange of diplomatic ties has a symbolic role because it is a recognition practice signifying social esteem and implying privileges (Duque 2018). Some scholars argue that their symbolic value is even greater than their strategic or functional value (Kinne 2014, Duque 2018). As the diplomatic competition between Taiwan and China suggests, the number of formal diplomatic relations generally represents a state's standing or status in the international system. The more ambassador ties a state receives, the more legitimacy it enjoys, so to speak. In this vein, scholars have used the number of incoming diplomatic missions as a proxy for state status or relative importance in the international system (Singer and Small 1966). Thus, understanding the patterns of diplomatic ties is crucial in part because it tells us which countries possess the highest and lowest status in the international system.

A diplomatic network is defined as the set of ambassadorial ties between member states where nodes are states and edges are ambassadorial ties. I use the Bayer's diplomatic exchange dataset (2006) to assemble diplomatic networks over the nearly 200-year period from 1817 to 2001 in five-year intervals.[3] The diplomatic network dif-

[3]The diplomatic exchange dataset records the presence of a state's diplomatic ties at the level of 1) charge d'affaire, 2) minister, or 3) ambassador or high commissioner from 1817 to 2005 in five-year intervals. I exclusively focus on the highest diplomatic representation – ambassador or high commissioner level – because lower-level diplomatic ties may not carry the same implications

fers from bilateral or multilateral ambassadorial relations among states, which capture only a small subset of all ambassadorial ties present at any point. The diplomatic network, by contrast, represents the *entirety* of ambassadorial ties among every member state in the international system, indicating which countries send ambassador ties where. The diplomatic network is crucial because information is not exclusively exchanged via direct diplomatic ties, as states can also gather information about third parties that they do not have direct ties with. The exclusive focus on direct ties can miss alternative pathways by which states can stay informed. By capturing the entire information flow, the diplomatic network can be characterized as the fundamental information channel through which information and resources routinely ebb and flow among member states. In this way, diplomatic networks reveal how the practical and symbolic values of diplomatic ties are distributed among countries, an important phenomenon that has been overlooked in previous scholarship.

1.3 Chapters Overview

Throughout the following three chapters, I demonstrate how structures of diplomatic networks influence a wide range of state behaviors in the domain of international security. Chapter 2, *"The Power of Leverage: Broker Position in Diplomatic Networks and International Conflict"*, demonstrates that occupying a broker position in diplomatic networks influences a state's decision to engage in militarized interstate disputes (MIDs) from 1817 to 2001. I posit that the broker position provides an often overlooked extra-dyadic component of a state's *opportunity* and *willingness* to engage in conflict. By virtue of occupying the broker position, broker states have more chances to interact with other states, thereby increasing the potential number of issues over which a conflict could occur. Equally importantly, broker states are more

as higher-level ties and often suggest deteriorated diplomatic relations (Duque 2018).

willing to engage in conflict because they are better situated to coerce or co-opt other states into their preparation for war. The findings of rare events logit and Heckman selection models show that the marginal impact of broker positions on dispute initiation is nearly twice that of military capability. However, interestingly this impact is not consistent throughout the different stages of a conflict, as the broker position does not exert a significant influence on a state's decision to escalate the dispute to a higher-level conflict. The findings indicate that a broker position serves as a crucial source of state aggression, particularly in the stage of initiating a MID.

Chapter 3, *"The Dissolution of Diplomatic Ties: A Temporal Dynamic Network Model,"* examines factors that influence the dissolution of diplomatic ties between 1970 and 2005. While a few studies have examined the process of diplomatic tie formation, little has been investigated about the factors that lead to diplomatic tie dissolution. However, the breakdown of diplomatic ties is not a rare event, and my research shows that it is a consistent pattern throughout history. To understand the dynamics behind diplomatic tie dissolution, I employ a separable temporal exponential random graph model (STERGM) and find that the network structure influences a state's decision to terminate ambassadorial ties. For instance, states tend to take cues from other countries in the network to decide whether or not to terminate diplomatic ties. My findings also show that processes of diplomatic tie formation are not the same as those of tie dissolution: among other findings, a state's extant diplomatic ties play a meaningful role in attracting more diplomatic ties in the first place, but they do not influence the maintenance of those ties. Given that incoming diplomatic ties are often used as a proxy for state status, my finding suggests that the processes of gaining and losing diplomatic ties are not the same. One of the interesting implications is that the maintenance of state status is not automatic. Rather, keeping status requires strategic effort to continuously stay connected with other countries.

Chapter 4, *"The Hierarchical Structure of Diplomatic Network"* explores latent communities of the diplomatic network and identifies key countries which belong to many distinct and separate communities. Although IR scholars have long been interested in identifying clusters, subsystems, and blocs of the international system, the previous approach is empirically less rigorous and makes tautological arguments: it uses *ex ante* information about states, particularly their geographical regions or institutional ties, to group them into communities and argue that the membership in communities influences state behavior. More recent scholarship on community detection methods has sought to overcome this problem by identifying communities inductively; however, it has a methodological weakness in that it does not allow for states to belong to multiple communities, which is highly likely to occur in real networks. To overcome this limitation, I use the link communities detection method that can identify latent communities based on the actual patterns of state diplomatic ties and the possibility for heterogenous community membership. Among a few notable findings, this article finds that the diplomatic network is made up of several overlapping and nested communities, rather than of mutually exclusive groups. It resembles a hierarchical structure in that diplomatic communities tend to overlap; only a small number of major powers tend to belong to multiple communities and few communities are independent from major powers.

Chapter 2

The Power of Leverage: Broker Position in Diplomatic Networks and International Conflict

This chapter focuses on broker position within the diplomatic network and examines whether and to what extent broker position influences a state's decision to engage in conflict. I argue that broker position is a proxy for an overlooked component of a state's *opportunity* and *willingness* to initiate and/or escalate conflict: the more of a broker position a state occupies in the diplomatic network, the more likely it is to engage in international conflict. Broker states have more opportunities to interact with other states and consequently have more potential issues over which a conflict could occur. Equally importantly, broker states are more willing to engage in conflict because they are better situated to coerce or co-opt other states into helping them in the preparation for conflict. I use the rare events logistic model and the Heckman selection model to examine the impact a state's broker position may have on its decision to initiate and escalate militarized interstate disputes (MIDs) from 1817 to 2001. My findings show that occupying a broker position increases a state's propensity to initiate a militarized dispute; its marginal impact is nearly twice that of the state's military capability. However, once states are involved in a dispute, a challenger's broker position does not exert a significant influence on its decision to escalate the dispute to a higher level of conflict.

This chapter contributes to the literature on diplomacy, international conflict, and

networks. Over the past decade an increasing number of IR scholars have applied network analysis to illuminate the network-based dynamics of state conflict behavior (Dorussen and Ward, 2008, 2010; Hafner-Burton and Montgomery, 2006, 2008; Kinne, 2012, 2013, Maoz et al., 2004, 2006; Renshon 2017). However, by focusing on IGOs, alliances, or trade networks, they have largely overlooked the structure of diplomatic networks capable of generating meaningful variations in terms of state conflict propensity.[1] On the diplomacy literature side, there have been few quantitative studies that have examined the impact of diplomatic ties on state behavior. Most of the existing empirical work has tended to focus merely on states' bilateral or multilateral diplomatic relations (Lebovic and Saunders, 2016; Trager, 2010, 2016), missing the ways in which complex diplomatic interdependence shapes conflict propensity even among states that are not directly linked to each other. To the best of my knowledge, none of the literature has examined the different effects that the structure of diplomatic networks might have on different stages of conflict. This article aims to bridge diplomacy and conflict scholarship using a network perspective and show the independent impact of diplomatic broker position on conflict propensity and its differential impacts on dispute initiation and escalation.

The remainder of this chapter proceeds in five steps. First, I review the existing theoretical and empirical research and identify inconsistent findings regarding the association between diplomatic ties and conflict propensity. Second, I present broker position within diplomatic networks. Third, I outline the theoretical mechanisms by which broker position within the diplomatic network influences a state's propensity to initiate and escalate conflict. Fourth, I present my research design and test my hypotheses with the rare events logistic model and the Heckman selection model using

[1]Three notable studies have examined the structure of diplomatic networks and enhanced our understanding of how diplomatic networks influence a wide range of state behavior (Duque, 2018; Kinne, 2014; Renshon, 2017). However, none of them examine in particular the role of broker position within diplomatic networks on state conflict propensity.

MID data from the period spanning 1817 – 2001. Finally, I conclude by showing how my findings contribute to the current body of diplomacy and conflict literature.

2.1 Diplomatic Ties and International Conflict

Diplomatic ties are the primary communication channels through which states can collect, interpret, and disseminate information about and with each other (Berridge, 2010; Bull, 1977; Jönsson and Hall, 2003; Sending, Pouliot, and Neumann, 2015; Trager, 2010; Watson, 2005). Despite the significance and volume of diplomatic ties, many scholars have acknowledged that the subject has long been marginalized in the study of international conflict (Derian 1987; Lebovic and Saunders, 2016; Sharp, 2009; Trager, 2010, 2016). To the extent that it has been addressed at all, three strands of literature have explicitly or implicitly examined the role of diplomatic ties as an independent force in understanding war and peace.

The first strand suggests that diplomatic relations are a means of conflict prevention. It posits that diplomacy involves peaceful conflict resolution through communication, mediation, and negotiation when interests do not entirely converge (Sharp, 2009; Watson, 2005). For example, Nicolson views diplomacy as "the management of international relations by negotiation" (Nicolson, 1963: 4). Watson defines diplomacy as "the process of dialogue and negotiation by which states in a system conduct their relations and pursue their purposes by means short of war" (Watson, 2005: 17). Using a dynamic formal and statistical model, Kenkel (2018) finds that diplomatic ties are likely to reduce a state's propensity to engage in militarily hostile behavior. Even if a short-run benefit from the use of force may be expected, the long-term loss of cutting diplomatic ties makes states more hesitant to initiate a dispute with a country once it has established a diplomatic tie. That is, "a formal diplomatic presence serves as a kind of commitment device" (Kenkel, 2018: 2). In a study of interstate rivals' be-

havior, Greig and Diehl (2006) similarly find that positive interactions via diplomatic ties play a crucial role in restraining states from engaging in conflict. Their idea is that diplomatic ties will "soften" the hostile attitudes of belligerents and eventually allow them to find peaceful resolutions to their differences.

The second strand of research views diplomatic ties as a resource of state coercive power. Sending, Pouliot and Neumann (2015), for instance, summarize diplomacy as practices of governing that involve coercion. Schelling (1966: 2) also emphasizes that diplomacy can be "polite or rude, entail threats as well as offers." Similarly, Bull (1977: 158) writes that diplomacy aims to "secure [other states'] cooperation or neutralize their opposition in carrying it out – by reason and persuasion if possible, but sometimes by *threats of force or other kinds of coercion*" [emphasis added]. George (1991) defines coercive diplomacy as a political strategy that aims to influence an adversary's will or incentive structure. He emphasizes that coercive diplomacy includes threats of force, and, if necessary, the limited and selective use of force in addition to positive inducements. The collective underlying message here is that diplomatic ties do not necessarily involve peaceful resolution of conflicts; rather, they can be utilized to deliver implicit or explicit threats of force in order to maximize one's benefits.

Some scholars go further, arguing that diplomatic ties indeed help states better prepare for war. For example, Barkawi (2015: 56) argues that "diplomacy is central to the administration and conduct of war, and to the construction and use of force more generally." When a state engages in conflict, a wide array of coordination with other states – including international sourcing of weapons, munitions, money or strategic advice, the coordination of arms shipments and logistics, and the coordination of blockades against their enemies – is necessary and often inevitable. Diplomatic ties play a crucial role in coordinating such military logistics with other states in preparation for war. In a similar vein, Henke (2017) suggests that diplomatic ties help

a state to effectively build military coalitions. Using statistical analyses of US-led coalitions and a case study, she shows that a greater "diplomatic embeddedness" allows the U.S. to effectively construct recruit military coalitions in conflict via side payments. "Diplomatic embeddedness, if used purposefully, constitutes an important state resource," writes Henke (2017: 2). [2]

The third strand of research is concerned with the role information plays in the occurrence of conflict, which implies the relevancy of diplomatic ties. The bargaining model of war dismisses the impact of diplomacy on war and peace by claiming that diplomatic communication is often uninformative because states have incentives to misrepresent their preferences. For Fearon (1995: 391), "diplomacy may not allow rational states to clarify disagreements about relative power or to avoid the miscalculation of resolve necessary to maintain peace." Due to incentives to misrepresent one's preferences, even after exchanging diplomatic ties, rational states remain uncertain about the distribution of power, thereby leading to a failure to compromise, which often results in war. Reed (2003), on the other hand, claims that uncertainty in the form of asymmetric information is an important predictor of the probability of conflict. Uncertainty about relative capabilities leads a challenger state to overestimate its bargaining leverage and demand more than a target state is willing to concede, increasing the likelihood of conflict. His findings imply the value of diplomatic ties in that asymmetric information is often shaped by the quantity and quality of diplomatic ties a state establishes with other states. Following similar logic, Trager (2010) suggests that such uncertainty can increase *or* decrease the likelihood of conflict. The existence of diplomatic channels gives states the ability to both convey their willingness to fight over *or* resolve issues. Diplomatic ties help states communi-

[2]Henke operationalizes a state's level of "diplomatic embeddedness" based on the number of total ties a state has with other states (i.e. degree centrality) in IGO networks. This article differs from her work in that it focuses on broker position that is measured by a challenger's betweenness centrality in diplomatic networks.

cate perceptions of given circumstances, but this stand of scholarship provides little consensus on whether it is likely to help achieve peace or war.

These three approaches support the notion that diplomatic ties help explain variation in terms of state conflict propensity both explicitly and implicitly. However it remains unclear how exactly and to what extent they impact a state's decision to engage in conflict. Such inconsistent findings regarding the role of diplomatic ties come in part from the fact that most of the earlier work focuses on bilateral relationships and explaining whether diplomatic ties between two states affect their probability of direct conflict. While diplomatic ties at the bilateral level are obviously influential, there are compelling reasons to believe that diplomatic networks, which go beyond mere direct bilateral relations to capture indirect relations, also play a role in state conflict propensity. Since states are in practice complicatedly interdependent, information and resources are not necessarily transmitted via bilateral diplomatic ties. The quantity and quality of information a state can gather from indirect third parties also plays a crucial role in calculating its relative power and shaping its bargaining leverage. In brief, diplomatic networks – the totality of diplomatic ties among every member state as a whole – allow us to understand the flow of information and resources that embedded states can access and accumulate through diplomatic ties. This article extends the insights of earlier work by demonstrating how the structure of diplomatic networks generates meaningful variation in terms of conflict and peace.

2.2 Broker Position within the Diplomatic Network

This chapter focuses particularly on broker position as a proxy for a state's diplomatic power. As Schelling (1966: 2) pithily writes, "the essence of diplomacy is *the use of leverage*[emphasis added] to achieve more favorable outcomes." A state's ability to exploit leverage stems from its bargaining power, or "the power to hurt." If the core

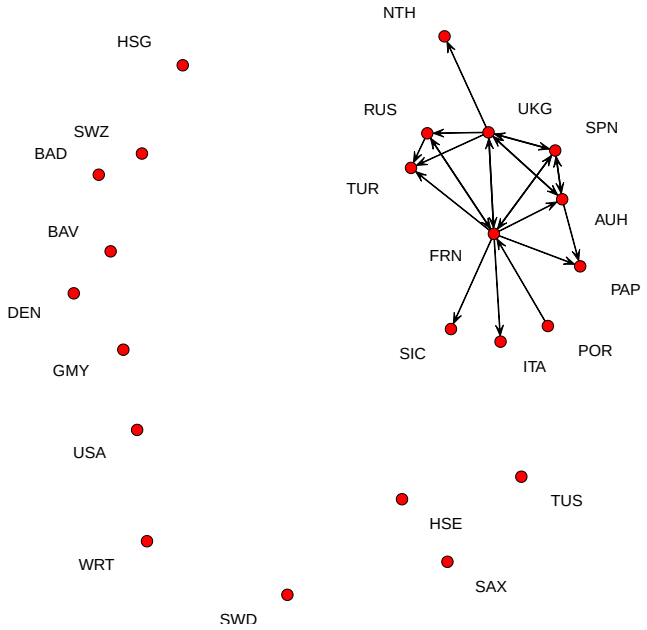
of diplomacy hinges on the leverage power, the broker position within the diplomatic network is a sound measure of a state's diplomatic power, as the position allows the country to use important issues as bargaining chips to extract benefits that otherwise might not be possible.

I measure a state's broker position using betweenness centrality. Betweenness centrality refers to the number of ties an actor occupies on the shortest path between other actors in a network (Wasserman and Faust, 1994). It suggests the extent to which an actor plays the role of a "broker" or "gatekeeper" with the potential for control over other actors in the network (Hafner-Burton, Kahler and Montgomery, 2009; Kim, Lee and Feiock, 2012). Kim, Lee, and Feiock (2012) show that during the Cold War, as the leader of the COMECON, the Soviet Union had a higher betweenness centrality than any other Eastern European country in the arms transfer network. By standing on the shortest paths connecting many pairs of unconnected communist countries, the Soviet Union could act as a broker in the network connecting with communist states who otherwise would have remained less connected. The broker position allowed the Soviet Union to exert leverage power over communist countries.

Table 2.1 shows the betweenness centrality of states in the diplomatic network of 1817. In the diplomatic network of 1817, in which 23 countries exchanged 23 diplomatic relations in total, France had the highest betweenness centrality score at 24, followed by the U.K's at 9.5, and the Kingdom of the Two Sicilies and Spain shared third place at 1.5. By virtue of occupying a central position among disconnected groups, France was able to control the flow of information and resources among states in the diplomatic network. As figure 2·1 illustrates, relatively fragmented states such as Portugal and Tuscany had no choice but to be more dependent on France to transmit information to other states with which they did not have direct diplomatic ties. The highest betweenness centrality provides France with power to exert influence

over other states for its own strategic interests.

Figure 2·1: Diplomatic network of 1817



Some might question whether a state's broker position is merely a reflection of its material capabilities or a buzzword that dims the clarity of theoretical debates. Although a state's military capability and diplomatic betweenness centrality are correlated to some extent, they are not entirely predictive of each other's behavior. As Table 2.1 shows, France had the highest brokerage power in 1817 with more than twice that of the U.K. However when it comes to military capability,[3] the U.K. was the strongest state in the international system approximately three times stronger than France. Russia was the second-strongest state in terms of military capability, but it had the lowest betweenness centrality. The discrepancy between military capability

[3]The military capabilities were obtained from the Correlates of War (COW) dataset (Singer, Stuart and Stuckey, 1972). I used a conventional indicator of the CINC (Composite Index of National Capabilities) to measure a state's military capability

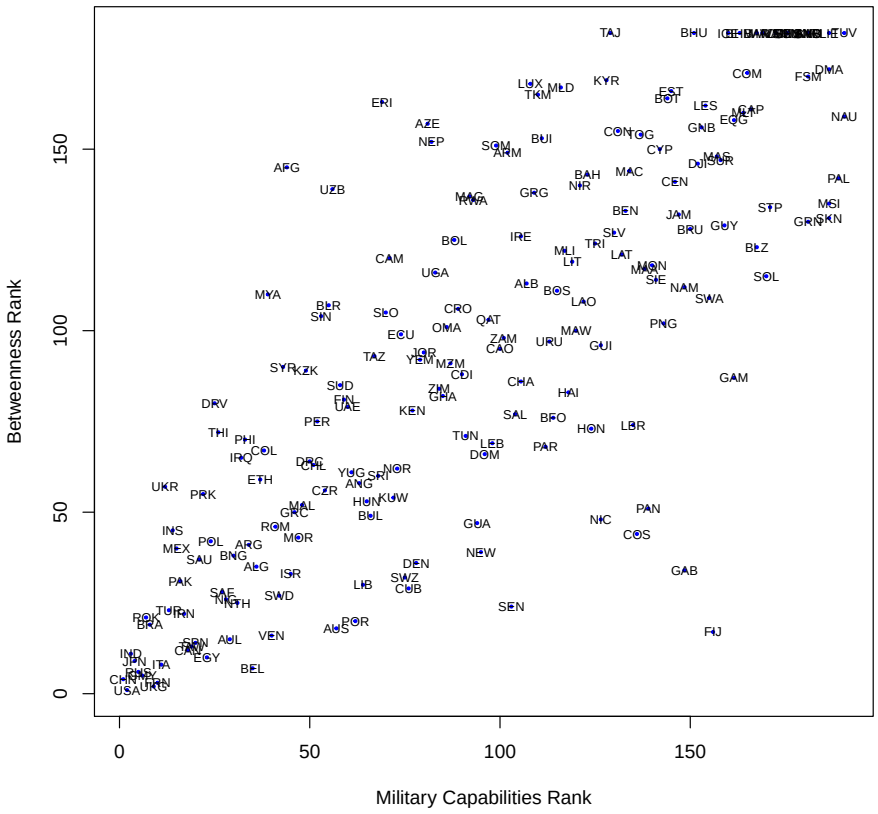
	country	betweenness centrality	military capability
1	AUH	1	0.094
2	FRN	24	0.114
3	ITA	0	0.009
4	NTH	0	0.041
5	PAP	0	0.009
6	POR	0	0.011
7	RUS	0	0.157
8	SIC	0	0.030
9	SPN	1.5	0.042
10	TUR	0	0.062
11	UKG	9.5	0.328
12	USA	0	0.036
13	SWZ	0	0.002
14	BAV	0	0.008
15	GMY	0	0.052
16	BAD	0	0.003
17	SAX	0	0.003
18	WRT	0	0.003
19	HSE	0	0.002
20	HSG	0	0.002
21	TUS	0	0.002
22	SWD	0	0.025
23	DEN	0	0.005

Table 2.1: Network Centrality and Military Capability of States in 1817

and betweenness centrality is a consistent pattern throughout history. Figure 2·2 compares states' ranks of betweenness centrality to those of military capabilities in the year 2000, suggesting similar variations between the two. Some states, such as Afghanistan, are relatively marginalized in the diplomatic network despite their relative military strength. Belgium and Fiji, by comparison, occupy a relatively more central position than their military capabilities rank would imply. Exploring the causes of the variations is out of the scope of this article; however, it should be noted that although material resources definitely affect a state's betweenness centrality, there are other exogenous and endogenous inputs in deciding a state's betweenness centrality in diplomatic networks.

Moreover, broker position within diplomatic networks has consistently existed throughout history. As more states have become interconnected with each other over time, and the integration level among them is higher than ever before, one might

Figure 2·2: Relationship between military capability and betweenness centrality (2000)



wonder whether broker position within diplomatic networks is even observable. It is true that the number of countries and their ambassadorial ties have substantially increased over time. However, interestingly, my analysis shows that the density of the diplomatic network has been relatively flat, around 0.2. This means that for every 10 possible ambassadorial links that states could have, in practice only two ties exist among them. Moreover, the distribution of broker position within diplomatic networks has become skewed: only a small number of countries tend to enjoy broker position over time, and the gap with marginalized states has increased. Thus, the broker position tends to be concentrated into a few countries, and thereby state

broker power has become more hierarchical. This historical pattern validates the unique value of a state's broker position as a meaningful explanatory variable of state conflict propensity.

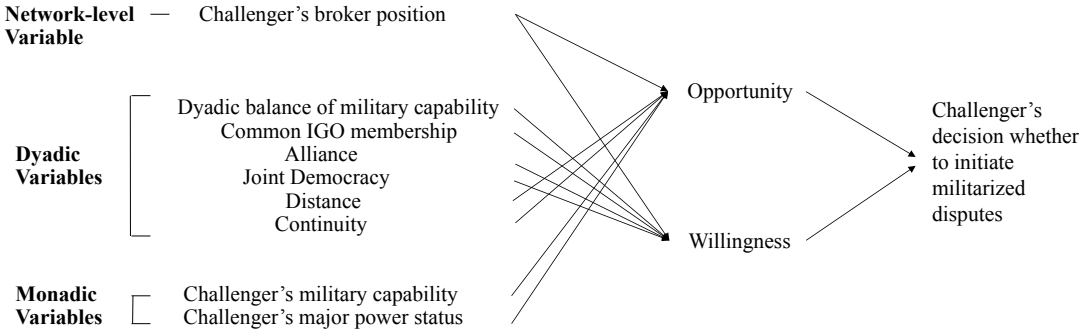
2.3 Theoretical Framework and Hypotheses: Opportunity and Willingness

The framework of opportunity and willingness helps illuminate the mechanism by which a broker position influences a state's decision to initiate a conflict. Since Starr and his coauthors first developed the framework of opportunity and willingness, numerous IR scholars have explicitly or implicitly utilized it to explain the initiation and escalation of international conflict (e.g., Clark and Regan, 2003; Gartzke, 1998; Kinsella and Russett, 2002; Most and Starr, 1989; Most, Starr and Siverson, 1989; Siverson and Starr, 1991; Starr, 1978). They assume that a state's decision to engage in a conflict is fundamentally based on the probabilistic occurrence of two necessary conditions – opportunity and willingness. Starr (1978: 364) defines opportunity as the "possibility of interaction" and claims that pairs of states with more opportunities to interact are more likely to engage in conflict whereas those with fewer opportunities are more likely to be at peace. IR scholars have generally considered proximity, major power status, or state power as primary proxies for a state's opportunity to fight in that they represent a state's capacity to interact with other states (Clark and Regan, 2003; Siverson and Starr, 1991; Starr, 1978).

While opportunity refers to the "possibility of interaction" and thereby the chance for conflict, willingness mainly concerns a variety of factors that affect a state's cost-benefit calculations in terms of choosing conflict over other policy options (Most and Starr, 1989; Starr, 1978). Although extant proxies of willingness come from a wider and more contentious range of variables, scholars have mainly considered the following

as the major sources that influence states' willingness to fight: military capabilities (Fordham, 2004; Mearsheimer, 2001) regime type (Maoz and Rusett, 1993; Oneal and Russett, 1997), joint alliances (Leeds, 2003), shared IGO memberships (Oneal and Russett, 1999; Oneal, Russett and Berbaum, 2003; Kinne, 2013), and expectations regarding the probability of winning (Bueno de Mesquita and Lalman, 1992; Clark and Regan, 2003). By either increasing or decreasing willingness to fight, they all affect a state's calculation in weighing the potential costs of conflict against the potential benefits.

Figure 2·3: Components of Challenger's Decision to Initiate Militarized Disputes



2.3.1 How does diplomatic centrality influence a state's *opportunity* to fight?

My central argument is that a state's broker position affects both its opportunity *and* willingness to initiate and escalate militarized disputes. Regarding opportunity,

I posit that broker position reflects and influences the likelihood of interaction a state has with other states. Network centrality is an apt proxy for a state's opportunity to fight because it by definition captures the extent to which an actor interacts with other actors. Among the numerous ways through which states can interact with other states, including through alliances, trades or IGOs, diplomatic ties are among the most basic vehicles by which states communicate and exchange information with other states on a regular basis. As such, diplomatic network centrality can capture states' interactions on a fundamental level.

Moreover, diplomatic network centrality can overcome a primary limitation of extant proxies for opportunity to fight. Clark and Regan (2003) point out the limitation of the extant measures, namely geographical proximity and major status, in that they are conceived and empirically measured as dichotomous rather than continuous – as if either having opportunity or fully lacking it. In contrast to these proxies, network centrality measures the continuous likelihood of interaction opportunity that a state has with other states, rather than simply whether it has such an opportunity. In other words, diplomatic network centrality can indicate which countries are more likely to have the opportunity to interact with other states, thereby having more potential issues over which a conflict could occur. Diplomatic networks do not themselves lead to the occurrence of conflict. Rather they create a crucial part of the international infrastructure that generates a continuous likelihood of interaction opportunity for formally distant states to be proximate, thereby raising the probability of disputes.

2.3.2 How does diplomatic centrality influence a state's *willingness* to fight?

Equally importantly, I posit that broker position also influences a state's willingness to initiate a militarized dispute because it equips the country with tools to garner a wide range of support from other states in preparation for war. I suggest two mechanisms

broker states can utilize to draw support from other countries: a *coercive* or *co-optive* mechanism. The coercive mechanism suggests the ways in which broker position enables a state to win over assistance from other countries via threats of coercion or promises of payments. This mechanism is comparable to what the state power literature refers to as the "first face of power," which is defined as "the ability to get others to act in ways that are contrary to their initial preferences and strategies" (Nye, 2011: 14).

For example, China's coercive power toward South Korea derives in part from its broker position. Given the consistent hostility between North Korea and South Korea since the Korean War in 1950, South Korea's connection with China is essential not only because of China's economic and military capabilities, but also due to its distinct position as a broker between South Korea and North Korea. By utilizing exclusive ties with North Korea, China has gained otherwise unavailable concessions from South Korea at the bargaining table and put pressure on South Korea to change its initial policy preferences to conform to Chinese ones. When South Korea decided to cooperate with the United States to deploy the U.S. defense system Terminal High-Altitude Area Defense (THAAD) in 2016, China expressed strong opposition to the system and took several retaliatory actions against South Korea. China's government responses included not only economic sanctions on specific companies and banning travel to South Korea, but also included loosening sanctions against North Korea and re-strengthening ties with Pyeongyang (Ryall, 2016). As Ryall puts, "China is sending a clear message that if other countries want its cooperation in ensuring that North Korea scales back its nuclear weapons and missile programs, then those nations will have to accommodate China's interests." It's not merely China's economic or military attributes but rather China's distinct broker position in the network that enables Beijing to exert its coercive influence.

The co-optive mechanism, on the other hand, suggests the ways in which broker position enables a country to win over assistance from other countries by controlling their ideas or narratives. This mechanism is similar to the "second face of power," which is defined as "the ability to get preferred outcomes through the co-optive means of agenda setting, persuasion, and attraction" (Nye, 2011: 16). Broker states are more likely to exert co-optive influence over other states because the position allows them to selectively choose information and/or manipulate discourse to suit their own benefits. In this vein, Goddard (2009: 258) suggests that brokers are more likely to act as "political entrepreneurs" who can "define issues, create norms, and at times, even introduce new identities into the international system." This co-optive power is attributed to the broker's ability to utilize different languages, rhetoric, or norms depending on the audiences. In a case study of the Belfast Agreement of 1998, Goddard (2012) demonstrates that brokers combine different rhetorics to formulate new justifications, frame a settlement in a way that resonates with different audiences, and thus legitimizes the settlement that ended the conflict in Northern Ireland. Simply put, broker actors can "build a winning coalition for a settlement, as well as marginalize spoilers who seek to undermine the peace (Goddard, 2012: 501)."

If broker position gives an actor the unique ability to utilize rhetorical resources to legitimate a settlement, there are compelling reasons to expect that the position can also furnish the unique ability to utilize rhetorical resources to legitimize one's military action. A broker state can effectively formulate and disseminate information and discourse in ways that can shape other states' perceptions of its military decision, such as the worthiness of the cause and/or the probability of success in the conflict. In this way, the broker state can garner support from other states in preparation for war, emboldening it to act aggressively. The co-optive power (i.e., a state's ability to shape other states' preferences by controlling their ideas or narratives) in particular makes

the value of broker position distinct from that of material capabilities. It's generally difficult for a militarily strong state to change the preference of other countries, but a broker state is more capable of doing so because it has the ability to get others to want what it wants.

The Russo-Japanese War of 1904 offers a revealing example of how broker position can exert co-optive influence to offset material disadvantages and pave the way for waging a successful war. Russia was perceived as far superior to Japan in terms of military and economic capabilities. The Russian leaders believed that "Japan would not dare to launch an attack against a far superior European power"(Paul, 1994: 42). However, the diplomatic landscape did not exactly reflect their material power distribution. After the painful experience of the Triple Intervention in 1895, Japan was acutely aware of the need to curry greater international favor in order to successfully initiate military action. As such, Japan started to put significant effort not only into cultivating close diplomatic ties with other states, such as the United States and Britain, but also toward isolating the diplomatic relations of Russia (White, 1964). As a result, Japan moved into a relatively more central position in diplomatic networks, whereas Russia became relatively marginalized in the international system. By connecting with the U.S. and the U.K. and isolating Russia, Japan successfully exported their own views, beliefs, and preferences to other states, convincing them that Russia was an aggressive expansionist and that the threat of Russia was advancing rapidly. At the same time, the brokerage power allowed Japan to depict itself as a legitimate and civilized state acting for the common goal of international society – "fighting for an open door" rather than "fighting for expansion" (White 1964: 76). Despite its military disadvantages, Japan was able to frame its military decision in ways that could resonate with other states and thus be favorable to its aim. Accordingly, Japan received otherwise inaccessible material and diplomatic support from other states and

successfully tainted the reputation of Russia, causing it to be perceived as a hostile aggressor. In 1903, Baron Rosen, the Russian minister to Japan, also emphasized the role of third parties, particularly the United States, on the Japanese decision to initiate a war against Russia.[4] Japanese broker position – that is, being linked to the U.S. and the U.K. and isolating Russia – played a crucial role in exerting co-optive power to make other countries sympathize with Japan's ideas. This lent justification to its military decision, and thereby induced a wide array of military support. It is particularly notable that Japan strategically utilized the rhetoric of "fighting for an open door" to resonate with the U.S. and the U.K, and thus successfully won over their moral and military support. Even if the U.S. and the U.K. considered it in their strategic interest to do so, none of this would likely have been possible if the idea Japan had promoted did not resonate within the network.

In sum, broker position in a diplomatic network helps a state to win over a wide range of support from other states through coercive and co-optive mechanisms. The expected assistance from other states can be perceived to reduce the costs of conflict and increase the chance of prevailing in a conflict, all of which in turn likely increases a state's *willingness* to fight. Moreover, the extent to which a state can receive support from other states often serves as a heuristic for the public to support a state's military decision (Johns and Davies, 2014). As a result, the expected support from other countries creates another pathway by which a state's willingness to fight increases. As such, broker states in diplomatic networks are more likely to make aggressive demands and engage in a militarized dispute to achieve their foreign policy goals. Accordingly, I contend that diplomatic networks influence a state's decision to initiate militarized disputes by affecting its *opportunity* and *willingness* to fight.

[4]Rosen explicitly stated: "I personally saw the extent to which the influences of the assurances of moral and material support from America was *decisive* (emphasis added) in the counsels of the Japanese government, for I sensed this very clearly during the conversations I conducted with the Japanese government just preceding the war" (White, 1964: 89).

Diplomatic networks influence the variation of interaction opportunities available to states and the extent to which they can draw upon support from other states and therein shape the cost-benefit calculations regarding a potential conflict. This leads to my first hypothesis:

H1: The more broker position a state occupies in diplomatic networks, the more likely it is to initiate a militarized interstate dispute.

In addition, I expect that the impact of broker states may not be consistent at different stages of conflict. Compared to initiating a dispute, escalating a dispute to a higher-level conflict is a much more costly venture. In this article, higher-level conflict is defined as actual use of force (hostility level 4) or interstate war (hostility level 5). Due to the substantial costs of higher-level conflict, it is reasonable to expect a challenger state to be more cautious when deciding to escalate a dispute compared to deciding whether to initiate a dispute in the first place. It is important to understand why some militarized disputes lead to war while others do not. IR scholars recognize that the same decision-making factors may have differential impact on dispute initiation and escalation. For instance, Hwang (2010) demonstrates that policy preference has a significant impact on a challenger's decision to initiate a dispute but not on its decision to escalate to a higher-level conflict. As Huth (1996: 39) summarizes, "the factors considered by the challenger at each [conflict] stage can vary, and even the same factors considered at several stages can be expected to have stronger or weaker effects at different stages." Due to the considerable cost-differences of dispute initiation and escalation, a factor that may have an influence on the initiation stage does not necessarily have the same impact on the escalation stage.

In this vein, I expect that the importance of network position for a challenger would differ depending on dispute initiation and escalation. As opposed to initiating a dispute, when a state decides to escalate a dispute to a costly higher level conflict, a challenger state may place greater emphasis on factors that definitely increase the chance of prevailing. However, network power is fundamentally based on other states' support and assistance, which is less firmly grounded and often vulnerable due to the vagaries of their circumstances. Broker power goes into effect only when other states decide to conform to a challenger's demand and provide necessary assistance. Thus, states may find it risky to escalate a dispute to a potentially catastrophic higher-level conflict solely based on brokerage power, suggesting its differential impact on dispute initiation and escalation. This leads to my second hypothesis:

H2: Once a MID is initiated, a challenger's broker position will not have a significant effect on dispute escalation.

2.4 Research Design

In order to test my hypotheses about the impact of a challenger's broker position on the likelihood that the challenger state will initiate and escalate a militarized dispute against a potential target, I employ a dataset that includes all possible directed dyads of states from 1817 to 2001. The unit of analysis is the directed dyad-year. I chose the directed-dyad year, as opposed to dyad year research design, since my primary research interest lies in the impact of diplomatic network centrality on a challenger's decision to engage in a dispute against a potential target. The directed-dyad year research design makes it possible to specifically model a challenger state's decision to initiate and escalate against a potential target state. I include all avail-

able dyads rather than just the politically-relevant ones, which are defined as dyads directly or indirectly contiguous or include a major power.[5] Since my hypotheses test whether and to what extent diplomatic centrality increases both a state's *opportunity* and *willingness*, I chose to include the entire population of dyads rather than the politically-relevant dyads that constrain opportunity variables *ex ante*.[6]

In order to test my hypotheses, I use rare events logistic regression and a Heckman selection model, respectively.[7] To begin, I run rare-events logistic regression with my entire sample of all available directed dyads to test my first hypothesis. In my sample, militarized dispute initiation occurred 1,484 times out of 903,509 observations, which is a rate of approximately 0.002%. The standard logit model tends to underestimate the likelihood of such rare events and thereby generates biased estimates (King and Zeng, 2001). As such, I run rare events logistic regression – a bias-corrected logistic regression for rare events – to mitigate the potential for biased estimates. With rare-events logistic regression, my first dependent variable is *MID initiation*. It takes the value of 1 when a potential challenger state initiates a MID against a target during a given year, and 0 otherwise. This variable was constructed using the Militarized Interstate Disputes dataset of the Correlates of War (COW) project corrected by Maoz (version 3.1). MIDs include not only interstate wars but also less severe forms of conflict including threats, displays of force, and use of force with less than 1000 casualties (Jones, Bremer and Singer, 1996). I identify the first state to threaten or

[5]Politically-relevant dyads are designed to capture an appropriate population of states conducive to the occurrence of conflict. If states are not politically relevant, they have no reasonable *opportunity* to engage in disputes due to being too far apart or too weak militarily (Maoz and Russett, 1993).

[6]Although contiguity and major power status can identify dangerous dyads conducive to the occurrence of conflict, they do not fully capture the full populations of states that are engaged in armed conflict. Previous studies (e.g., Werner, 2000; Bennett and Stam, 2000) point out that approximately one quarter of all militarized disputes occurred between states considered politically irrelevant to each other.

[7]I use two different models because in addition to testing the impact of network centrality on conflict initiation and escalation, I am interested in looking at whether selection bias exists, and if so, whether the impact of network centrality is consistent regardless of selection bias.

to use military force as the initiator of the MID; states which join ongoing disputes are not regarded as initiators.[8]

Subsequently, I run a Heckman selection model to test my second hypothesis. Consistent with previous findings (e.g., Kinsella and Russett, 2002; Lemke and Reed, 2001; Peterson and Graham, 2011; Reed, 2000), I expect a selection bias in my study of conflict escalation because states can escalate to a higher-level dispute only if the dispute already occurred in the first place. Thus, I examine only a subsample of directed dyad years in which disputes occur, which suggests that the sample used for this estimation may not be random. As such, I run a Heckman selection model to account for the possible existence of selection bias (Heckman, 1979). The Heckman model first estimates a selection equation predicting whether a challenger will initiate a dispute based on the entire dataset. Then it estimates an outcome equation predicting whether the challenger will escalate the dispute to a higher-level of conflict based on censored observations.[9] In this way, the Heckman selection model jointly estimates the likelihood of dispute initiation, considering all observations, and dispute escalation, conditional on the likelihood of dispute initiation. With the Heckman selection model, my second dependent variable is *MID escalation*. Using challenger hostility levels, I measure conflict escalation if a MID initiated by a challenger advances to full-blown use of force (hostility level 4) or interstate war (hostility level 5). It is coded as 1 if a MID being initiated by a challenger escalates to the use of force or interstate war, and 0 otherwise.

[8]I code "Side A" and "originator" in the directed-dyad as the initiator. I also run all models holding "revisionists" as initiators instead of "Side A", and the empirical results still confirm my hypotheses.

[9]Heckman selection models require an exclusion restriction in order to minimize the problem for collinearity between the selection and outcome equations. Consistent with previous works on conflict escalation (e.g., Hwang, 2010; Peterson and Graham 2011), I exclude the cubic polynomials from the second stage equation as the exclusion restriction.

2.4.1 Independent Variable: A Challenger's Broker Position

In order to measure a state's broker position in diplomatic networks, I assemble directed diplomatic networks from 1817 to 2005 using the diplomatic exchange data (Bayer, 2006).[10] After assembling diplomatic networks, I use a state's betweenness centrality to measure its broker position in diplomatic networks. Betweenness centrality is a measure of how often a given node lies on the shortest paths between all other pairs of actors and is precisely described as:

$$g(k) = \sum_{i \neq k \neq j} \frac{\sigma_{ij}(k)}{\sigma_{ij}}$$

where $\sigma_{ij}(k)$ is the number of shortest paths from i to j going through k. A state with high betweenness centrality in diplomatic networks is characterized as occupying more broker position within the diplomatic network. [11]

2.4.2 Control Variables

I control for a number of variables that are typically associated with conflict initiation and escalation, which may also influence a state's diplomatic network centrality. In order to control for a state's opportunity to engage in conflict, I include a variable for a *challenger's military capability*, which is generally measured as the COW's

[10]The diplomatic dataset includes diplomatic ties between states measured at five-year intervals from 1817 to 2005 and records the presence of a state's diplomatic ties at the level of *charge d'affaire*, *minister*, or *ambassador or high commissioner*. This article limits diplomatic ties to an ambassador or a high commissioner level because lower-level diplomatic ties may not carry the same implications as higher-level ties and often suggest deteriorated diplomatic relations (Duque 2018). Data are available for the years 1817, 1824, 1827, 1832, 1836, 1840, every five years between 1844 and 1914, every five years between 1920 and 1940, and every five years between 1950 and 2005. The original collectors of the data, Small and Singer (1973), suggest that researchers who require annual data either use the diplomatic exchange data from the last available date until the next observation, or interpolate the missing years. I chose the latter approach.

[11]I use a logged variable of a state's betweenness centrality due to the expectation of decreasing marginal influence. I expect that an increase of a challenger's network centrality from 0 to 50 has more impact than that of 50 to 100, which has more impact than that of 100 to 150, and so forth. As such, I incorporate the logged measure of a states' betweenness centrality to capture this tendency.

Composite Index of National Capability (CINC) score. The CINC score measures an individual state's percentage of the total capabilities of the international system in terms of energy consumption, iron and steel production, military expenditures, military personnel, total population, and urban population (Singer, Bremer and Stuckey, 1972). As I expect that central states in diplomatic networks are more likely to be militarily strong states, the incorporation of a challenger's military capability is crucial in distinguishing the effect of network centrality from that of military capability. In addition, I control for the *capability ratio* of dyads, which is measured as a challenger's CINC score divided by the sum of the challenger and target's CINC scores.

It is plausible that initiating a conflict and/or occupying a broker position in diplomatic networks may be the privilege of great powers. In order to reduce the possibility that I inadvertently selected the likelihood of major powers or stronger states to become involved in conflict, I control for a challenger's major power status. *Major power status* takes on a value of 1 if a challenger in a dyad is a major power, and 0 otherwise.[12]

In order to control for a state's willingness to engage in conflict, I include *joint democracy* as a potential control variable consistent with previous findings (Bueno de Mesquita and Lalman 1992; Oneal and Russet 1997). It is coded as 1 if both states in a dyad score at least a six or higher on the Polity IV democracy scale that varies from -10 to 10, and 0 otherwise (Marshall, Jaggers and Gurr, 2010). Similarly, I include a dummy variable for *shared alliance* to measure whether challenger and target states form a military alliance. If they form a defense pact, neutrality, or entente,

[12]Following Small and Singer (1982), the following countries are regarded as having major power status: the United Kingdom (1816- present), France (1816-1940, 1945-present), Prussia/Germany (1816-1918, 1925-1945), Austria-Hungary (1816-1918), Russia/Soviet Union (1816-1917, 1922-present), Italy (1860-1943), Japan (1895-1945), the United States (1899-present), and China (1950-present).

this variable is coded as 1, and if there's no official agreement, it is coded as 0. In addition, I control for *shared IGO membership* of states in a dyad. Shared IGO membership is measured as the total number of joint memberships of intergovernmental organizations (IGOs) that challenger and target states share in a given year.

As shared borders are often regarded as major sources of conflict, I include a dummy variable for *contiguity* of states in a dyad. It is measured as 1 if challenger and target states in a dyad share a land border or are separated by less than 400 miles of water. Similarly, I also include geographical *distance* between challenger and target states in a dyad.[13] All data except for the IGO membership were obtained from the EUGene software program (version 3.12) (Bennett and Stam, 2000). I use the International Organization Data Set (version 2.3) to measure shared IGO membership of states. (Pevehouse, Nordstrom and Warnke, 2004).

Given the cross-sectional time-series structure of the data, I include variables for peace years[14], peace years squared, and peace years cubed to correct for temporal dependence (Carter and Signorino, 2010).[15] I cluster standard errors by the non-directed dyad to account for unit heterogeneity. Additionally, I lag all of the independent variables by one year to reduce bias from reverse causality (except the peace year variables).

2.5 Results

Table 2.2 presents the results for the rare events logit estimates, which strongly support my core proposition. As hypothesized, a challenger's broker position has a

[13]The natural log of the distance is used.

[14]Peace year is measured as the number of years that dyads have been at peace since the previous conflict. In my data, this variable ranges from 0 to 185 years. Per Beck, Katz and Tucker's (1998) suggestion, I rescaled each peace year by dividing by 100.

[15]When it comes to binary cross-sectional time-series data, these cubic polynomials can account for duration dependence of conflict. Carter and Signorino (2010) claim that cubic polynomials are easier to generate and interpret than commonly used cubic splines, and accordingly serve as a better measure of addressing temporal dependence.

statistically significant and positive impact on its decision to initiate a MID. Specifically, a one-unit increase of a state's betweenness centrality increases the probability of the state's decision to initiate a MID by a factor of exp (0.134) = 3.684, or approximately 2.68%. The coefficients for all of the control variables largely correspond with the major findings suggested in the previous literature except the impact of shared military alliances. I expected the impact of alliances to be negative, however it is not statistically significant, suggesting that a shared alliance with a potential target makes little difference in terms of a challenger's propensity to initiate a dispute.

Table 2.2: Rare Event Logistic Regression, 1817-2001

	Model
Challenger's broker position	0.134***
	(0.0241)
Challenger's military capability	4.867***
	(1.044)
Capability ratio	-0.623***
	(0.175)
Challenger's major power status	0.868***
	(0.160)
Distance	-0.254***
	(0.0585)
Contiguity	2.375***
	(0.158)
Alliance	0.0563
	(0.105)
Shared IGOs	-0.00826**
	(0.00311)
Joint democracy	-0.906***
	(0.136)
Constant	-3.570***
	(0.492)
N	903,509

[a] * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[b] Robust standard errors in parentheses, clustered on dyads.
[c] Estimates for peace years, peace years^2, and peace years^3 are not reported.

In order to provide a more substantively meaningful interpretation of my results, I present a set of predicted probabilities holding a set of conditions. Table 2.3 reports percentage changes in the probability of MID initiation. Changes in the predicted

probability of militarized disputes are calculated for a one standard deviation increase for continuous variables or a one unit increase for binary variables, holding all other variables at the mean or mode. The baseline probability of a MID is 0.00045, suggesting that the probability of MID initiation by a challenger in any given directed-dyad year is very small. However, if states of dyads are contiguous and a challenger state is a major power, then the probability of initiating a MID increases by 982.22 and 135.56% respectively. The substantive impact of a challenger's broker position is striking: a one-standard deviation increase in a challenger's betweenness centrality increases the probability of the challenger to initiate a MID by 31.11%. For instance, marginalized states with zero betweenness centrality in the diplomatic network in the year 1817, such as Denmark, were more likely to initiate a militarized dispute by 31.11% if they sat one unit closer to the center – a position occupied by Spain at the time – in the diplomatic network, all other factors being equal. This is a surprisingly huge impact considering that a one-standard-deviation increase in a challenger's military capability, which has been a primary emphasis of previous scholarship, only has roughly half the impact of betweenness centrality. In other words, a state is nearly twice as likely to initiate a militarized dispute if it occupies one unit closer to the center in diplomatic networks than if it possesses one unit more of military capability, holding all other factors constant.

Table 2.3: Percentage Change in Risk for Likelihood of a MID

Explanatory variables	Change in explanatory variable	% change in relative risk of dispute
Challenger's broker position	*+ 1 SD*	**+ 31.11**
Challenger's military capability	*+ 1 SD*	**+ 17.78**
Challenger's major power status	*minor to major*	**+ 135.56**
Capability ratio	*+1 SD*	**- 20.00**
Contiguity	*noncontiguous to contiguous*	**+ 982.22**
Alliance	*nonmutual to mutual alliance*	6.67
Shared IGO membership	*+1 SD*	**- 11.11**
Joint democracy	*nonjoint to joint democracy*	**- 60.00**
Distance (log transformed)	*+1 SD*	**- 20.00**

The baseline probability of a MID is .00045. Bolded are significant at .05 level.

Having found substantive evidence about the impact of a challenger's broker po-

sition on the likelihood of dispute initiation, I now turn to dispute escalation and examine whether this has a different impact on the escalation stage. Table 2.4 shows the results of the Heckman selection model: the first column reports estimates for dispute initiation in the first stage, and the second reports the estimates for dispute escalation in the second stage. ρ means the correlation between two error terms in the MID initiation and escalation equations. The statistical significance of ρ suggests that the null hypothesis – a challenger's decision to initiate a MID and subsequently escalate it to a higher-level of conflict are independent – is rejected, which means that the processes of conflict initiation and escalation are related. The negative direction of ρ suggests that unobserved characteristics that increase a challenger's decision to initiate conflict conversely decrease its decision to escalate to full-blown use of force or interstate war.

The estimates for dispute escalation from the Heckman selection model in the second column of Table 2.4 support my second hypothesis that a challenger's broker position does not have a significant impact on dispute escalation. That is, the impact of a challenger's broker position is not consistent across the different stages of conflict. Just as the possession of greater military capability emboldens a state to initiate a dispute, occupying a broker position in diplomatic networks makes the country act aggressively in the first place. However, in contrast to military capability, broker position makes little difference in a challenger's decision-making calculus when it considers whether or not to escalate the dispute to full-blown uses of force or war. The negative coefficient of a challenger's military capability may be due to its deterrent impact on a target state. Once a dispute is initiated by a challenger, a target state recognizes the challenger's greater military power and is more likely to back down rather than escalate to a catastrophic higher-level conflict. As a result, the challenger state does not need to escalate the dispute to a higher-level conflict. However, the

Table 2.4: Heckman Selection Model of MID initiation and escalation, 1817-2001

	(1) MID initiation	(2) MID escalation
Challenger's broker position	0.0538***	-0.0364
	(0.00823)	(0.0229)
Challenger's military capability	2.128***	-2.672***
	(0.352)	(0.777)
Capability ratio	-0.285***	-0.0976
	(0.0580)	(0.137)
Challenger's major power status	0.351***	-0.141
	(0.0572)	(0.122)
Distance	-0.0986***	0.155***
	(0.0197)	(0.0446)
Contiguity	0.851***	-0.0830
	(0.0514)	(0.138)
Alliance	0.0214	0.0681
	(0.0417)	(0.0945)
Common IGOs	-0.00421***	-0.000696
	(0.00105)	(0.00345)
Joint democracy	-0.325***	0.227
	(0.0472)	(0.128)
Constant	-1.859***	0.437
	(0.163)	(0.461)
Selection effect(ρ)		-0.314**
		(0.109)
Number of observations(uncensored)		903,509(1,484)

[a] Robust standard errors in parentheses.
[b] Ward test of independent equations (rho =0): $\chi^2(1)$=7.26, prob.> χ^2=.00071.
[c] * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
[d] Estimates for peace years, peace years^2, and peace years^3 are not reported.

challenger's broker position does not have as much of a deterrent impact on a target state as its military capability. In other words, the challenger's broker power may not be strong enough for a target state to back down and refrain from escalating a dispute to a costly higher-level conflict. Thus, a challenger's broker position does not have statistical significance in the escalation stage, while it has a strong and positive impact in the initiation stage.

2.6 Discussion

This chapter presents some of the first theoretical arguments as to whether and how a broker position within diplomatic networks influences a state's tendency to engage in different stages of conflict. More so than marginalized states, broker states tend to have greater opportunity to engage in conflict because the position reflects increased opportunity for policy disagreements and potential conflicts. On top of that, broker states tend to be more willing to act aggressively by right of being able to receive a wide range of support from other countries in preparation for war. Accordingly, all other factors being equal, pushing a state one unit closer to the broker position in diplomatic networks makes it more emboldened to initiate militarized disputes. The substantive marginal impact of the broker position is nearly twice that of military capability, which has been a key point of emphasis in previous scholarship. However, once a a challenger state engages in militarized disputes, its broker position makes little difference on its decision to escalate the dispute to actual full-blown use of force or interstate war, suggesting its limited deterrence impact.

My findings provide crucial theoretical and policy implications that enrich our understanding of state power and conflict propensity. State power is generally understood as a state's ability to get other states to do what they would otherwise not do (Keohane and Nye, 1973) Many IR research focuses exclusively on material ca-

pabilities to measure state power and then assumes that greater military capabilities stimulate state aggression. In Fordham's words (2004), "the possession of a very sharp sword" constitutes state power and thus explains variation of state conflict propensity. Just as Fordham's Sharp Sword (2004) empirically demonstrates the importance of military capability, my research offers an empirical demonstration as to why where a state sits in a diplomatic network matters. I argue that greater military capability is by no means the sole source of state power that emboldens a state to fight. Occupying a broker position in diplomatic networks also makes a country more willing to initiate a militarized dispute as it constitutes another important source of state power. Moreover, broker states are more likely to have opportunities to interact with other states and thereby have more chances to fight. In this way, occupying a broker position generates a distinct set of forces that makes military options more attractive and potentially more frequent. The structural position within diplomatic networks reveals the previously neglected mechanism by which states become powerful and aggressive.

When policy makers and scholars discuss the possibility of hegemonic war against rising China, many have focused exclusively on Chinese material capabilities – such as economic or military assets – to indicate the extent to which China has risen. However, few have focused on how China's broker position within diplomatic networks has skyrocketed and thus equipped the nation with the ability to exert influence over other countries. My research shows that in the period from 1970 to 2005, China's broker position – measured as a betweenness centrality – increased by 1,545 percent, whereas in the same period U.S. broker power grew by just 125 percent.[16] Moreover, the broker position of the U.S. has shown a downward trend since 1995, and the gap

[16]The betweenness centralities of China from 1970 to 2005 in five-year intervals are as follows: 170.63, 121.57, 231.75, 1115.65, 1297.48, 1951.65, 2078.61, and 2807.52. Those of the U.S. over the same period are as follows: 1763.70, 1290.83, 1305.15, 2627.46, 2801.90, 4544.20, 4262.45, and 3953.95.

between China and the U.S. has shrunk remarkably over the past three decades.

In addition to carrying crucial policy implications, my findings make important theoretical contributions to the literature on diplomacy, international conflict, and networks. Regarding the diplomacy literature, this chapter refreshes and validates the importance of diplomatic relations, which have long been marginalized in the study of conflict. Diplomatic ties are neither epiphenomenal nor inessential. Rather, they are a formidable power resource that enables some countries to control for and even monopolize information and thereby become equipped with effective policy options. With said policy options, they can coerce and/or co-opt other countries to provide necessary assistance in their preparation for conflict. Moreover, this article demonstrates the importance of the quality of diplomatic ties rather than their mere quantity.[17] Even if a state has a relatively small number of ambassadorial ties, if it occupies a broker position, it may still be able to flex its influence over other countries by monopolizing information and shaping discourse.

As for the international conflict and network literature, this chapter validates previous findings that the network structure as an extra-dyadic factor influences a state's conflict behavior. Moreover, it examines the more nuanced impact that it may have on different stages of conflict. As Hafner-Burton, Kahler and Montgomery (2009: 580) suggest, "international relations research too often deploys network concepts and theories that are inappropriate or grounded in unproven assumptions." This article, however, demonstrates how a network measure can be situated into a broader international conflict framework, which in this case is the opportunity and willingness framework. Rather than merely employing network measures without theoretical con-

[17]This finding aligns with Box-Steffensmeier, Christenson and Hitt's (2013) work about amici networks and American judicial outcomes. They show that the quality of amici ties, which is measured as a network position, plays a significant role in American Justice's responsiveness to amicus briefs. Although this is different subfield, my work is consistent with their findings in that they both demonstrate the value of quality of ties – rather than the mere quantity of ties – in terms of generating variation in political outcomes.

sideration, this article suggests some of the first theoretical arguments as to whether and how a broker position can influence a state's conflict propensity and empirically demonstrates the association between the two. Given the lack of studies that demonstrate the association between the structure of diplomatic networks and state conflict propensity, this article can serve as a pipeline for understanding the importance of the structural position as an important variable not only within diplomatic networks but perhaps in other international networks.

Chapter 3

The Dissolution of Diplomatic Ties: A Temporal Dynamic Network Model

In September 2019, both Kiribati and the Solomon Islands terminated diplomatic ties with Taiwan and entered into diplomatic relations with China. In June 2017, Panama had switched its diplomatic recognition from Taiwan to China following the same choice made by Sao Tome and Principe in December 2016. This pattern has been occurring for decades in many parts of the world due to China's long adherence to a diplomatic retaliation policy against those who recognize the sovereignty of Taiwan. Since Prime Minister Tsai took office in 2016, Taiwan has lost seven diplomatic allies (Financial Times 2019), reducing its total number of diplomatic allies to 15 as of October 2020. Although such diplomatic losses are not new for Taiwan, it is striking that Taiwan has lost several key diplomatic allies in quick succession – which is likely to be causal rather than coincidental — in both the South Pacific and Central America, areas that used to be strong diplomatic bases for Taiwan. In response to such an avalanche of diplomatic defeats, many policymakers in Taiwan are concerned about "domino effects" or a chain reaction in the region (DW news 2018; Reuters 2007).

Taiwan's increasing diplomatic isolation illustrates two crucial points. First, diplomatic ties represent crucial battlegrounds where states compete for recognition and international legitimacy. China has long used substantial economic and political power to pressure Taiwan's diplomatic partners to switch their recognition. Such an

ongoing effort to isolate Taiwan precisely reveals that China perceives diplomatic ties as crucial means toward enhancing its legitimacy. Second, a state's decision to break diplomatic ties may not be totally independent from other states' decisions. Just as Taiwanese officers are concerned about domino effects, other remaining allies with Taiwan may take a cue from countries that switch allegiances and thus accelerate Taiwan's diplomatic isolation.

Then what makes diplomatic ties persist? Under what circumstances do states decide to terminate their formal diplomatic ties? This article aims to understand the underlying dynamics that lead to diplomatic termination. Our understanding of diplomatic ties is lopsided in that we have little knowledge about the termination of diplomatic ties compared to its formation. Several scholars have examined the formation of diplomatic ties (Duque 2018; Kinne 2014; Maliniak and Plouffe 2011; Neumayer 2008). They have identified power, ideology, geographical proximity, and network-based structural effects as key factors. Interestingly, however, little is known about the termination of diplomatic ties. Several cases studies pariah states exist (e.g. Cooper 1992; Kleine-Ahlbrandt and Small 2008; Levey 2008), but there have been almost no quantitative or comparative studies that systematically examine the underlying dynamics of diplomatic tie dissolution. Although Taiwan is a unique case because of its relationship to China, the termination of diplomatic ties in and of itself is not an exceptional event. States consistently evaluate and adjust their diplomatic postures to maximize the political benefits that diplomatic ties can generate, and due to limited resources, they often terminate certain diplomatic ties to enter into new ones.

The dissolution of diplomatic ties is crucial for two reasons. First, a state's decision to terminate diplomatic ties implies that the state loses the ability to gather routinized information and resources. A diplomatic tie has a crucial strategic or functional value

as it is the most fundamental communication channel between states. As Berridge (1995:41) summarizes, "gathering information on the local scene and reporting it home has long been recognized as one of the most important functions of the resident embassy. The state of the economy, foreign policy, the morale of the armed forces, scientific research with military implications, the health of the leader, the balance of power within the government, the likely result of any forthcoming election, the strength of the opposition, and so on, have long been the staple fare of ambassadorial dispatches." As information-gathering is the basic function of diplomatic exchange, states can benefit from diplomatic ties by sending and receiving a wide range of intelligence on counterparts, and thus enabling states to craft highly tailored policy tools. In this vein, breaking off diplomatic ties means that states are willing to suffer from potential costs of diplomatic termination. The costs include not only a substantial loss of intelligence, but also a diminished ability to craft effective policies on the counterpart. Thus, the state does not terminate diplomatic ties based on affection, but rather strategic calculation. This implication is important because the state's decision to sever diplomatic ties shows the adjustment of foreign policy priorities.

Second, relatedly, the dissolution of diplomatic ties suggests that a target state loses its status in the region (Maller 2010; Levey 2008). According to Lake, status is "a ranked ordering of valued attributes, such as wealth, coercive capabilities, culture, demographic position, socio-political organization, or *diplomatic clout* (emphasis added)." In this vein, many scholars have used the number of diplomatic missions a state receives as a proxy for state status or relative importance in the international system (Singer and Small 1966). The state with the largest quantity of incoming diplomatic ties is perceived to be the most important member of the international community. If a state's extant diplomatic ties signify its standing in the international

system, the dissolution of diplomatic ties represents the loss of standing in the international system. This implication is crucial because achieving status has long been regarded to be an essential goal for states (Paul et al. 2014). Moreover, as the use of force becomes illegitimate, termination of diplomatic ties is a crucial alternative that a state can inflict "indirect violence" on a target state (Levey 2008: 209).

3.1 Diplomatic Formation and Termination: what do we know about them?

Several scholars have examined the determinants of formal diplomatic ties between states and revealed the importance of exogenous factors as key predictors of diplomatic exchange. For instance, Russett and Lamb (1969) argue that geographical proximity and state status play a significant role in predicting diplomatic clusters. Their study finds that states are more likely to exchange formal diplomatic ties with geographically close states and/or materially powerful states, and thus diplomatic groupings largely correspond to geographical regions. Neumayer (2008) confirms the importance of geographical proximity and power status, and in addition to these factors, finds that ideologically close countries are also more likely to exchange diplomatic relations with each other due to their shared interests. By considering both the benefits and costs of exchanging diplomatic ties, Leiby and Burtler (2006) theorize the formation of diplomatic representatives as a two-step process. States consider not just possible inducements but also the potential disincentives of forming ties. They find that while dyadic trade levels and shared regime types serve as potential inducements, the presence of civil war functions as a disincentive.

Two recent empirical works have revealed the importance of endogenous factors or network attributes in explaining the formation of diplomatic exchange (Kinne 2014; Duque 2018). Kinne (2014) analyzes the network structure of diplomatic relations

and reveals the network-based motivations for states when it comes to deciding where exactly to send diplomatic ties. When selecting diplomatic partners, states consider not only exogenous characteristics, like geography, wealth, and power, but also endogenous factors such as reciprocity, transitivity, and preferential attachment. Duque (2018) similarly finds network-based effects of diplomatic tie formation, such as reciprocity, transitivity, preferential attachment (or popularity), and homophily. Her findings confirm Kinne's previous work on diplomatic tie formation: states tend to reciprocate embassies with each other (reciprocity); they tend to establish embassies in countries where their partners do (transitivity); and they are more likely to establish embassies in countries that already have extensive embassies (popularity). She also reveals that states are more likely to establish embassies with similar countries (homophily). Their findings significantly contribute to our understanding of diplomatic tie formation in that states base their exchange of diplomatic ties on other states' decisions in diplomatic networks. In other words, where a state decides to send ambassador ties is not entirely determined by the receiver's exogenous monadic characteristics or bilateral relations, but is also influenced by the structure of the diplomatic network that all states are embedded in.

However, despite the contribution of Duque (2018), Kinne (2014), and others, important questions still remain: what makes states decide to retract their ties? Are the underlying mechanisms that increase a state's status the same as those that decrease it? Several scholars have examined the mechanisms of losing diplomatic recognition in the cases of Taiwan or Israel (Levey 2008), but this is hardly enough of a foundation for systemically explaining diplomatic tie dissolution. There have been very few quantitative or comparative studies that we can use to make generalizations about the patterns of the termination of diplomatic missions. Gitelson (1974) is a notable exception for conducting comparative studies on the issue. He examines why

some African countries broke diplomatic relations with other states between 1958 and 1973, and finds that African countries tended to sever relations with small countries or relatively unimportant outside powers rather than with their former colonial powers. This finding implies that material capabilities or major state status are the most important factors in terms of whom African states decide to sever diplomatic ties with. He also argues that bilateral consideration (e.g., intervention in domestic affairs) or regional factors (e.g., manifesting regional solidarity) play a particularly crucial role in breaking diplomatic ties.

Despite the lack of systematic scholarly attention on diplomatic tie dissolution, many scholars have long acknowledged the possibility of terminating diplomatic ties. States occasionally do so reallocate their limited resources from low to high-priority areas (Duque 2018; Small and Singer 1972). As Small and Singer (1972:582) summarize, "every government is faced periodically with the need to estimate or re-estimate how important it is to exchange missions with every other one in the system. That relative importance is reflected in its willingness to: allocate limited resources to a given diplomatic bond; incur the costs of overcoming domestic or foreign opposition to such a bond; and sacrifice one set of attractive bonds in order to maintain or estimate another set of more or less equally attractive bonds." In practice, according to my descriptive analyses of diplomatic ties – which follow in detail in the next section – the density of the diplomatic network has been relatively flat, approximately 0.2 between 1970 and 2005, although the absolute number of ambassador ties has substantially increased over time. This finding suggests that states do not just establish more and more diplomatic ties, but also dissolve more and more ties over time. In sum, due to limited resources, states cannot establish embassies in every state in the world (Duque 2018; Kinne 2014); rather, states must make discriminating decisions regarding where to send diplomatic representatives and then periodically reevaluate

their decisions, which can lead to the dissolution of diplomatic ties.

3.2 Global Patterns of Diplomatic Relations: 1970-2005

How many diplomatic ties have been newly established and dissolved between 1970 and 2005? To what extent diplomatic networks have been similar over time? This section describes global patterns of diplomatic relations by exploring several key characteristics of diplomatic networks.

As Table 3.1 summarizes, the overall characteristics of the diplomatic network show an upward trajectory from 1970 to 2005. In this period, the number of member states in the international system increased from 134 to 192. That is, 64 dependencies became new sovereign states on the waves of massive decolonization. 16 dependencies — mainly insular "microstates," such as the Bahamas, Papua New Guinea, or Suriname — became sovereign states and thus appeared in the diplomatic network after 1970. 27 other countries, including Ukraine, Kyrgyzstan, and Georgia, emerged in the diplomatic network after the dissolution of the Soviet Union in 1991. The total number of diplomatic exchanges among states also rose from 4,567 in 1970 to 7,517 in 2005, which is approximately a 70% increase over three decades. The emergence of more countries and ambassador ties in the diplomatic network suggests that in the domain of diplomacy, states have become increasingly interconnected over the last three decades of the 21st century.

Between 1970 and 1975, 458 ambassadorial ties were terminated whereas 2,768 ties were newly established. This shifting of diplomatic ties has been a consistent pattern over time. Overall, the number of newly formed diplomatic ties is larger than the number of newly dissolved diplomatic ties during the given periods. For instance, between 1975 and 1980, 655 ambassadorial ties were dissolved, whereas 2,325 ties were newly established. Between 1985 and 1990, 761 were dissolved whereas 985 were

formed. Between 2000 and 2005, 481 ties were dissolved whereas 1,207 ties were newly established. Interestingly, between 1980 and 1985, the number of ambassadorial ties dissolved was far greater than that of ties established: 3,249 ties were terminated whereas only 580 new ties were established during the given period. Similarly but to a lesser degree, the period between 1990 and 1995 observed a higher ambassador tie dissolution number, 438, compared to a tie formation number of 441.

It is important to note that along with other network characteristics, the number of diplomatic ties decreased significantly in the second cold war from 8,547 in 1980 to 5,878 in 1985. Roughly 30% of ambassador ties were severed in this period, and the decline of edges in the period is likely explained by the growing tension and confrontation between two superpowers. The egocentric networks (i.e. the ties between the focal node and its diplomatic partners and all of their partners) of the United States and Russia respectively show that ambassadorial ties of Russia and its direct diplomatic partners decreased from 6,720 to 4,640, whereas that of the U.S. and its diplomatic partners decreased from 7,309 to 5,098. The U.S. dissolved 10 ambassadorial ties between 1980 and 1985 (Dominican Republic, Dominica, Grenada, St. Lucia, Poland, Sao Tome and Principe, Comoros, Maldives, Australia, and Samoa), whereas it established 7 new diplomatic ties during that time (Mauritania, Burkina Faso, Congo, Mozambique, Seychelles, Iraq, and Brunei). On the other hand, the Soviet Union terminated 6 ambassadorial ties (Trinidad and Tobago, Liberia, Chad, Comoros, Maldives, and Fiji), and newly established 4 ties (Suriname, Cape Verde, Zimbabwe, and Lesotho) between 1980 and 1985. During that period, 9 countries terminated their ambassadorial ties with Russia (Jamaica, Malta, Liberia, Central African Republic, Seychelles, Libya, Lebanon, Yemen People's Republic, and Philippines) whereas 7 countries terminated their ambassadorial ties with the U.S. (Bahamas, Poland, Finland, Burkina Faso, Liberia, Nepal, and Indonesia). 9 countries

newly established their ambassador ties with Russia (Mexico, Cape Verde, Equatorial Guinea, Mali, Mauritania, Angola, Mozambique, Egypt, and Mongolia), whereas 20 countries established their ambassador ties with the U.S (Jamaica, Antigua & Barbuda, St. Kitts and Nevis, Belize, Suriname, Liberia, Chad, Uganda, Djibouti, Ethiopia, Mozambique, Swaziland, Mauritius, Seychelles, Iraq, Syria, Kuwait, United Arab Emirates, Afghanistan, and Brunei).

Despite the growth of nodes and edges in diplomatic networks, strikingly, network density has been relatively flat over the period of 1970 to 2005. Network density is calculated as the ratio of the number of existing links to that of all possible links in the network. The network density of diplomatic networks has consistently been approximately 0.2 over time. In other words, for every 10 possible links, only 2 links exist in the diplomatic network, which suggests that the exchange of ambassadors is not a simple occurrence. Rather, it is an expensive, strategic, and symbolic act that necessitates careful consideration. Also, considering the observation that while the numbers of nodes and link increase the network density is flat, we can therefore expect that states indeed terminate diplomatic ties rather than merely add more ties over time.

Table 3.1: Descriptive characteristics of diplomatic networks, 1970-2005

	1970	1975	1980	1985	1990	1995	2000	2005
Number of Nodes	134	150	156	161	165	187	191	192
Number of Links	4567	6877	8547	5878	6102	6519	6791	7517
Average Degree Centrality	68.16	91.69	109.6	73.02	73.96	69.72	71.11	78.3
Average Betweenness Centrality	98.79	88.19	102.06	122.63	130.96	156.76	163.67	155.81
Network Density	0.256	0.308	0.353	0.228	0.225	0.187	0.187	0.205

As Table 3.1 suggests, average degree centrality has increased over time. The average number of ambassador ties a state has in the international system rose from 68.16 in 1970 to 78.3 in 2005. This means that overall, states have tended to move toward the center of the diplomatic network. Only 3 countries had exchanged over 200 ambassador relations in 1970: the U.K (218), France (215), and the U.S. (214).

However, in 2005, the number of countries with over 200 ambassador ties had increased to 13: USA (319), France (302), China (299), the U.K (288), Germany (286), Russia (270), Belgium (246), Japan (246), Italy (242), Egypt (238), Canada (217), India (211), and Spain (200). At the other end of the spectrum, 8 countries had less than 10 ambassador ties in 1970: Zimbabwe (0), Maldives(2), Gambia (3), Fiji (4), Swaziland (5), Lesotho (6), Equatorial Guinea (7), and Botswana (8). The number of such isolated countries with less than 10 ambassador ties increased to 23 by 2005. They include Tuvalu (1), Nauru (2), Kiribati (3), Vanuatu (5), Liechtenstein (5), Comoros (5), and Tonga (6).

However, what's notable with the trend is that such an increase has never been equally distributed among states. As figure 3·1 shows, the distribution of degree centrality skews considerably to the right from 1970 to 2005. That is, ambassador ties are unevenly divided among states. Rather they become hierarchical. In other words, only a small number of states have had a large number of ambassador ties, and the number of such states has decreased over time. This suggests that diplomatic networks come to resemble a more hierarchical structure with core-peripheral relationships. The 20 top countries —roughly 1% of all member states—accounted for more than 70% of the total ambassador ties around the globe in 1970. Such a lopsided distribution pattern has accelerated over the given period.[1]

One implication of uneven distribution of patterns is that major power states are more powerful than many scholars or policy makers may have often assumed using conventional indicators of state power. When policymakers and foreign policy pundits, for example, have avidly discussed rising powers and the consequent world order, they have tended to focus exclusively on their military or economic capabilities, such as GDP per capita, military spending, population, or technology. However, the

[1]The ratio of the top 20 countries exchanging ambassador ties to the entire ties are the following: 0.708, 0.602, 0.551, 0.645, 0.640, 0.645, 0.645, 0.613 between 1970 and 2005 by five year intervals.

possession of material capabilities merely constitutes one dimension of state power. When we add diplomatic network power on top of the existing indicators of state power, the power of so-called major states may have appeared even greater than was often assumed.

3.2.1 Diplomatic Network Centrality: Connection and Brokerage Power

Many scholars have long recognized that no state is able or willing to send ambassadors to every other state in the international system. That is, there is a great deal of variation in terms of the number of ambassador exchanges depending on the state. Then, which countries have greater diplomatic network power and how has their network power changed over time? In other words, which countries occupy central positions in diplomatic networks?

This section examines degree and betweenness centrality to identify key diplomatic power countries. Degree centrality refers to the number of direct ties an actor has with other states in a given network. The more direct connections a state has with other states, the higher its degree centrality. A state with high degree centrality can easily access and accumulate a great deal of information and resourc?oes from states it is connected to. Thus, states with higher degree centrality can be described as possessing *social power* (Hafter-Burton, Kahler, and Montgomery 2009). On the other hand, betweenness centrality refers to the number of ties a state occupies on the shortest path between other states in a network. The more geodesics (shortest paths) that an actor is on, the higher its betweenness centrality. By virtue of occupying the distinct location, states with high betweenness centrality can connect marginalized actors in the network and control the flow of information and resources over the exclusive or near-exclusive links. As such, states with high betweenness centrality can act as a *broker* or *gatekeeper* in the network (Hafter-Burton, Kahler, and Montgomery 2009).

Figure 3·1: Distribution of Degree Centrality: 1970-2005

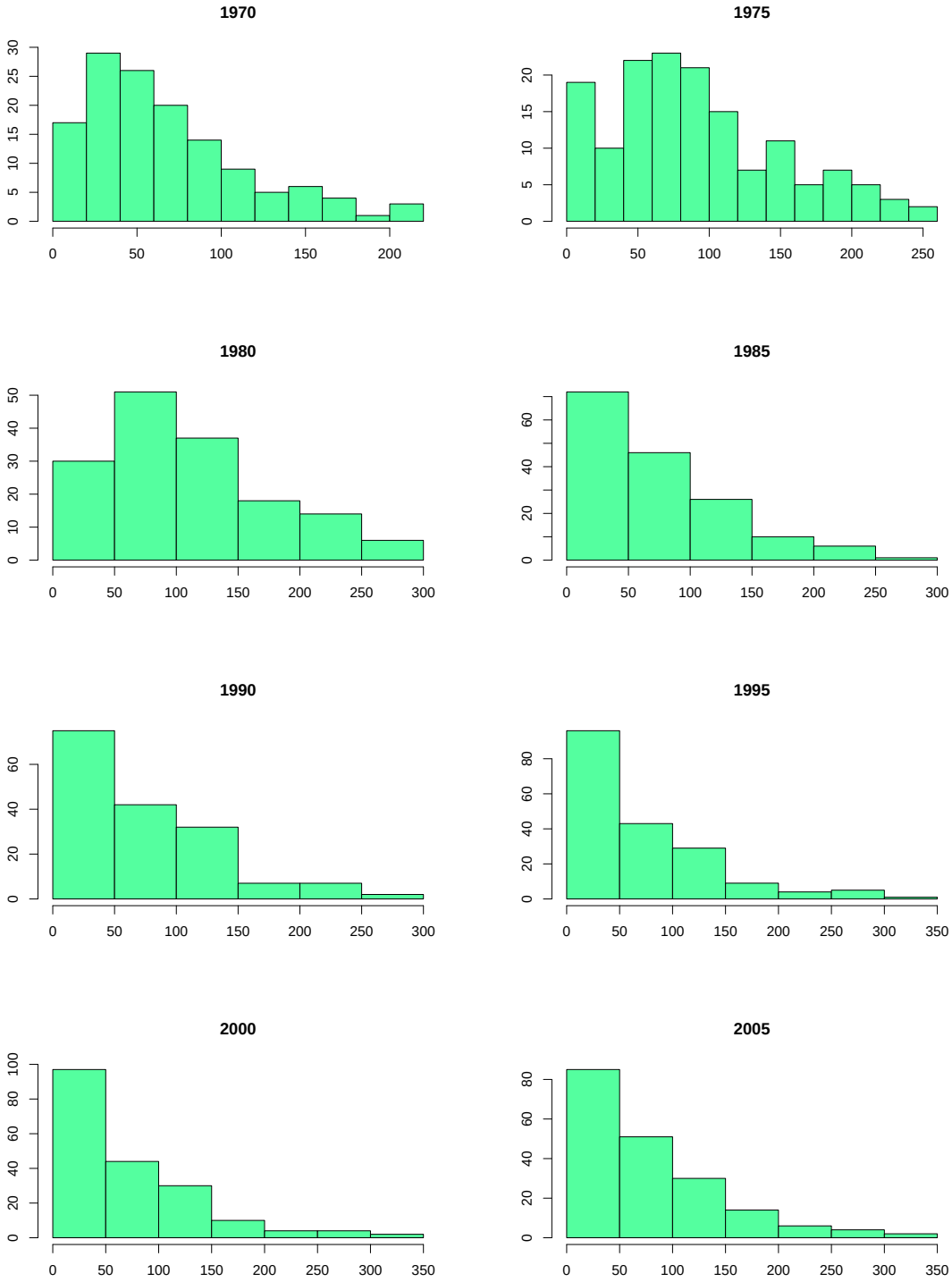


Figure 3·3a shows the top 20 countries in terms of diplomatic degree centrality in 2005. The United States has the highest degree centrality at 319, followed by France at 302, China at 299, the United Kingdom at 288, Germany at 286, and Russia at 270. Regional powers – Japan, Belgium, Italy, Egypt, Canada, India, Spain, Netherlands, Brazil, South Korea, South Africa, and Iran – also appear to have greater social power in the diplomatic network. Figure 3·3b shows the top 20 countries in terms of diplomatic betweenness centrality in 2005. The United States has the highest betweenness centrality at 3594, followed by China at 2,808, UK at 2,536, France at 2,343, and Germany at 1,497, and Japan at 1,236. Interestingly, Australia, Venezuela, Fiji, Cuba, and Niger appear as brokers or gatekeepers in the diplomatic network, which reflects their abilities to connect to relatively marginalized states in diplomatic networks. The higher betweenness centralities of the U.S., China, U.K., France, and Germany reflect that their diplomatic interests spread across different countries across continents, even to marginalized actors in the diplomatic network. Their network position indicates that they have abilities to coordinate with marginalized states, mediate their preferences, and persuade them to collaborate on certain governance issues.

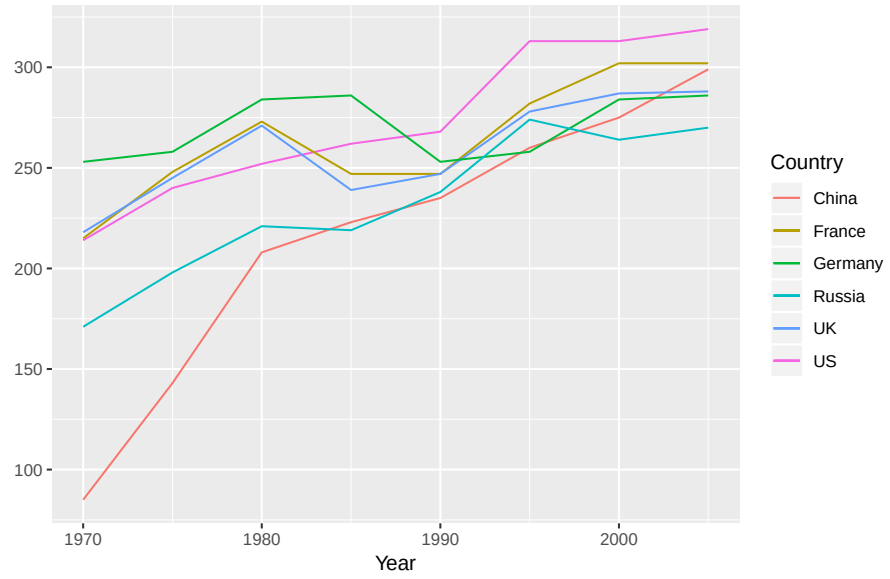
Figure 3·2 illustrates the temporal trends of major states' network power between 1970 and 2005. Both the degree and betweenness centralities of the U.N. Security Council members have shown upward trajectories. The rise of China's degree and betweenness centrality is particularly notable. Starting from the bottom, China's degree centrality has increased from 85 and 299 and its betweenness centrality has increased from 170.63 to 2805.58 over the last three decades. China overtook Russia in 2000 in terms of degree centrality, and by 2005, Germany, U.K. As far as betweenness centrality, China overtook Russia, and Germany in 2000, and France and U.K. by 2005.

The rocketing growth of China's "betweenness" centrality carries substantive implications. China aggressively established diplomatic ties with marginalized states and accordingly has come to achieve some leverage over them. China has willingly used its leverage to deal with a number of previously deadlocked issues, such as the nuclear proliferation matter in Iran and political repression in Burma and Darfur (Kleine-Ahlbrandt and Small 2008). For example, regarding the violence in Darfur, Beijing took the lead and privately asked the Sudanese government to implement the resolution devised by UN Security-General Kofi Annan, which notably yielded the Sudanese government agreement. Kleine-Ahlbrandt and Small (2008) quote the U.S. deputy Secretary of State, John Negroponte crediting China: "[it] played a pivotal role in brokering the agreement." This precisely captures the impact of China's broker position in a way that could not be manifested by the traditional approach of state power.

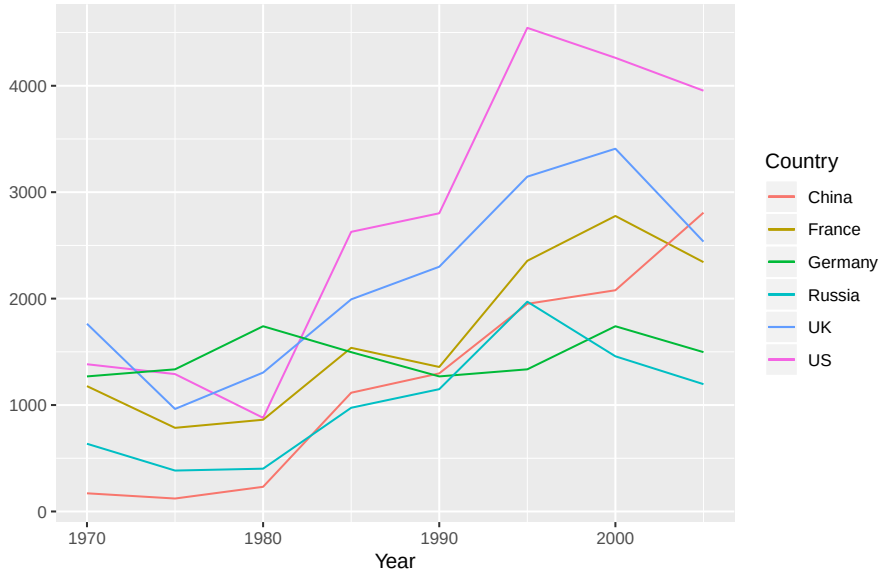
3.3 The Formation and Dissolution of Diplomatic Ties

The descriptive analyses in the previous section suggest that the structure of diplomatic networks has evolved over time. Diplomatic ties come and go and diplomatic networks have become more hierarchical in terms of the concentration of ties. Then, what are the underlying dynamics that lead to the evolution of diplomatic networks? More specifically, why do some ambassador ties persist and why do others falter? I argue that diplomatic network structures not only condition the formation of diplomatic ties but also the persistence, and dissolution of diplomatic ties. In addition, the underlying processes that lead to the formation of diplomatic ties are not the same as those that generate the termination of diplomatic ties.

My argument is based on two notable scholars – Kinne (2014) and Duque (2018) – who have identified *network influences* of diplomatic tie formation. They both re-



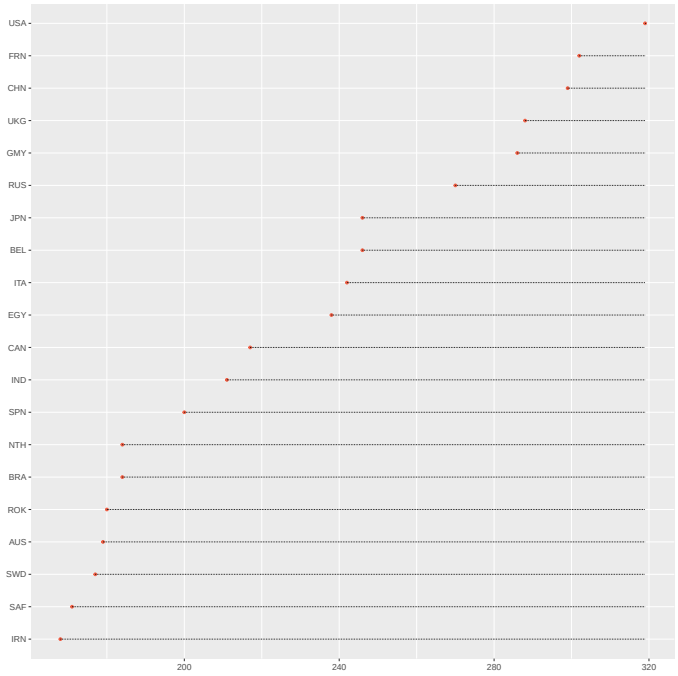
(a) degree centrality



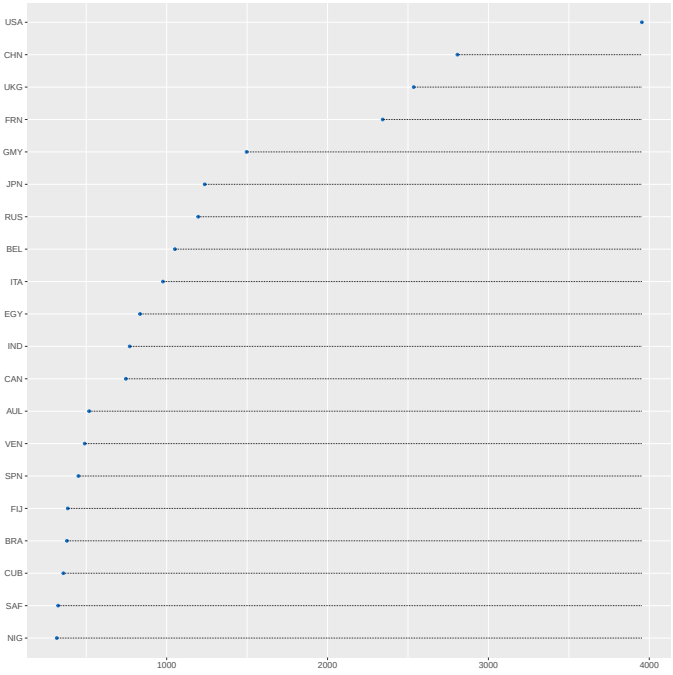
(b) betweenness centrality

Figure 3·2: Degree and Betweenness Centralities of the UN Security Council Members (1970-2005)

veal three major network structures that influence the formation of diplomatic ties: preferential attachment, reciprocity, and transitivity. First, *preferential attachment* suggests that a state's received ties derive from precisely the state's extensive incom-



(a) Top 20 degree centrality countries



(b) Top 20 betweenness centrality countries

Figure 3·3: Network Centrality: 2005

ing ties. That is, states are more likely to send diplomatic ties to prestigious states that already possess extensive ties in order to maximize the returns, such as status achievement and information gathering. Second, *reciprocity* suggests that states prefer to establish diplomatic ties in countries that send diplomatic ties in return. This effect is a kind of default in diplomatic networks in that international convention mandates the *exchange* of diplomatic ties (Kinne 2014). Asymmetric tie formation is "inherently unstable" and compromises bilateral relations in that declining reciprocal acts imply "a sense of material or moral superiority on the part of the receiving states" (Duque 2018: 585). Third, *transitivity* measures the tendency for diplomatic ties to form that result in closed triads.[2] If a state i is tied to state j and state j is tied to state k, then a diplomatic relationship is likely to connect states i and k. In other words, states tend to establish diplomatic ties in countries where their diplomatic partners also have diplomatic ties.

In addition to the structural endogenous effects, Duque (2018) reveals the homophily effect of diplomatic tie formation at dyadic level. That is, states are more likely to exchange diplomatic ties with similar states in terms of their key exogenous attributes, such as military capability or democracy. Duque finds that the more two states are similar with each other along these dimensions, the more likely they are to exchange diplomatic ties. The central insight of Kinne (2014) and Duque (2018) is that diplomatic networks emerge not only from state characteristics but also endogenous factors. In short, the formation of diplomatic ties are in part determined by the network structure.

I build on their findings about diplomatic tie formation to explicitly examine underlying processes of diplomatic tie dissolution. Kinne (2014) and Duque (2018) do not explicitly examine underlying processes of diplomatic tie dissolution; however, their findings offer some insights into why diplomatic ties dissolve. At the dyadic

[2] A triad of a node i, j, k is transitive when i is tied to k, and k is tied to j, and i is tied to j.

level, I argue that heterophilous diplomatic ties are more likely dissolve over time. Just as the homophily effect comes into play in the process of diplomatic tie formation (Duque 2018), I expect the heterophilous effect to occur in the process of diplomatic tie dissolution. In other words, states are more likely to sever diplomatic ties with dissimilar states, especially in terms of their level of democracy, as different values would likely lead to disagreement and a potential conflict. The more gaps between states along the regime scores, the more likely states are to sever diplomatic ties. In addition to the heterophilous effect, I expect that reciprocal ties are more likely to persist and thus are less likely to dissolve. As reciprocity is associated with the stability in ties (Kinne 2014; Duque 2018), reciprocal diplomatic relations are more likely to persist over time.

> *H: States are more likely to retract diplomatic ties with dissimilar countries (heterophily)*
> *H: States are less likely to retract diplomatic ties with countries that exchange diplomatic ties in return (reciprocity)*

At the structural level, I expect that the impact of *transitivity* comes into play in the process of diplomatic tie dissolution. That is, if a state i's diplomatic partners withdraw diplomatic ties from some j target, i is more likely to withdraw its own diplomatic tie from j. Just as states take cues from other countries to decide whether or not to exchange diplomatic ties with certain states (Duque 2018; Kinne 2014), states do the same when they decide to terminate diplomatic ties in order to anticipate potential repercussion of their decisions. The diplomatic isolation of Israel in the African continent precisely reflects the chain reaction. As a result of the military crisis ramping up to the 1973 Yom Kippur war, Uganda terminated the diplomatic ties with Israel in March 1972, followed by Chad, Congo, Mali, and Niger in January 1973. Subsequently more than twenty African states retracted their diplomatic

ties with Israel within less than a year. Their decisions were not made themselves independently, but rather they were the result of mounting peer pressure upon the states. These African countries "feared disunity on their continent" and "wished (themselves) to avoid isolation" and thus decided to sever diplomatic ties with Israel collectively (Levey 2008: 205).

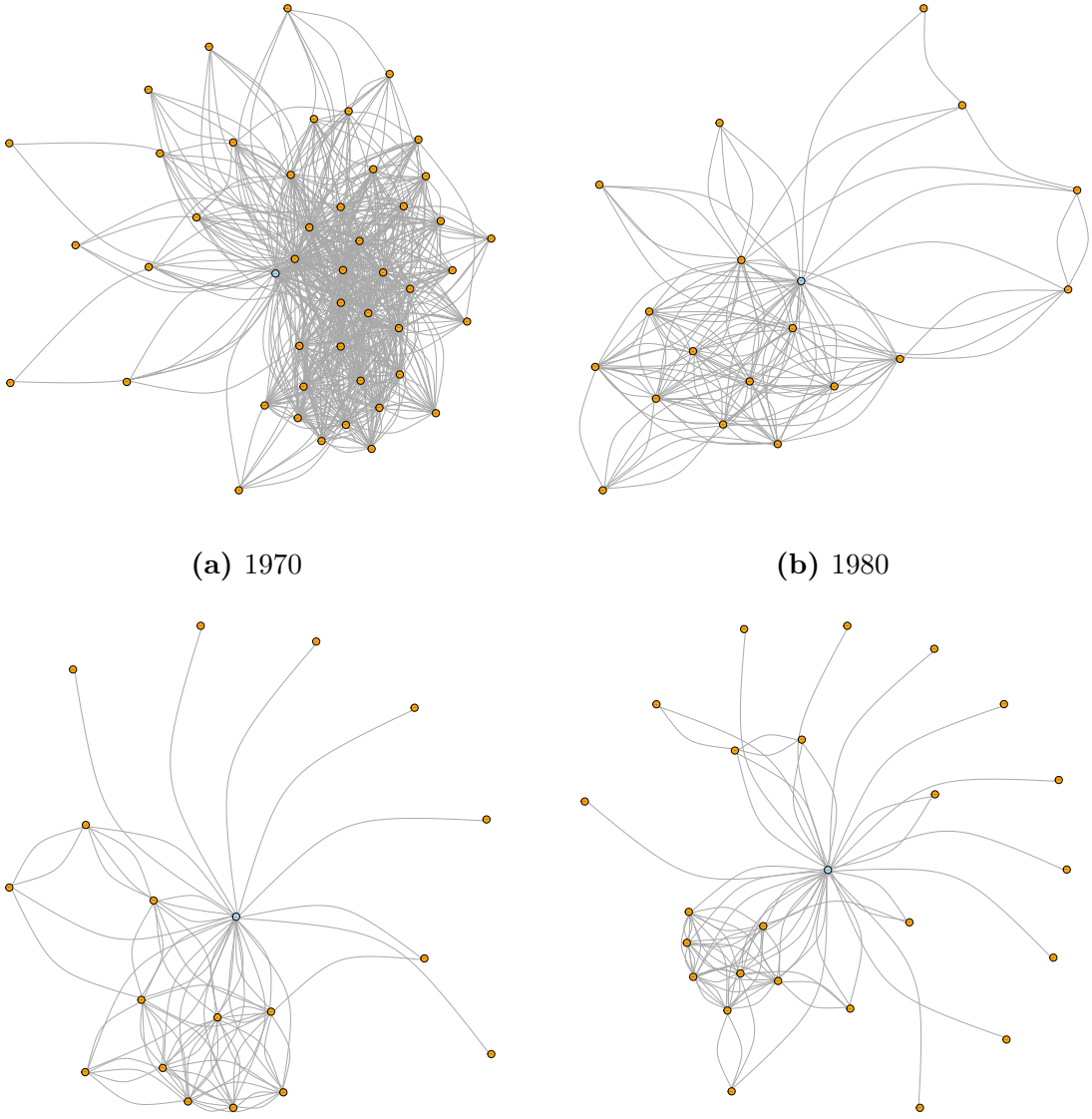
> *H: States are more likely to retract diplomatic ties with countries where diplomatic partners also retract ties (transitivity)*

At the monadic level, I control for a state's exogenous factors that may influence the dissolution of diplomatic ties. I particularly focus on a states' military capability and quality of democracy as major state attributes that influence changes in diplomatic ties. Just as greater military capabilities and higher regime scores tend to draw more incoming diplomatic ties, I expect that they make diplomatic exchanges more persistent.

3.4 Separable Temporal ERGMs (STERGMs)

In order to test for the presence of different mechanisms of diplomatic network evolution, I use a statistical network model that allows for inferences about the formation and dissolution of ties in the network. I particularly employ a separable temporal exponential random graph model (STERGM) to examine the evolution of the diplomatic networks in the period between 1970 and 2005 in five year intervals. STERGM extends the standard exponential-family random graph models (ERGMs) for modeling dynamic networks in discrete time (Krivitsky and Handcock 2014).[3] STERGM

[3]ERGMs determine whether the observed network processes differ significantly from what would be expected to occur randomly, while controlling for other parameters. In contrast to ERGMs that examine a single static model of network formation (i.e., whether a tie is present at a given period), STERGM is temporal and analyzes multiple panels of the network data.



(a) 1970 **(b)** 1980

(c) 1990 **(d)** 2000

Figure 3·4: Network Visualization of Taiwan's Diplomatic Ties

includes two separate models — tie formation and tie dissolution — and can estimate the processes of tie formation and dissolution separately. It assumes that the formation and dissolution of diplomatic ties are independent events at a given time step (although they are dependent over time), which allows for testing different hypotheses

for tie formation and dissolution. STERGM is a particularly appropriate method for the purpose of this article in that it allows researchers to examine whether the mechanism of diplomatic tie formation is the same as that of diplomatic tie dissolution. [4] There are substantial reasons to believe that factors that make countries exchange diplomatic ties are different from factors that incline them to break up existing ties. I use a conditional maximum likelihood (CML) as an estimation method.

To test my hypotheses for diplomatic tie dissolution, I include both exogenous covariates and endogenous network effects in the STERGM. To test structural or endogenous hypotheses, I include three sets of network effects in both the formation and dissolution model: preferential attachment, reciprocity, and transitivity. To measure *preferential attachment* or *popularity*, I use both the geometrically weighted in-degree distribution (GWIDegree) and the geometrically weighted out-degree distribution (GWODegree). The GWIDegree intuitively captures the increased tendency of a state i to send ties to state j when j has more incoming ties. Conversely, the GWODegree captures the increased tendency of a state i to send ties to state j when j has more outgoing ties. They respectively parameterize the distribution of the number of incoming and outgoing ties per vertex using an alpha decay parameter. I expect to find negative coefficients for them because larger numbers of incoming and outgoing ties would be geometrically discounted when the indegrees and outdegrees are summed in the statistics (Cranmer et al. 2017). In other words, a negative parameter suggests the presence of preferential attachment effect (i.e., the richer get richer) that drives the network evolution. To measure the impact of *reciprocity* I include the mutual parameter. This variable equals the number of pairs of states in which if i sends a diplomatic tie to j, j is likely send diplomatic tie to i. I expect to find a positive coefficient for the reciprocity term. To measure the impact of *transitivity*, I include

[4] STERGMs require the network to have the same set of nodes in time periods. In other words, the number and composition of nodes should be the same over time. As such, I extracted the common nodes that have commonly appeared in the period between 1970 and 2005. They are 128 countries.

the *triangle* parameter. It measures the tendency of states to form transitive diplomatic ties if i sends a diplomatic tie to j, j sends a diplomatic tie to k, then i is likely send diplomatic tie to k. I expect to find a positive coefficient for the transitivity term, which would indicate that states in a closed triad are more likely to exchange ambassadors. I include the same parameters in the formation and dissolution model to test whether underlying mechanisms of tie formation and dissolution are the same.

For dyadic covariates, I test for the *heterophily* effect for tie dissolution. I use the absolute difference parameter (*absdiff*), which measures the absolute difference between the states in every network dyad. I use the Correlates of War CINC scores (version 5) (David, Bremer and Stuckey 1972) to measure a state's military capability and the Polity V score (Marshall and Gurr 2020) to measure a state's quality of democracy.[5] I expect to find a negative coefficient of these variables for the formation model, which would capture the homophily effect: the more two states differ along two dimensions, the lower their likelihood to exchange diplomatic ties. I also expect to find a negative effect of the variables for the dissolution model, which would capture the heterophily effect. That is, the more states differ in terms of their military capabilities and the quality of their democracies, the less likely they are to maintain diplomatic exchanges over time. In other words, they are more likely to dissolve diplomatic exchanges over time. I include a state's military capability and the quality of democracy as the monadic exogenous covariates, and expect positive coefficients for both the formation and dissolution model.

Table 3.2 presents the results of the STERGM. As far as the formation model, the estimates generally align with the theoretical expectations. The *edge* parameter measures the probability that a diplomatic tie forms between any two states in the diplomatic network. All other factors excluded, the edge variable represents the

[5]The extant Polity Score does not record information on the following countries: Barbados (53), Iceland (395), Maldives (781), and Malta (338) between 1970 and 2005. Thus, I assigned their polity scores to 0, a neutral score, instead of assigning arbitrary scores.

density of the network, which functions similarly to an intercept. The negative coefficient of the *edge* variable suggests that the diplomatic network is less dense than any exponential random graph would predict, which confirms that diplomatic exchanges are a consequence of deliberate state decisions. The formation results show the impacts of *reciprocity*, *transitivity*, and *popularity*; the results are consistent with previous findings (Duque 2018; Kinne 2014). Positive coefficients in the formation model suggest that the establishment of diplomatic exchanges is more likely. For example, the *triangle* variable is positive and statistically significant when controlling for all other factors. Exponentiating the estimate of 0.115 indicates that diplomatic ties that result in triadic closure are 1.17% more likely to form than they would be expected to by chance. In other words, if a state i exchanges a diplomatic tie with j and j exchanges a diplomatic tie with k, then i is 1.17% more likely to exchange a diplomatic tie with k (or k is more likely to exchange a diplomatic tie with i).

In terms of the dissolution model, the results strongly support my hypotheses. The positive coefficient in the dissolution model signals the higher likelihood of maintaining a tie, and thus the lower likelihood of diplomatic tie dissolution. The positive edges suggest that the conditional log-odds of two states maintaining a diplomatic tie would be 0.32, which is approximately 31.71%. All other factors excluded, diplomatic exchanges tend to persist at a rate of 31.71%over the subsequent interval, which is five years. This suggests that diplomatic ties do not automatically renew once they are established, rather they are the products of the rational decisions, which change according to evolving state strategic interests.

The parameters of *mutual*, *triangle*, and *GWODegree* are positive and statistically significant. They suggest that states are less likely to dissolve diplomatic ties with countries when there are reciprocal diplomatic ties (reciprocity); states are less likely to dissolve diplomatic ties with countries when there are mutual diplomatic partners

(transitivity); states are less likely to dissolve diplomatic ties with countries that actively send diplomatic missions to other countries (GWODegree). Interestingly, in contrast with the formation model, the GWIDegree variable is not statistically significant in the dissolution model. A lack of preferential attachment suggests that states with many incoming existing ties are not more likely to keep them. Substantively, this means that a state's status or prestige is not a crucial factor when it comes to dissolution of diplomatic ties, although the status factor shapes the underlying dynamic of the tie formation.

The heterophily parameters strongly support my hypothesis. Absolute difference variables in terms of military capability and regime score are statistically significant and negative. This suggests that the more dissimilar states are in terms of their level of democracy, the more likely they are to sever their diplomatic relations. A one-unit difference in regime score between states increases the probability that a state i terminates a diplomatic tie with j (or a state j terminates a diplomatic tie with i) by a factor of -0.026, or around 2.57%.

The coefficients of state military capability and regime score are significant and positive in the dissolution model. A one-unit increase in military capability increases the probability of a state i to j tie by a factor of 59.36. Similarly, a one-unit increase in regime score increases the probability of a state i to j tie by a factor of 0.01789, or approximately 1.81%. That is, militarily powerful states are less likely to dissolve their ambassador ties, and more authoritarian countries are more likely to dissolve ambassador ties.

3.5 Discussion

This chapter aims to understand the underlying dynamics of diplomatic tie formation and dissolution. The number of states and their diplomatic exchanges has increased

Table 3.2: STERGM of Diplomatic Networks

	Formation	Dissolution
Edges	-4.270***	0.320***
	(0.033)	(0.041)
Reciprocity	2.009***	1.357***
	(0.038)	(0.038)
Transitivity	0.0115***	0.006***
	(0.0004)	(0.0004)
In-degree Preferential Attachment	-1.181***	0.088
	(0.068)	(0.496)
Out-degree Preferential Attachment	-2.161	2.26***
	(0.116)	(0.657)
Heterophily (military capability)	-10.71***	-51.25***
	(0.149)	(0.478)
Heterophily (polity score)	-0.014***	-0.026***
	(0.002)	(0.002)
Military Capability	19.94***	59.36***
	(0.847)	(0.478)
Polity Score	0.018***	0.018***
	(0.002)	(0.002)
Number of vertices	128	128
AIC	36092	25119
BIC	36175	25195

[a] * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

over time. But states do not merely add more ambassador ties, rather they strategically calculate the costs and benefits of exchanging diplomatic ties. Accordingly, states sometimes terminate certain diplomatic exchanges. Understanding diplomatic tie dissolution is important because from the perspective of a sender, this implies not only potential loss of intelligence about a target state but also reduced status in the region. From the perspective of a target, the withdrawal of diplomatic ties is a form of "indirect violence", as the decision can potentially isolate the target state in the international system (Levey 2008: 209).

I employ STERGM to examine the underlying processes of diplomatic tie formation and dissolution and whether they are the same. My findings suggest that the structure of diplomatic networks influences the dissolution of diplomatic ties. In other words, states condition the retraction of ties based in part on the decisions of their

diplomatic partners. Just as the formation of diplomatic ties is influenced by network impacts, the dissolution of diplomatic ties is also partially shaped by network factors. Along with state monadic characteristics and dyadic relations, states take cues from other countries to decide whether or not to terminate their diplomatic ties. This confirms policy-makers' concern about the domino effect or chain-reaction in terms of diplomatic isolation. Even a small country's decision to terminate diplomatic ties with a target state can accelerate the chain reaction of diplomatic severances of the target state.

The mechanism that draws more diplomatic ties is not exactly the same as the one that decreases them. The presence of different mechanisms of diplomatic tie formation and dissolution has significant policy implications. The *popularity* effect only holds for the formation model, and not for the dissolution model. That is, a state's status matters when it comes to drawing more ties in the first place, which means that higher status states can automatically enjoy receiving more ties from other countries. However, this does not necessarily mean that the state can automatically maintain existing diplomatic ties, as status does not influence the maintenance of existing diplomatic ties. Rather, a states' activeness in terms of sending out diplomatic ties (out-degree) plays a significant role when it comes to maintaining diplomatic ties. This suggests that a state's status is never static or *always there*, but requires consistent efforts to stay connected with other countries to maintain it.

Chapter 4

The Hierarchical Structure of Diplomatic Network

The international system is made up of numerous communities in which some states are more tightly connected than others. Scholars of International Relations (IR) have long been interested in identifying and delineating subsystems, communities, clusters, and blocs of states in the international system. Binder (1958) is among the first scholars to emphasize regional differences within the international system and suggest that regional subsystems should constitute an independent analytical lens. Since his seminal work, many political scientists have suggested different groupings of states. For example, Brecher (1963) argues that the international subsystem mainly comprises of the Middle East, America, Southern Asia, West Europe and West Africa.[1] By applying the same set of criteria developed by Brecher (1963), Bowman (1968) argues that Southern Africa constitutes a distinct community in the international system.[2] Hellmann (1969), on the other hand, emphasizes the East Asian community as a distinct community within the international system. Haas (1970: 101) identifies 21 international subsystems, including Western Europe, the North Atlantic, and

[1]Brecher (1963) suggests six principal characteristics of international subsystems. The characteristics are "(1) a delimited scope with primary stress on a geographic region; (2) the existence of at least three actors; (3) taken together, they are objectively recognized by other actors as constituting a distinctive community; (4) the members identify themselves as such; (5) the units of power are relatively inferior to units in the Dominant System; and (6) changes in the dominant system have greater effect on the subordinate system than the reverse" (1963: 220).

[2]Bowman suggests that the following states comprise the subordinate system of Southern Africa: South Africa, South- West Africa, Rhodesia, Angola, Mozambique, Lesotho, Botswana, Swaziland, and Malawi.

East Asia. The United Nations Statistics Division (UNSD) groups countries into six geographical communities such as Asia, Africa, Europe, Latin America and the Caribbean, Northern America and Oceania.

Although there is some overlap, little consensus has been established on the number of communities and countries' memberships within those communities. Part of the reason for the fragmented knowledge is that scholars have relied on prior knowledge about countries to delineate communities, rather than identifying communities inductively. Scholars invariably have defined and identified communities based on geographic proximity and state interactions (Russett 1967; Lupu and Traag 2013). For instance, Russett (1967, 7) emphasizes that "geographical contiguity, interaction, and perceptions of belonging to a distinct community" are the key factors in delineating different communities. Thompson (1973) similarly argues that international subsystems are characterized by regional proximity and regular interaction among countries. Kaiser (1968, 86) defines the international subsystem as "a pattern of relations among basic units in world politics which exhibits a particular degree of regularity and intensity of relations as well as awareness of interdependence among the participating units." Haas (1970: 101) defines international subsystems as having a relatively "self-contained network of political interactions" between the member countries. As all of these definitions suggest, communities have been identified based on a state's geographic proximity and interaction patterns. Because scholars have focused on different domains of state interaction, the whole body of knowledge on communities ends up fragmented.

The extant literature takes the important step of enhancing our knowledge on communities; however, much of it lacks empirical rigor in that scholars tend to use prior knowledge of regions and/or interactions *ex ante* to identify latent communities. Moreover, some of the extant work is tautological: it defines and categorizes commu-

nities as groups of states with more interactions than others *ex post*, and then posits that that shared community membership explains why some countries tend to behave similarly. Such an approach often produces circular arguments, plaguing early efforts to advance our knowledge on international communities.

Some scholars have sought to overcome this problem by inductively identifying communities without incorporating any prior knowledge of state characteristics. Russett (1967) provides one of the first empirical analyses that detects underlying communities of states in the international system by using factor analyses. He inductively identifies different sets of groups of states based on the following five dimensions: socio-cultural similarity, trade, international organization membership, political orientation and geographical proximity. His findings show that the three communities—the Soviet Union and the Eastern European community, the Latin American community, and the Western community—are robust communities within the international system, consistently appearing in those five dimensions. It is interesting to note that his analysis does not find Asian or Southeast Asian communities as distinct communities.

More recent scholarship uses community detection methods to identify latent communities of several international networks, including trade, alliance, or intergovernmental organization networks (e.g., Barigozzi, Fagiolo, and Mangioni 2010; Greenhill and Lupu 2017; Lupu and Traag 2013; Lupu and Voeten 2012). Community detection methods enable researchers to separate networks into similarly-behaving communities based on actual patterns of ties (Kim and Kunisky 2018). For instance, Lupu and Traag (2013) use modularity maximization to reveal trading communities. They find the following five groups as the core trading communities: the Western Hemisphere community; the former Soviet Union; China and many of its smaller trading partners; Southeast Asia, Australia, and Japan; and the small states bordering

the Indian Ocean. Greenhill and Lupu (2017) similarly use modularity maximization to reveal communities within the network of intergovernmental organizations (IGOs). They show that the IGO network is comprised of three core communities: African, European/Northern, and Latin American communities. Barigozzi, Fagiolo, and Mangioni (2010) optimize modularity maximization to reveal latent communities of multi-commodity trade networks. They identify the American, European, Asian and Russian communities as the core communities of states in the networks.

While the recent extant community detection methods provide empirically rigorous findings, a key methodological drawback remains: they do not allow for a node to have memberships in multiple communities. The extant methods tend to assume that each node belongs to only one single community. This assumption of homogenous membership is problematic because it prevents us from capturing the overlapping and nested structure which would more accurately reflect the actual makeup of networks. Most of the real networks are made of highly overlapping communities where nodes simultaneously belong to multiple groups (Palla et al., 2005). Only when we take into account that actors may belong to more than one community, can we see more nuanced structures of communities. This nuance provides answers to the questions of to what extent do diplomatic networks resemble a hierarchical structure or get polarized into opposing camps.

Accordingly, this chapter uses the link communities method developed by Ahn, Bagrow and Lehmann (2010). The key innovation with this method is the ability to detect communities in a way that allows a node to have membership in multiple communities simultaneously. Thus, with the link communities method, this article aims to identify countries that belong to multiple communities in the diplomatic network, as well as to reveal the extent to which communities overlap or are separated into exclusive groups that do not overlap.

The rest of the chapter proceeds as follows. It begins by introducing the link communities detection method that is developed by Ahn, Bagrow and Lehmann (2010). The next section applies the method to reveal communities of the diplomatic network in 2005. It shows three different sets of mega-communities of the diplomatic network that are identified at the three different levels of aggregation. The third section uses community centrality to identify key countries which belong to many and distinct communities within the diplomatic network. And then this chapter concludes by discussing the implications of the findings.

4.1 Link Communities

This chapter uses the link communities method developed by Ahn, Bagrow and Lehmann (2010) in order to reveal communities of a diplomatic network. Ahn, Bagrow and Lehmann (2010) propose the link communities method to resolve key problems of extant community detection methods (e.g., greedy modularity optimization), which have entirely focused on grouping nodes. The conventional community detection methods tend to identify communities based on nodes and define communities as groups of densely interconnected nodes. The implication of the node-based approach is that each node can only belong to one single community in a network, and thus it does not take into account the possibility that nodes simultaneously belong to multiple communities that often overlap. As a result, the conventional node-based methods cannot capture the relationships between overlapping communities, failing to reveal the hierarchical structure of networks.

As Palla and his co-authors (2005: 814) aptly summarize, "most real networks are characterized by well-defined statistics of overlapping and nested communities." In reality, many networks are comprised of communities that often overlap in which each node belongs to more than one community (Ahn, Bagrow and Lehmann, 2010). For

example, in social networks, an individual as a node belongs to numerous personal communities as a member of family, friend, and social activity communities, while simultaneously belonging to several academic communities as a member of political scientist, network analyst, and IR researcher communities. Similarly, as an example of natural science networks, it is known that a large fraction of proteins belong to several protein complexes simultaneously rather than belonging to one complex (Gavin et al., 2002). Social and nature networks alike are made up of highly overlapping communities of nodes.

Accordingly, Ahn, Bagrow and Lehmann (2010) develop the link communities method, which identifies communities by focusing on *links* instead of nodes. This approach can reveal the hierarchical community structure in complex networks where communities may intensely overlap. Their idea comes from the fact that, while nodes tend to have multiple memberships, links tend to have unique memberships. An individual, for example, can have multiple community memberships as a member of family, friend, and any social groups. However, the individual's links are unique and distinct in contexts, such as family links, friendship links, and colleague links. Thus, Ahn, Bagrow and Lehmann (2010) assign a node's community membership based on its links and define communities as groups of links as opposed to groups of nodes. Identifying communities based on links allows us to capture a more nuanced structure of networks in which nodes can belong to multiple communities that may be overlapping and/or nested.

In order to identify communities based on links, the link communities method measures similarities between links that share a node using the Jaccard coefficient and these similarities are used to hierarchically cluster the links. Link pairs that share a node are expected to be more similar than are disconnected link pairs. The

link similarity (S) between e_{ik} and e_{jk} is measured as:

$$S(e_{ik}, e_{jk}) = \frac{|n_+(i) \cap n_+(j)|}{|n_+(i) \cup n_+(j)|}$$

where i represents a node and $n_+(i)$ is its neighbors. Single-linkage hierarchical clustering builds a link dendrogram from the above equation. One can cut a link dendrogram at various thresholds, which yields different sets of link communities. Ahn, Bagrow and Lehmann (2010) in particular use the partition density, D, to find the best threshold at which to cut the dendrogram. The maximum partition density is meant to maximize the density of links within clusters and minimize the density of links across clusters.[3]

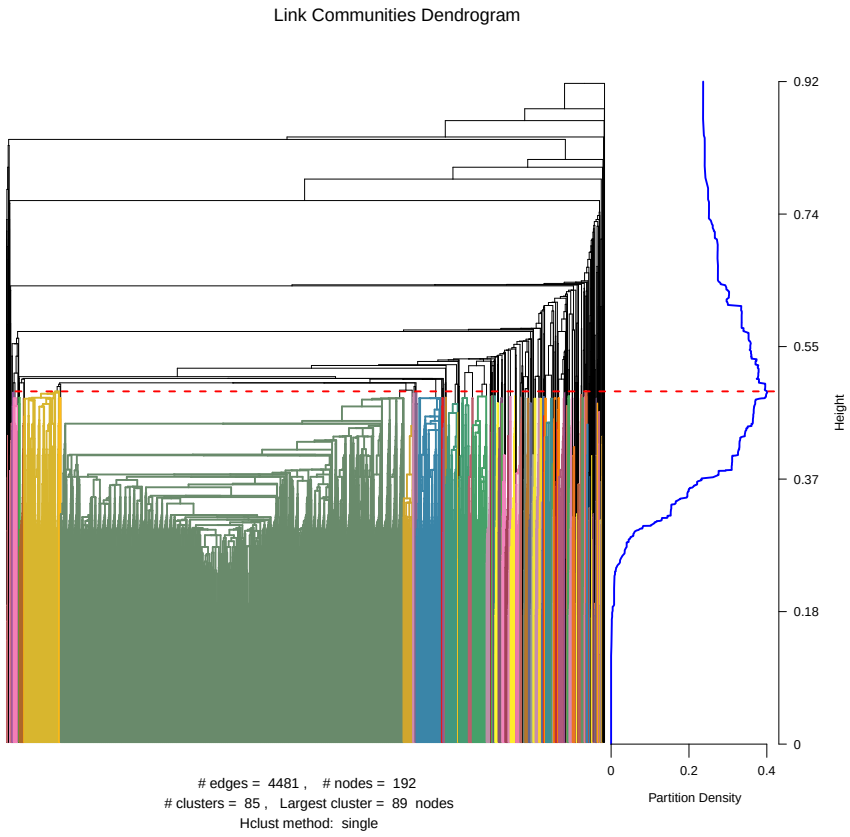
4.2 Diplomatic Community in 2005

The diplomatic network consists of a complicated web of links among countries, with some more highly interconnected than others. With the link communities method, this article defines a diplomatic community as a group of similar ambassadorial links. Figure 4·1 shows the link communities dendrogram of the 2005 diplomatic network. In this dendrogram, each leaf represents an ambassadorial link and each branch represents a diplomatic link community. The dendrogram in Figure 4·1 is cut at 0.401, or the threshold point at which the partition density is maximized. The maximum partition density yields 85 latent communities of the diplomatic network, which includes 192 countries and 4481 ambassador ties. Of the 85 latent communities, seven communities are found to be entirely nested within larger communities in the diplomatic network.

Figure 4·2a illustrates one example of an entirely nested community: a community (i.e. community 74) that includes Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan,

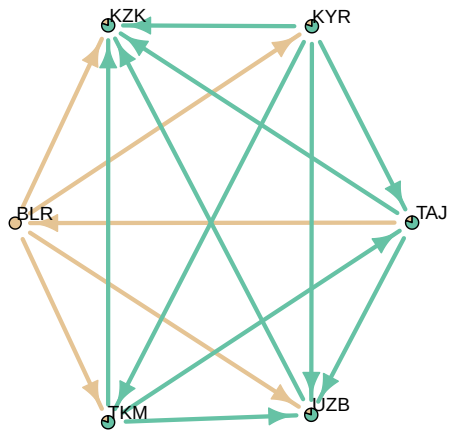
[3]The maximum partition density results from standardizing the values of maximum density of each level against the maximum and minimum numbers of links possible in each cluster.

Figure 4·1: Communities Summary (2005)

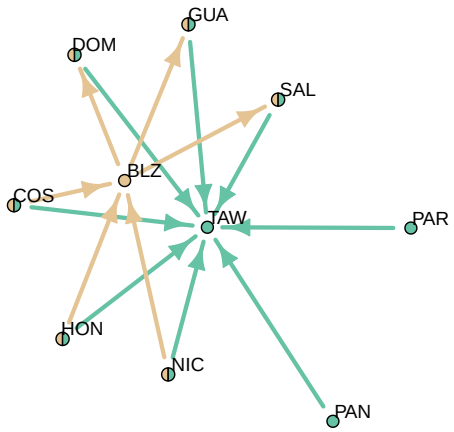


and Kazakhstan is entirely embedded into another larger community (i.e. community 71) that additionally includes Belarus. Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan, and Kazakhstan belong to two communities, whereas Belarus belongs to only one community to which the aforementioned countries also belong. This suggests that the ambassadorial ties of Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan, and Kazakhstan are more similar to each other, than those of Belarus. Figure 4·2b shows one example of two overlapping communities within the diplomatic network. A community that includes Taiwan, Paraguay, and Panama is overlapped with another community that includes Belize. Nicaragua, Honduras, Costa Rica, and the Dominican Republic, Guatemala, and El Salvador belong to both of the communities.

Figure 4·2 shows that diplomatic networks are comprised of nested and overlapping communities in which countries have multiple memberships.



(a) Nested Communities



(b) Overlapped Communities

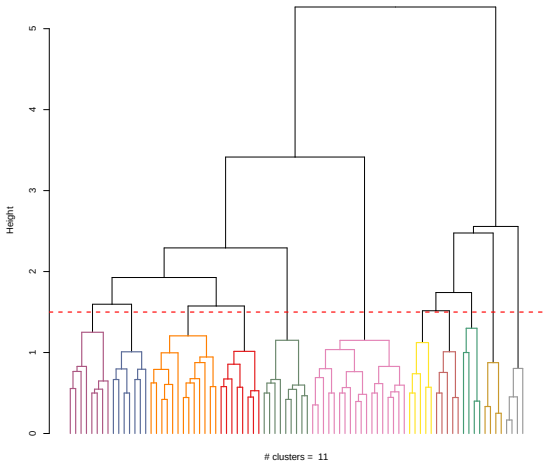
Figure 4·2: Nested and Overlapped Communities of Diplomatic Network

This chapter aims to suggest a range of different sets of diplomatic communities in order to see whether and to what extent communities are consistent or inconsistent with different thresholds.[4] To that end, I further cluster the 81 communities of the diplomatic network that are produced by the maximum partition density into three different sets of mega-communities. Figure 4·3 shows different sets of mega-communities of diplomatic communities in 2005. The three sets of mega-communities are selected based on the three different dendrogram threshold points at 1.5 (lower), 2 (middle), and 3 (higher) respectively, which in turn yields 11, 6, and 3 meta-communities respectively.

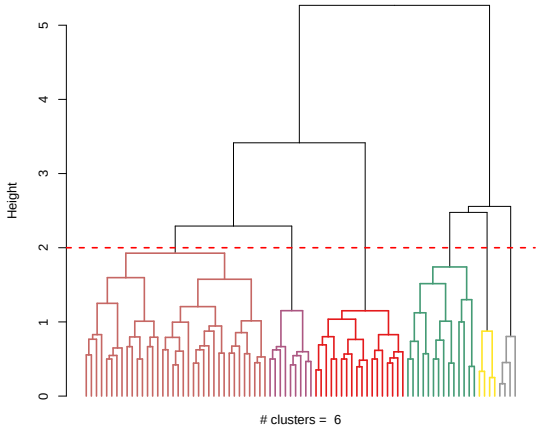
As Figure 4·3a shows, at a lower threshold (i.e. with a relatively greater number of communities), one can observe eleven communities of the diplomatic network. The list of countries in each community can be found in the online appendix. *Community 1* is a group of Commonwealth of Independent States (CIS) countries. This community comprises primarily of the former Soviet Union states, including Belarus, Tajikistan, Turkmenistan, Kyrgyzstan, Azerbaijan and Georgia. The Commonwealth of Independent States (CIS) is a regional intergovernmental organization, which was designed to manage the collapse of the Soviet Union and maintain cooperation of post-Soviet countries in political, economic, and security domains (Kubicek 2009). The presence of this community can be explained by the member's shared experiences of being in the Soviet Union and their strategic interests to maintain interdependence.

Community 2 is a group of some East African countries as well as Front Line States (FLS) located in sub-Saharan Africa. This group includes Angola, Tanzania, Mozambique, Malawi, Uganda and Burundi. The FLS, as former colonies, have played a substantial role in the struggle against existing white-ruled states in Africa. They tend to have one-party systems in which democratic values and political liberties are

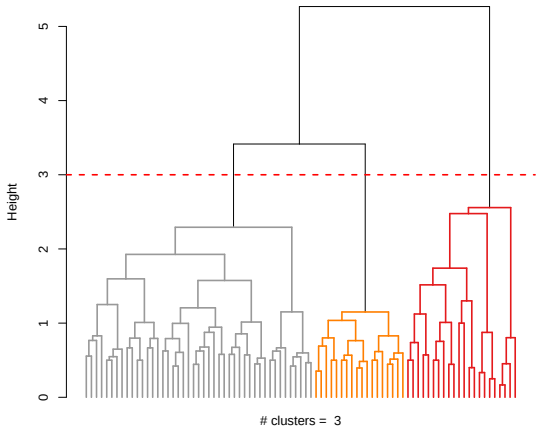
[4]This article does not aim to determine a *true* set of diplomatic communities but rather to explore various sets of existing diplomatic communities with different levels of aggregation. The delimitation of communities within a network is a matter of aggregation. (Lupu and Traag 2013).



(a) 11 Communities (lower threshold)



(b) 6 Communities (middle threshold)



(c) 3 Communities (higher threshold)

Figure 4·3: Three Sets of Communities of Diplomatic Network (2005)

not applicable (Francis 1979). Interestingly, North Korea also has a membership in this community, suggesting that ambassadorial ties of North Korea are similar to those of African countries that belong to this community.

Community 3 is a group of small island countries as well as major powers. This

community includes Vanuatu, Comoros, Bahamas, Tonga, Samoa, the Marshall Islands, the U.S., the U.K, France, China and Japan. Small island countries in general are members of the Alliance of Small Islands States (AOSIS), a coalition of small island and low-lying coastal developing countries, which fights against climate change and advocates for sustainable development. This community reflects the common interests of small-island countries, which is to fight against global climate challenges and amplify their collective voice in this matter. It is notable that major powers also have membership in this community.

Community 4 consists of some West African coastline countries. 12 countries belong to this community and they include Senegal, the Ivory Coast, Burkina Faso, Ghana, Guinea, Liberia, Gabon, Angola, Mali, Benin, and Niger. Except Ghana and Liberia, all of these countries were former colonies of the French empire and gained independence in the 1960s. It is interesting to note that Sierra Leone, Gambia, Guinea- Bissau, and Togo, which are generally regarded as West African countries, do not belong to this community. This can be explained in part because Sierra Leone, Gambia, and Guinea-Bissau were former colonies of the British and Portuguese empires, whereas countries in this community were former colonies of the French empire. [5] The member composition of this community suggests that conventional geographical classification is not an exact indicator of diplomatic community; rather, the shared history of colonial power also plays a crucial role in delimiting diplomatic community.

Community 5 is an amalgamation of Latin American and Caribbean countries as well as major powers. 45 countries belong to this community: some South American countries (e.g., Suriname, Venezuela, Chile and Argentina), Central American countries (e.g., Mexico, Cuba, Haiti, Honduras, Costa Rica and Panama), and Caribbean

[5]The United Nation classifies Western Africa as the amalgamation of 16 countries of the western part of Africa. They include Benin, Burkina Faso, Cape Verde, the Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

countries (e.g., St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines). Global and regional powers (e.g., the U.S., U.K, Germany, Russia, Japan, China, India, France, Austria, Spain and Italy) also have memberships in this community.

Community 6 comprises mainly of Central African countries, including the Central African Republic, Chad, the Congo, Mauritania, Senegal, Gabon, Cameroon and the Democratic Republic of the Congo. Out of the 10 countries that belong to this community, Senegal, Gabon, and the Ivory Coast also simultaneously belong to the West-African community (i.e., *community 4*).

Community 7 can be characterized as the UN members in the international system. It is the largest community of the diplomatic network, including 132 out of all 192 countries in the network. Approximately 70 percent of the member states belong to this community, meaning that the ambassadorial links of these countries are similar enough to each other to make them belong to one community. This similarity suggests that the vast majority of countries are highly interconnected to each other at a macro level. Because so many countries belong to this giant community, it is interesting to explore countries that do not, which include Gambia, Togo, Lesotho, Malawi, Fiji, Papua New Guinea, Samoa, the Solomon Islands, Taiwan and North Korea. These countries can be understood as so-called "pariah states.[6]" These countries' ambassadorial ties are not similar to the majority of the countries in the international system, suggesting that they are relatively isolated in the diplomatic network.

Community 8 comprises mainly of Middle East and North Africa (MENA) countries as well as major powers [7] 48 countries belong to this community, including Syria,

[6]Harkavy (1981) suggests several characteristics of pariah states. Pariah states can be characterized as i) small and weak, ii) having poor diplomatic leverage and not considered as a good alliance partner by major powers, iii) facing adversaries that have solid support from a major power.

[7]According to World Bank geographical classification, the following 21 countries are regarded as MENA members: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates, Algeria, Djibouti, Egypt, Iraq, Iran, Israel, Jordan, Lebanon, Libya, Malta, Morocco, Yemen, Syria, Tunisia, and the West Bank and Gaza (The World Bank, 2003).

Israel, Jordan, Kuwait, Morocco, Algeria, Tunisia, Libya, Egypt, India and Pakistan. Some countries that belong to the central African community (i.e., *Community 6*) also belong to this community, such as Mauritania, the Congo, the Central African Republic, and Chad. The members of *Community 8* are similar to what Samuel Huntington (1996) categorizes as "Islamic" civilizations that are spread across North Africa, the Iberian Peninsula and Central Asia. The U.S., France, Spain, Germany, Russia, China and the U.K also have membership in this community.

Community 9 is an amalgamation of Asian, African, and Scandinavian countries as well as major powers. 51 countries belong to this community. They include Pakistan, Bangladesh, Sri Lanka, India, South Korea, Japan, Malaysia, the Philippines and Thailand. Some African countries that are geographically dispersed within the continent also belong to this cluster. They include Mauritius (East Africa), Seychelles (East Africa), Equatorial Guinea (Central Africa), Nigeria (West Africa), Kenya (East Africa), Botswana (South Africa), Madagascar (South Africa), Malawi (South Africa) and Lesotho (South Africa). Some Scandinavian countries such as Denmark, Norway, Sweden, and Finland as well as major powers (e.g. the U.S, U.K, Germany, France, Russia and China) also have memberships in this community.

Community 10 can be characterized as a group of Western small landlocked countries. 20 countries have membership in this community, including San Marino, Liechtenstein, Andorra, Swaziland, Belize, and the Solomon Islands. Although they are all geographically dispersed across different continents, they tend to share common characteristics: they are small and landlocked countries with the exception of Belize and the Solomon Islands. Several western major powers (e.g., the U.S., U.K, France, and Germany) also belong to this community.

Community 11 consists of Taiwan and its ambassador partners. 17 countries belong to this community. They include Estonia, Latvia, Lithuania, Belize, Guatemala,

El Salvador, Nicaragua, Costa Rica, Panama, Cambodia, Laos and Vietnam.

Figure 4·3b shows the dendrogram that is selected at a middle threshold (i.e. with a relatively fewer number of communities). At the 1.5 threshold, one can detect six communities of the diplomatic network: 1) the Commonwealth of Independent States community (*Community 1*), 2) the African Frontline States community (*Community 2*), 3) the UN members community (*Community 7*), 4) the Middle East and North Africa states community (*Community 8*), 5) the Western-friendly heterogenous community and 6) the African community. The first four communities are also found at the lower threshold in Figure 4·3a in the same form. This continuance suggests that these communities are relatively salient and robust blocs in the diplomatic network. The other seven communities found at the lower threshold are merged into two larger communities at this threshold: the *Western-friendly heterogenous community* and the *African community*. On the one hand, the community of the small Islands (*Community 3*), the community of Latin American and Caribbean countries (*Community 5*), the community of Asia-Pacific countries (*Community 9*), and the community of Western small landlocked countries (*Community 10*) are merged into the Western-friendly heterogenous group. On the other, the community of Taiwan and its ambassador partners (*Community 11*), the Central African community (*Community 6*) and the Western African community (*Community 4*) are merged into one larger community as the *African community*.

Finally, Figure 4·3c shows the dendrogram that is selected at a higher threshold (i.e. with a relatively few number of communities). One can identify three mega-communities: the *UN community*, the *Western-friendly heterogenous community*, and the *African community*. The community of the UN member countries (*Community 7*) found at the lower and medium thresholds still remains at this threshold. This community is consistently observable regardless of the three different thresholds, which

suggests that it is the most robust community in the diplomatic network. The community of Middle East and North Africa (*Community 8*) that is found as a unique community at the middle threshold is now merged into the Western-friendly heterogenous community at this threshold. This western-friendly heterogenous community includes 114 countries across Western Europe, Latin America, the Asia-Pacific, and the Middle-East and North Africa region. The communities of CIS (*Community 1*) and the Frontline states (*Community 2*) that are found as distinct at the middle threshold are merged into the *African community* at this threshold. The *African community* at this threshold comprises of 53 countries encompassing Central Africa, Western Africa, and Eastern Africa as well as the former Soviet Union countries and Taiwan's diplomatic partners.

This article finds four interesting and notable observations in terms of the diplomatic communities. First, diplomatic communities that are identified through the actual links do not exactly correspond to the common geographical regions. Historical bonds and shared national interests also appear to be as important as geographical proximity in revealing communities. For instance, the members of the small islands community (*Community 3*) are not geographically proximate, rather they are dispersed in the Indian, Atlantic, and Pacific Oceans. However, their shared geographical condition (i.e., small island and low-lying coastal developing countries) may enable the countries to flock together and closely intertwine with each other. The CIS community (*Community 1*) also reflects the importance of shared history and/or shared national interests. As the former members of the Soviet Union, the countries have aimed to maintain close economic, political, and security cooperation after the end of the Cold War, thus they are closely intertwined with each other, distinguishing themselves from other countries in the world. These findings complement the conventional understanding of international subsystems that emphasizes geographic

proximity as the major factor that can delimitate communities.

Second, the diplomatic network is made up of several overlapping and nested communities, rather than of mutually exclusive groups. This structure suggests that the diplomatic system is not polarized into opposing camps. Polarity is generally defined as the number of relatively cohesive groups of major actors in the system (Haas 1970, 303). Hart (1974, 232) defines polarity as "the degree to which antipathetic, non-overlapping subgroups are formed." Although scholars have long emphasized the distribution of relationships to capture polarity, they tend to measure polarity based merely on the number of poles, or counting the number of preponderantly powerful states. In this vein, some scholars claim that the conventional understanding of polarity must be supplemented by information on the distribution of bonds or ties among those states (Russett and Lamb 1969). This supplementation is necessary because "the extent to which a society will polarize into possibly opposing camps is likely to be influenced by the patterns of social relations through which members of the society influence each other" (Weenie et al 2008). My findings contribute to our understanding of polarity by adding the missing puzzle piece of to what extent states form mutually exclusive blocs of states with internally similar and externally dissimilar relations. My findings show that diplomatic communities are less polarized into opposing camps than we may think because the diplomatic network is made up of several overlapping and nested communities in which many countries have shared memberships. There are only a few communities that form mutually exclusive blocs.

Third, the diplomatic network resembles a hierarchical structure, which is generally dominated by major powers. Major powers tend to have multiple memberships in different diplomatic communities across regional boundaries. The U.S., the U.K., Russia, China, France, and Germany have memberships in the Latin American and Caribbean community (*Community 5*) and the Middle East and North Africa

community (*Community 8*) that they do not geographically belong to. Moreover, the U.S. simultaneously belongs to the community of small islands (*Community 3*), the Asian-Pacific community (*Community 9*), and the Western-European community (*Community 11*). Such multiple diplomatic membership suggests that major powers are highly interconnected with countries across different continents, and thus have political, economic, and social interests in the regions that derive from such interdependence.

Fourth, the cohesiveness of diplomatic communities substantially varies. The African community appears much more distinct and cohesive than other communities, such as Asian-Pacific, Latin American, and Middle Eastern communities. African communities consistently appear independently regardless of the different thresholds. At the lower threshold, 4 out of 11 communities are African clusters: Eastern African and Frontline countries (*Community 2*), West-African countries (*Community 4*), and the Middle East and North Africa (*Community 8*). At the higher threshold, these communities merged into the larger African community. The African community remains independent, along with the giant UN member community and the Western-friendly heterogenous community. The fact that African communities are observable regardless of different threshold suggests that they have relatively unique patterns of diplomatic ties distinguishing themselves from other countries in the world.

The robustness of African communities sheds new light on the debate on the post-colonial relationships between former metropoles and former colonies. Some argue that former African colonies have lessened their ties with former European metropoles, while others claim that African colonies are still dependent on European powers and their relationships have remained static (Kofele-Kale 1981). My findings support the former view, in that many African countries flock together, tightly intertwining with each other independent from European countries. European countries tend not to

belong to African communities, which suggests that former African colonies attempt to lessen their ties with and disengage from colonial powers in the pursuit of greater independence.

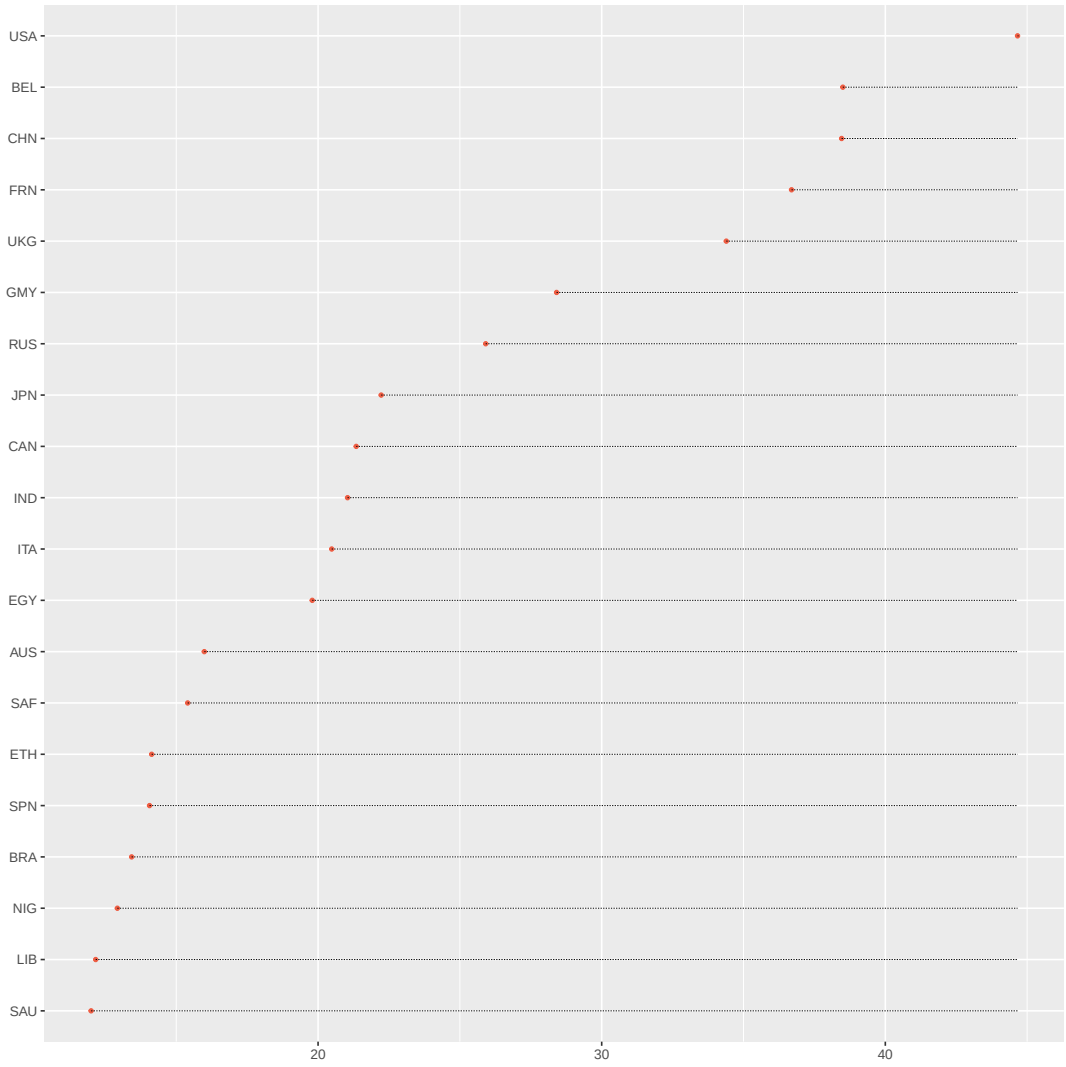
4.3 Community Centrality: Major States with Multiple Diplomatic Membership

This section uses community centrality to reveal key countries that have multiple community memberships in the diplomatic network. Community centrality measures the importance of a node based on the number of communities to which the node belongs (Kalinka and Tomancak 2011). It is a weighted measure of community membership that considers the distinctiveness of a community to which a node belongs as compared to the other communities to which the same node belongs. A country with high community centrality means that it belongs to many distinct and separate diplomatic communities whereas a low score means that a country is embedded in overlapping and nested diplomatic communities.

Figure 4·4 shows the top 20 countries in terms of community centrality in the diplomatic network in 2005. The U.S. has the highest community centrality at 44.66, followed by Belgium at 38.50, China at 38.46, France at 36.69 and the United Kingdom at 34.39. The other countries with high community centrality include Germany, Russia, Japan, Canada, India, Italy, Egypt, South Africa and Brazil. Countries with high community centrality are mainly global powers or regional powers. This finding suggests that major and regional powers tend to belong to distinct and separate diplomatic communities, which means that they have the potential to exert influence on these communities' members.

The finding that major powers have heterogenous diplomatic community membership is important because it suggests that major powers are much more powerful

Figure 4·4: Top 20 Communities Centrality (2005)



than their military or economic capability may indicate. When scholars and policy-makers discuss state power, they tend to exclusively focus on material resources, such as economic and military capabilities. For instance, Mearsheimer (2001, 56) defines power in military terms because "force is the ultima ratio of international politics." In a similar vein, many IR scholars have used the indicator of the Composite Index of National Capability (CINC) to measure state power. The CINC score measures the relative power of each country averaging its percentages of the world totals in six

material components: military expenditure, military personnel, energy consumption, iron and steel production, urban population, and total population (Singer, Bremer and Stuckey 1972). Based on this indicator, scholars have assumed that countries with high CINC scores are powerful in that they can dispose of these material resources to make other countries do something that otherwise they might not do.

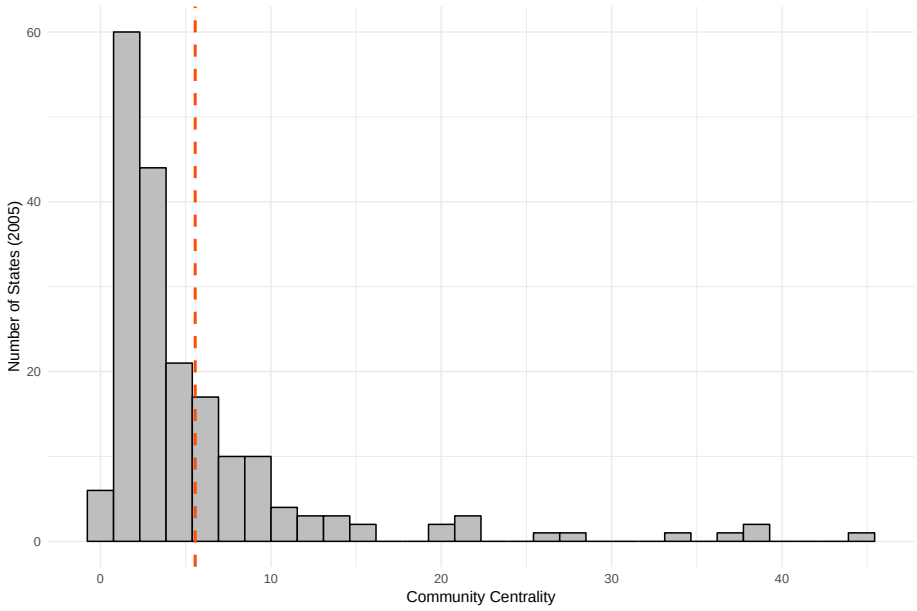
My findings reveal that major powers are not only powerful in the material sense but also formidable ones in the network sense. One of the political benefits of heterogenous membership is information advantages. Compared to states which belong to nested and overlapping communities, countries with heterogenous membership are able to access and gather information and resources from multiple diplomatic communities by virtue of belonging to separate and distinct clusters. The information they acquire from different communities is more diverse, exclusive, and reliable, all of which in turn gives them an information edge. The information is diverse because it comes from many distinct communities, exclusive because it is less likely to overlap, and reliable because states have multiple paths to double check it. Moreover, states with heterogenous diplomatic membership have an outside option to gather necessary resources or information, which in turn increases their foreign policy autonomy.

It is important to note that such intangible benefits of information advantage and political autonomy are never equally distributed among countries. Figure 4·5 shows the distribution of community centrality of countries in the diplomatic network in 2005. The distribution of community centrality is highly skewed right, with a minimum of 0, a maximum of 44.56, and an average of 5.56. This skewed distribution of community centrality means that only a small number of countries belongs to multiple distinct communities to enjoy intangible political advantages, whereas more than a majority belong to overlapping and nested communities within the diplomatic network.

This finding aligns with the existing work that emphasizes the hierarchical structure of the international system (Kang 2004; Lake 2007). This line of research focuses on relational aspects of political authority and argues that the international system is better characterized as a hierarchy rather than an anarchy in that states have different levels of political autonomy. Some states have more external constraints on their sovereignty than others and subordinate states are often dependent on the dominant state for assistance (Lake 2007). If potentially subordinate countries have an "outside option" that reduces the dominant state's ability to exercise control, then they are shown to have foreign policy autonomy. Conversely, if all of a subordinate's alliances are shared with the dominant state, then this may indicate a security hierarchy. In this vein, Lake (2007:63) operationalizes security hierarchy as "the number of independent alliances possessed by the subordinate state," and argues that "the larger the number of such independent alliances possessed by subordinates, the less hierarchical the security relationship is likely to be."

By applying this logic, my findings on diplomatic communities show that diplomatic relations among countries resemble a hierarchical structure in that there is only a small number of communities that are independent of major powers. Only a few communities, such as the former Soviet Union community or the so-called *pariah* community, constitute independent communities without any major powers. The majority of countries are embedded in the overlapping and nested communities that major powers are also engaged in. This suggests that major powers are likely to exercise control within the communities in part because subordinate countries lack outside options that can reduce major powers' influence.

Figure 4·5: Distribution of Community Centrality



4.4 Discussion

The overarching goal of this chapter is to map latent communities of the diplomatic network and identify key players which belong to many distinct and separate communities. Understanding communities within the international system is crucial because it helps to answer many fundamental questions about a wide range of state behaviors, particularly with regard to how states foster collective identities and interests, establish regional institutions, create regional stability, recruit military coalition members and engage in conflict (Greenhill and Lupu 2017; Hurrell 1995; Lupu and Traag 2013; Deutsch 1954; Lake 1997; Wallace 1975).

The earlier extant literature on communities, international subsystems or blocs of states is often empirically less rigorous and make tautological arguments: it uses *ex ante* information about states, particularly their geographical regions or institutional ties, to group them into communities and argue that the membership in communities influences state behavior. More recent scholarship on community detections has

sought to overcome this problem by identifying communities inductively; however, it has a methodological weakness in that it does not allow for the possibility that a state can belong to multiple communities, which is highly likely to occur in real networks.

The link communities method utilized in this article resolves these problems by detecting communities without incorporating any prior knowledge of states as well as taking into consideration the possibility that countries may belong to more than one community. Using the link communities method, this article reveals three sets of latent communities of the diplomatic network based on three different levels of aggregation. By examining the three sets of communities, this article finds several interesting observations. For instance, in addition to geographical proximity, shared history and/or common national interests play a crucial role in delimitating communities. Some communities, such as the African community, are more cohesive than other communities, consistently appearing regardless of the different levels of aggregation. This cohesion suggests that African countries tend to have more similar ambassadorial tie patterns toward each other than others, distinguishing the community from other communities. On the other hand, the Asian community tends to be nested into a larger community rather than constituting an independent community, suggesting that Asian countries are less cohesive and distinct.

Using community centrality, my findings also reveal that only a small number of major countries tend to appear in multiple distinct communities. This means that they equip themselves with high community centrality, suggesting that major powers are also formidable in the network sense. The lopsided distribution of community centrality suggests that the diplomatic network resembles a hierarchical structure: only a small number of countries constitutes communities independent from major powers, while more than a majority of the countries tend to appear in overlapping and nested communities to which major powers also belong.

These findings have two main implications. First, my findings shed new light on state identity alignment. Many constructivists argue that state identity is intrinsically formed through relations and interactions with other states (Ashizawa 2008). State identity and action are inextricably related because state identity provides a context of the situations within which a state is located. This context in turn helps the state to define which actions are deemed reasonable or appropriate. As Williams and Newmann (2000: 363) put it, "the logic of appropriateness is intrinsically social and relational: what counts as appropriate action is determined in the context of a social structure within which the actor is located and on the judgement of others." In this regard, identifying communities of diplomatic networks—who belongs where—sharpens our understanding of state identity alignment, because diplomatic ties are one of the most fundamental channels through which states regularly communicate and interact with each other. States in the same diplomatic communities are more likely to form a similar identity and thereby develop a sense of trust and reciprocity, whereas states in different diplomatic communities are more likely to perceive one another as others or even enemies and develop a hostile course of action against each other. My approach of identifying diplomatic communities yields more accurate and interesting insights on state identity and behavior, because it does not require any prior knowledge of state characteristics. My findings, for instance, show that Bangladesh and Laos may not behave similarly despite their geographic proximity. The behavior of Mali may differ from that of Mauritania even though they share a border in Western Africa.

Given the lack of systemic empirical studies on diplomatic communities, this article provides the basic landscape of what the structure of diplomatic interdependence looks like and reveals key countries which potentially exert influence on different communities. My findings will serve as a guideline for future studies that may ex-

amine what makes states aggregate in a cluster, what makes some countries belong to multiple communities and not others, and how and under what conditions member countries in a community are more likely to behave similarly or pursue collective policy objectives.

Chapter 5

Conclusions

While there has been a long recognition that relationships among countries matter in predicting their foreign policy behavior, many existing IR studies merely focus on either dyadic or multilateral relationships, rarely exploring the structures of international networks that encompass all countries and their ties. This has left a significant gap of whether and how extra-dyadic factors affect embedded countries' foreign policy behaviors and international outcomes. Accordingly, my dissertation aims to put a spotlight on key structures of diplomatic networks and demonstrate their causal impacts on foreign policy behaviors.

My research begins with defining and constructing diplomatic networks over the almost two century period from 1817 to 2001. In Chapter 1, I define a diplomatic network as the set of ambassadorial ties between all member states at a given time. Although there are different levels of diplomatic representations, such as charge d'affairs or ministers levels, I focus on ambassadorial ties because they represent the highest and thus most significant level of diplomatic representation among countries. Based on the previous scholarship that emphasizes the role of diplomatic ties, I argue that diplomatic networks are crucial because they carry practical and symbolic value. The diplomatic network has a practical value in that it is the most fundamental avenue through which information and resources are routinely exchanged. It also has a symbolic value in that exchanging diplomatic ties signifies recognition between countries. Accordingly, diplomatic networks suggest the extent to which embedded countries

enjoy information benefits as well as social standing in the international system. I particularly note that diplomatic networks provide meaningful variations in terms of both practical and symbolic values, depending on states' structural positions. In other words, I argue that the structural position—where a state sits—within the diplomatic network generates variations in terms of the quantity and quality of information that it can access and accumulate, as well as the level of recognition that it receives from other countries. A central state in the diplomatic network is more likely to enjoy a high quality of information and resources, as well as greater recognition, compared to marginalized states.

Based on such assumptions, my dissertation suggests three pathways by which structures of diplomatic networks, particularly a state's structural position, influence foreign policy behaviors. I use a wide range of network analytics and advanced statistical methods with diverse data to demonstrate the causal impact in the subsequent three chapters.

Chapter 2 focuses on broker position within diplomatic networks and examines how it influences a state's tendency to initiate and escalate MIDs between 1817 and 2001. Broker position is defined as a structural position that can connect countries that otherwise would be less connected. I argue that broker position serves as an extra-dyadic proxy for state's opportunity and willingness to engage in conflict. Broker states are more likely to engage in conflict because they have more chances to interact with others. They also have more willingness to engage because they can coerce or co-opt other countries into helping them in the preparation for war. By virtue of occupying the broker position, a state can control the flow of information and resources and thus can often use such advantages as bargaining chips to extract benefits that otherwise might not be possible. The rare events logit and Heckman selection models find that broker states are more likely to initiate militarized disputes.

The marginal impact of broker position on dispute initiation is nearly twice that of military capability, which has been regarded as a major source of state aggression. However, this impact is not consistent throughout the different stages of a conflict, as broker position does not exert a significant influence on a state's decision to escalate a dispute to full-blown use of force or interstate war. This finding not only indicates the extent to which occupying a broker position empowers a state to act aggressively but also illuminates how its impacts differ from those of military capability.

Chapter 3 focuses on the breakdown of diplomatic ties and examines whether and to what extent network dynamics influence a state's decision to terminate its diplomatic ties. Diplomatic networks are never static and diplomatic ties consistently come and go. States re-evaluate their diplomatic posture and often terminate their diplomatic ties; this is not a rare event throughout history. To examine factors that influence diplomatic tie dissolution, I employ a STERGM and find that the network-based dynamics come into play during the process. For example, a state's decision to break off diplomatic ties depends on other countries' decisions, confirming the domino effect of diplomatic isolation that policy makers often discuss without empirical findings. I also find that the processes of establishing diplomatic ties are not the same as those of breaking them apart.

Chapter 4 focuses on latent communities of diplomatic networks, revealing which countries flock together to form cohesive groups and which countries belong to multiple groups. The diplomatic network consists of a complicated web of links among countries, with some countries more highly interconnected than others. Among numerous community detection methods, I particularly use a link communities method that allows nodes to simultaneously belong to multiple communities. Among many findings, it shows that the diplomatic network resembles a hierarchical structure in that diplomatic communities tend to overlap; only major countries tend to belong to

multiple communities and few communities are independent from those major powers. These findings suggest that major powers are much powerful than their material capabilities may indicate.

In sum, altogether, this dissertation expands our knowledge on the role diplomatic ties play in state foreign policy behavior from a network perspective. Diplomatic ties are never mundane practices that all states exchange, rarely generating meaningful variation for state behavior. Rather, diplomatic ties are significant power vehicles that carry practical and symbolic value, making some countries more powerful than others. My approach in understanding diplomatic ties from a network perspective enables us to reveal previously overlooked causal pathways by which states become emboldened or restrained.

While the previous chapters outline the major findings, implications and contributions of this project, there is ample space for future studies to build upon and extend these findings. For example, the findings from Chapter 2 shed light on a previously overlooked phenomenon—the link between structural position and the initiation of conflict— that in turn suggests several stimulating questions for future research. Under what circumstances does the broker position become a more prominent factor when a state calculates the costs and benefits of waging a conflict? While Chapter 2 reveals a probabilistic association suggesting that broker position tends to embolden states to act more aggressively over the 200 years of conflict initiation, it does not pinpoint the exact mechanisms behind the process. It would be helpful to look at specific cases to identify what kinds of information and resources exclusively pass along the broker position, and how exactly the broker state utilizes such political advantages to induce assistance from other countries in their preparation for war.

Another set of questions relates to whether the relationship between the broker position and conflict initiation is stable over time. That is, does the broker position

have the same level of emboldening effect over time—for example, in the 19th century and 21st century where more countries become integrated with each other? Also relatedly, is the impact of the broker position the same for all states, regardless of states' material capabilities? I expect that the influence of network power may be different for states depending on their material capabilities. It would be interesting to look at the interaction terms between the network power and material capabilities to examine how they come into play at the initiation of conflict and whether the network power has a conditional impact.

Also, while Chapter 4 describes the basic landscape of complicated ambassadorial relationships among countries at a macro level, a couple of interesting questions still remain. For example, why do some countries flock together in the first place? How does community membership influence countries to foster a shared identity, if it does? And how do great powers' multiple diplomatic memberships grant them the capacity to exert their influence over their communities? To what extent does their influence derive from network power, not from material capabilities?

Finally, diplomatic networks are among numerous international networks in which all member states are embedded, such as alliances, trades, and intergovernmental organizations. Therefore, one avenue for future research would be to compare and contrast key structures of those different international networks. This comparison will give us more comprehensive understanding of a wide range of international networks and provide a foundation to understanding state foreign policy behavior from a network perspective. I hope my theoretical framework and evidence in this project will serve as a basis on which future research can build.

Appendix A

Separable Temporal Exponential Random Graph Model (STERGM)

The STERGM is an extension of the exponential random graph model (ERGM) (Krivitsky and Handcock 2014). ERGMs are statistical models for matrices of relationships among actors. One of the key advantages ERGMs have over traditional regression models is that they account for conditional dependence among actors. In practice, neither states nor dyads of states are completely independent from each other in the international system. For example, the decision of state i to form a diplomatic tie to state k could likely impact the decision of state j to form a diplomatic tie to state k. Similarly, the decision of dyad i and k to dissolve a diplomatic tie could likely influence whether dyad k and j terminate a diplomatic tie. In short, states and dyads of states never exist independently.

ERGMs use a Markov chain Monte Carlo maximum likelihood estimation (MCMC MLE) to model the structure of observed networks. The MCMC dependence implies that a dyad of two actors influences and is influenced by any further tie of those two actors. As ERGMs are based on the Markov dependence, ERGMs consider link creation as a continuous and conditionally dependent process. The ERGMs consider the observed network structure as one possible structure that can appear out of a large set of potential network structures with similar characteristics (Robins et al. 2007). "The range of possible networks, and their probability of occurrence under the model, is represented by a probability distribution on the set of all possible graphs with this

number of nodes. (Robins et al 2017:176).” In this vein, a good ERGM has a high probability of simulating the observed network by identifying the correct coefficients of the factors that influence the network structure. In the process, ERGMs allow the inclusion of node and dyadic characteristics as well as hyper-dyadic dependence determinants at the same time.

Krivitsky and Handcock (2014) extend ERGMs to measure separable processes of tie formation and dissolution. STERGMs model the transition from a network $\mathbf{Y^t}$ at time t to a network $\mathbf{Y^{t+1}}$ at time $t+1$ by assuming that the formation and dissolution of ties occur independently from each other within each time step. That is, tie changes that happen between temporal points t and $t+1$ only influence the structure of dependence at $t+1$. Two separate ERGMs model this change simultaneously: the first generates a formation network, $\mathbf{Y}^+$, conditional only on the creation of new ties, and the second generates a dissolution network, $\mathbf{Y}^-$, conditional only on those ties that dissolve. As such, the STERGM combines two models and thereby estimates $\mathbf{Y^{t+1}}$ by accounting for both new ties that form and old ties that dissolve. By finding the best coefficients, a strong STERGM has a high probability of simulating the observed network correctly.

Appendix B

Eleven Meta-Communities of Diplomatic Networks in 2005

Table B.1: Community 1 – Commonwealth of Independent States (CIS)

Belarus	Tajikistan	Turkmenistan	Kyrgyzstan	Uzbekistan
Kazakhstan	Armenia	Georgia	Azerbaijan	Afghanistan

Table B.2: Community 2 – Frontline States

Angola	Tanzania	Mozambique	Zambia	Zimbabwe
Malawi	Uganda	Rwanda	Burundi	North Korea

Table B.3: Community 3 – Alliance of Small Islands of States and Major powers

United Kingdom	France	China
Vanuatu	Comoros	USA
Tonga	Federated States of Micronesia	Japan
Samoa	Belgium	Bahamas
Canada	Marshall Islands	Indonesia

Table B.4: Community 4 – West-African Countries

Senegal	Ivory Coast	Burkina Faso	Ghana	Guinea
Liberia	Gabon	Angola	Mali	Benin
Niger	North Korea			

Table B.5: Community 5 – Latin American and Caribbean Countries

USA	Venezuela	Suriname
France	India	Brazil
Netherlands	Belgium	China
Indonesia	Portugal	Guinea-Bissau
Russia	Canada	Cuba
Haiti	Mexico	Chile
Argentina	Spain	Germany
South Africa	Japan	Dominican Republic
Jamaica	Honduras	Costa Rica
Panama	Colombia	Peru
United Kingdom	Nigeria	Ethiopia
Trinidad and Tobago	Barbados	Dominica
Grenada	St. Lucia	St. Vincent & the Grenadines
Antigua-Barbuda	St. Kitts and Nevis	Guyana
Cape Verde	Austria	Italy

Table B.6: Community 6 – Central African Countries

Central African Republic	Chad	Congo
Mauritania	Senegal	Ivory Coast
Gabon	Cameroon	North Korea
Democratic Republic of the Congo		

Table B.7: Community 7 – UN member states

USA	United Kingdom	France
Germany	Poland	Hungary
Czech Republic	Bulgaria	Russia
Turkey	China	Mongolia
Canada	Belgium	Austria
Egypt	South Korea	Japan
India	Thailand	Vietnam
Mexico	Peru	Brazil
Chile	Argentina	Netherlands
Switzerland	Italy	Greece
Iran	Malaysia	Singapore
Indonesia	Australia	New Zealand
South Africa	Saudi Arabia	Philippines
Ireland	Luxembourg	Romania
Finland	Sweden	Portugal
Denmark	Slovakia	Estonia
Latvia	Lithuania	Ukraine
Norway	Israel	Yugoslavia
Belarus	Oman	Pakistan
Bangladesh	Myanmar	Cambodia
Laos	Brunei	Sri Lanka
Jordan	United Arab Emirates	Moldova
Cuba	Nigeria	Angola
Ethiopia	Morocco	Algeria
Namibia	Dominican Republic	Guatemala
Honduras	El Salvador	Nicaragua
Costa Rica	Panama	Colombia
Venezuela	Ecuador	Bolivia
Paraguay	Uruguay	Albania
Macedonia	Croatia	Bosnia and Herzegovina
Slovenia	Cyprus	Kenya
Tunisia	Libya	Sudan
Syria	Lebanon	Yemen
Kuwait	Bahrain	Qatar
Afghanistan	North Korea	Uganda
Tanzania	Burundi	Rwanda
Mozambique	Zambia	Zimbabwe
Armenia	Georgia	Azerbaijan
Turkmenistan	Tajikistan	Kyrgyzstan
Uzbekistan	Kazakhstan	Iraq
Malta	Mali	Senegal
Benin	Niger	Ivory Coast
Guinea	Ghana	Cameroon
Gabon	Congo	

Table B.8: Community 8 – Middle East and North Africa

USA	France	Spain
Germany	Russia	Mauritania
Nigeria	Canada	United Kingdom
Belgium	Italy	Morocco
Algeria	Tunisia	Libya
Egypt	Syria	Jordan
Israel	Saudi Arabia	Yemen
Qatar	United Arab Emirates	China
Japan	Netherlands	Denmark
Burkina Faso	Austria	Ethiopia
Ethiopia	Sierra Leone	Togo
Central African Republic	Chad	Congo
South Africa	Eritrea	Sudan
Sweden	Kenya	Kuwait
Australia	Somalia	Oman
India	Pakistan	Djibouti

Table B.9: Community 9 – Asia-Pacific states and others

United Kingdom	France	Russia
Seychelles	China	India
USA	Malaysia	South Africa
Mauritius	Belgium	Germany
Egypt	Pakistan	Australia
South Korea	Japan	Philippines
Indonesia	Papua New Guinea	Fiji
Canada	Bangladesh	Sri Lanka
Maldives	Brazil	Portugal
Thailand	East Timor	Spain
Equatorial Guinea	Nigeria	Ethiopia
Morocco	Finland	Sweden
Norway	Denmark	Iceland
Austria	Iran	Israel
Nepal	Saudi Arabia	Kenya
Botswana	Italy	Madagascar
Malawi	Lesotho	Swaziland

Table B.10: Community 10 – Small landlocked countries and others

USA	United Kingdom	Gambia
Belgium	France	Swaziland
Monaco	Switzerland	Spain
Germany	Italy	San Marino
Austria	Belize	Andorra
Portugal	Canada	Liechtenstein
Japan	Solomon Islands	

Table B.11: Community 11 – Taiwan's diplomatic partners

Estonia	Latvia	Lithuania	Belize	Honduras
Nicaragua	Costa Rica	Dominican Republic	Guatemala	El Salvador
Panama	Paraguay	Taiwan	Myanmar	Cambodia
Laos	Brunei			

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