2012

Networks of Influence: Implementing Politically Sustainable Multinational Stakeholder Strategies

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Abstract

In a bid to gain stakeholder support for their operations, multinational firms operating in politically uncertain environments often inappropriately apply a rational financial approach to a sociopolitical problem. Using the tools of network theory, I present an alternative sociopolitical approach to gaining stakeholder support by engendering cooperative relations and increasing tie formation while minimizing conflict. This dissertation comprises three paper chapters. The first, theory, paper chapter outlines a theory of influence exploring how the firm's strategic position within the network of stakeholders affords it positional benefits of information and reputation, while also highlighting the costs of exposure to pre-existing conflict and the fostering of conflict through asymmetric relations. The second, empirical, paper chapter explores how firms can best manage altercentric and egocentric uncertainty in the nonmarket environment and compares the efficacy of the *ex ante* strategies that the firm can use to manage both types of uncertainty. I hypothesize and find that through strategic network positioning that affords it information, the firm can manage its egocentric uncertainty; and, by managing how it is perceived through its associations, the firm can also manage stakeholders' altercentric uncertainty. When both strategies are assessed together, I find greater returns to firms in terms of engendering cooperation, minimizing conflict and forming ties by managing altercentric uncertainty through strategic associations. In the third, also empirical, paper chapter, I use insights from structural balance theory to explore the relationship between dyadic structure and triadic closure among networks of actors in the sociopolitical context. I outline and test hypotheses of four types of structural homophily of the actors in the triad—access to resources, status, likeability and number of ties (popularity)—on the likelihood of the closure of that triad. I find that a link that closes an open directed triad is more likely when the actors of the triad have *different* access to resources, *different* status, and similar numbers of ties to other actors. I also find that likeability among actors in the triad has no impact on the likelihood of closing that triad. My empirical papers test the relationships among firms and stakeholders in a novel hand-coded database of 51,754 stakeholder events linking 4,623 unique stakeholders of a population of 19 publicly traded gold mining firms which operate 26 mines in 20 largely emerging economies.

Degree Type
Dissertation

Degree Name
Doctor of Philosophy (PhD)

Graduate Group
Management

First Advisor
Witold J. Henisz

NETWORKS OF INFLUENCE: IMPLEMENTING POLITICALLY SUSTAINABLE

MULTINATIONAL STAKEHOLDER STRATEGIES

Lite Josephine Otoo Nartey

A DISSERTATION

in

Management

For the Graduate Group in Managerial Science and Applied Economics

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2012

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To my husband,

Ayeh,

You are everything to me!

ACKNOWLEDGMENT

Just as it takes a village to raise a child,

It takes a village to obtain a PhD.

My deepest thanks to:

Witold Henisz, my advisor, colleague and mentor, whose guidance, advice and support have shaped me into the scholar I have become.

My wonderful committee—Lori Rosenkopf and Mauro Guillen—for your comments, suggestions and endless patience and support!

My wonderful faculty mentors—Heather Berry, Katherine Klein—for your friendship, and wise and candid counsel.

The amazing Wharton community of faculty, staff and students—it is a pleasure to be counted among your number. I especially thank my dearest friends Elisa Alvarez-Garrido, Jemima Frimpong, and Srividya Jandhyala! Ladies, what would I have done without you?

My ever-growing group of friends and family—buckets of love to you all, especially, my darling Daddy, Alfred Otoo, and my dearest mother Alberta (the older I grow, the more I miss you), Alfie, Kees, and Anna, Auntie C (Cecilia Atoo), Esi Ansah, Nana Kyerewaa Nsiah—thank you for your prayers, calls and love!

My dearest husband and best friend, Ivan Ayeh Nartey—words cannot express how much you've done for me! I dedicate this dissertation to you with my eternal love.

My greatest thanks are reserved for You, O Lord, My God for every moment You have given me.

Immortal, invisible, God only wise,

In light inaccessible hid from our eyes,

Most blessed, most glorious, the Ancient of Days,

Almighty, victorious, thy great name [I] praise!

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ABSTRACT

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Lite Josephine Otoo Nartey

Witold Jerzy Henisz

In a bid to gain stakeholder support for their operations, multinational firms operating in politically uncertain environments often inappropriately apply a rational financial approach to a sociopolitical problem. Using the tools of network theory, I present an alternative sociopolitical approach to gaining stakeholder support by engendering cooperative relations and increasing tie formation while minimizing conflict. This dissertation comprises three paper chapters. The first, theory, paper chapter outlines a theory of influence exploring how the firm's strategic position within the network of stakeholders affords it positional benefits of information and reputation, while also highlighting the costs of exposure to pre-existing conflict and the fostering of conflict through asymmetric relations. The second, empirical, paper chapter explores how firms can best manage altercentric and egocentric uncertainty in the nonmarket environment and compares the efficacy of the *ex ante* strategies that the firm can use to manage both types of uncertainty. I hypothesize and find that through strategic network positioning that affords it information, the firm can manage its egocentric uncertainty; and, by managing how it is perceived through its associations, the firm can also manage stakeholders' altercentric uncertainty. When both strategies are assessed together, I find greater returns to firms in terms of engendering cooperation, minimizing conflict and

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unique stakeholders of a population of 19 publicly-traded gold mining firms which

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PREFACE

We need to understand the complex interconnections between economic and social forces. Isolating "social issues" as separate from the economic impact which they have, and conversely isolating economic issues as if they had no social effect, misses the mark both managerially and intellectually (Freeman, 1984:41)

Introduction

Navigating uncertainty in the nonmarket environment (Baron, 1995; Baron &
Diermeier, 2007) has been a long-standing focus of scholarship at the nexus of
international business and multinational strategy. While the market environment includes
"typically voluntary" economic and property-based transactions and exchanges between
firms and "other parties that are intermediated by markets or private agreements," the
nonmarket environment "consists of the social, political, and legal arrangements that
structure the firm's interactions outside of, and in conjunction with, markets" (Baron,
1995:49). Further,

> *The nonmarket environment includes those interactions that are*
> *intermediated by the public, stakeholders, government, the media, and*
> *public institutions. These institutions differ from those of the market*
> *environment because of characteristics such as majority rule, due process,*
> *broad enfranchisement, collective action, and publicness. The interactions*
> *in the nonmarket environment may be voluntary, such as when the firm*
> *adopts a policy of developing relationships with government officials, or*
> *involuntary when government regulates an activity or activist groups*
> *organize a boycott of a firm's product (Baron, 1995:47).*

The importance of the nonmarket environment for firms can be distinguished by the
"control of a firm's opportunities" by governments and "direct challenges" against the
firm by activists and interest groups (Baron, 1995:49). Examples of control and
challenges from actors in the nonmarket environment that creates uncertainty for firms,
include hostile relations and adverse interventions by governments—such as, sudden
stop-work orders, denial of security and work permits, adverse tax or regulatory changes,
or outright expropriations of assets—through interventions orchestrated by actors from
civil society—such as, sophisticated political strategies of nongovernmental coalitions,

violent and nonviolent protests, employee strikes and walkouts, or acts of sabotage. These adverse interventions by both governments and civil society actors can have detrimental impacts on firm operations—often resulting in closures and operational delays—and can cause irreparable damage to that firm's reputation, thus adversely affecting the firm's financial returns. Such nonmarket uncertainty, while well documented against firms in the extractive industries (i.e., oil, gas and mining), impacts a much wider array of firms in a diverse set of industry and country environments. A successful nonmarket strategy therefore "must … be tailored to the firm's nonmarket competencies and the characteristics of its market and nonmarket environments" (Baron, 1995:48).

Scholars of multinational firm strategy seeking to understand how firms can strategically navigate uncertainty in the nonmarket environment have focused primarily on two market-based strategies: (1) developing offsetting managerial or organizational capabilities and advantages (Buckley & Casson, 1976; Caves, 1982; Mezias, 2002), and (2) imitating the practices of local firms (Zaheer, 1995) and competitors from the same host country (Guillen, 2002). However, the path-dependent nature of capabilities-development limits the effectiveness of managerial capabilities in highly complex and dynamic political environments. Further, many resource-rich regions are in emerging countries with few, if any, local firms (with the exception of state-owned enterprises), thus limiting opportunities for imitation. In addition, in those nonmarket environments with local and other foreign firms, imitation is further limited by the subjective and relational nature of "political and social capital" accumulated by these firms. That is, political and social capital is based not solely on the characteristics and actions of the

competing firm, but also on their ties and connections to the political, social and economic actors, i.e., stakeholders, within these environments. Seeking to obtain this political and social capital, firms have sought to form strategic joint ventures with local firms. But the deployment of such a strategy is untenable when asset specificity is high, in that local counterparties can, given a firm's high sunk costs, use their connections with the government against that firm (Henisz, 2000). Because the business environment is "composed of market and nonmarket components, … any approach to strategy formulation must integrate both market *and* nonmarket considerations" (Baron, 1995:47).

With the exception of exploring the strategic formation of joint ventures with local businesses in a bid to mitigate uncertainty in the nonmarket environment from largely political actors (i.e., governments and their associated actors), multinational strategy research has paid little attention to the integrated strategy of managing how firms choose and develop relationships with not only local firms and strategic businessmen but also with various political, social and economic stakeholders in countries where they invest. Such an integrated strategy, with a focus on the firm's strategic formation of ties with the political, social and economic stakeholders who can affect and are affected by that firm (Freeman, 1984:46), is the focus of this dissertation. The goal of the strategic tie formation is to engender cooperation and reduce conflict with stakeholders in order to maximize shareholder value.

Firms operating in hostile nonmarket environments have understood the need for a nonmarket approach through the strategic formation of ties with stakeholders that engenders cooperation or reduces conflict with stakeholders in a bid to obtain reputational benefits and secure the social license to operate (Gunningham, Kagan, &

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Thornton, 2004) and thus reduce the occurrence and impact of adverse interventions orchestrated by political, social and economic stakeholders that can impact the firm's financial and operational returns. These firms often engage in corporate philanthropy or corporate social responsibility, such as the building of noncritical infrastructure including hospitals, schools, libraries, town halls, as well as the more politically-motivated and controversial expenses such as the building of private residences and palaces for government officials, and the loan of private planes to strategic political actors, in a bid to "win the hearts and minds" of external political, social and economic stakeholders. This strategy can result in significant outlays of financial and other resources—for example, firms in the extractive industries reportedly spent upwards of $500 million annually on corporate social activities and expenses (Wells, Perish, & Guimaraes, 2001) and more recently, Goldman Sachs considered a $1bn donation to a charity during the height of the financial crisis in 2009 in a bid to quell furor over executive bonuses.[1] These significant outlays of financial and other resources however often have uncertain financial and operational returns.

One difficulty for firms seeking to link their stakeholder interactions to financial returns is the fundamental disconnect between the financially-based exchange mechanism of firms and the sociological exchange mechanism of stakeholders. Drawn from the firm's knowledge of market-based mechanisms, the financial mechanism of exchange for firms is largely rational with objective quantifiable costs, benefits and inputs and outputs. To mitigate nonmarket uncertainty in hostile environments, firms have merely extended this rational exchange approach to the pursuit of social and political support from

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[1] "Goldman Sachs ponders $1bn charity donation" in The Telegraph, by James Quinn, 13 Oct 2009.

stakeholders through a series of financial and operational transactions, with a focus on quantifiable outputs such as the number of houses built, people relocated, schools built, desks bought, amounts donated, and the financial cost of social infrastructure. However, the socially-based exchange mechanism of stakeholders is not monetary nor quantifiable and often not rational but rather based on subjective intangible factors such as trust, social capital, reputation, expectations and biases (Zandvliet, 2004). Often business in nonmarket environments fraught with uncertainty is contingent on transforming perceptions of identity from foreign extractor to local community member. Such a focus leads to very different recommendations on which stakeholders to approach and how to engage with them. It leads to less greenwashing[2] or window dressing and to more substantive efforts targeting the greatest legitimate needs of the local community. Calling for an integrated approach to understanding economic and social forces which are largely considered dichotomous, Freeman (1984:41), states:

> *We need to understand the complex interconnections between economic and social forces. Isolating "social issues" as separate from the economic impact which they have, and conversely isolating economic issues as if they had no social effect, misses the mark both managerially and intellectually.*

I seek to bridge the divide between the rational and social exchange perspectives not through a limited and often ineffective corporate social responsibility approach, but rather through a stakeholder influence strategy by which the firm's strategic formation of ties with stakeholders can protect and enhance the firm's reputation and cooperation with stakeholders, while minimizing or undermining conflictual stakeholder relations.

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[2] The term "greenwashing," coined by environmentalist Jay Westerveld in 1986, is defined as "disinformation disseminated by an organization so as to present an environmentally responsible public image" by the Oxford Dictionary.

A stakeholder is any individual or group which can affect or is affected by the actions of the firm (Freeman, 1984). The stakeholder view of the firm (Freeman, 1984; Post, Preston, & Sachs, 2002a) advocates for the deepening of ties between firms and their stakeholders. Instrumental stakeholder theory holds that stakeholder relationships are the ultimate sources of the firm's wealth-creating capacity, and that in order to leverage this wealth-creating capacity firms need to recognize and understand the multiplicity and diversity of stakeholder relationships within the environment. Post et al (2002), state that "the corporation is a network of linkages with and among stakeholders and requires their support for its existence and operation" (Post, Preston, & Sachs, 2002b:29). Here, the focus is on firms recognizing that stakeholder relationships form a complex web of relationships among and between stakeholders themselves, and that dyadic firm-stakeholder links provide a limited view of, and ability to manage, stakeholders. Deepening ties between the firm and its stakeholders and the creation and strengthening of *relational*, and not merely *transactional*, stakeholder engagement is a "core competence" (quotations in original) for management, "a means of enhancing the enterprise's value and earning capacity and of improving its ability to respond to problems and challenges" (Post et al., 2002a:22). While bargaining models in international business and non-market strategy (Fagre & Wells, 1982; Kobrin, 1987; Nebus & Rufin, 2009; Teegen, Doh, & Vachani, 2004), the literature examining the design and implementation of corporate social responsibility activities (Carroll, 1999; Egri & Ralston, 2008; McWilliams, Siegel, & Wright, 2006), and the stakeholder view of the firm (Boutilier, 2012; Clarkson, 1995; Doh & Teegen, 2002; Donaldson & Preston, 1995; Freeman, 1984; Post et al., 2002a; Rowley, 1997; Rowley & Moldoveanu, 2003),

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all argue for a richer understanding of a firm's relationships with its stakeholders and often appeal to network theory or metaphors, the development of a positive theory providing insight into *with whom to engage*, *how* and the *potential costs* of this engagement, remains nascent.

I use the tools of network theory, as well as insights from the entrepreneurship, social psychology, and civic or political participation literatures, to specify strategic choice variables of stakeholder networks that foreign firms can alter, and thus improve the nature of their relations with individual stakeholders by engendering cooperative relations and increasing tie formation while minimizing conflict. The "purpose of a nonmarket strategy is to shape the firm's market environment, as when a firm lobbies in support of legislation to lower trade barriers" (Baron, 1995:48). By enhancing the firm's reputation, increasing cooperation and minimizing conflict through strategic tie formation with stakeholders, the firm favorably "shapes" its market environment such as reducing the cost of operations, obtaining favorable regulatory policies, and mitigating adverse activist action.

The appeal of social network analysis is the ability to examine the interrelationships (e.g., direct and indirect ties and the nature of these ties) among social and political actors and entities (Scott, 2000; Wasserman & Faust, 1994), understand the "implications of these relationships" (Wasserman et al., 1994:3), and empirically examine these interrelationships at both the network and actor-node levels (Borgatti & Foster, 2003). Speaking to the impact of network research in political contexts, Knoke (1993: 23) asserts that "by combining reputational, positional and decision-making measures, researchers delineate the networks of communication ties and resource

exchanges, which shape collective actions that attempt to influence the outcomes of political controversies." Recent work applies network theory to international politics through the primary views of networks as both structures and collectives of strategic actors (Kahler, 2009). Addressing the important contributions of network applications to international politics, Kahler (2009: 32) states:

> *Although network analysis will continue to justify itself through its ability to explain significant features of contemporary international politics, its theoretical contribution should not be overlooked. Networks offer a means to investigate the relations between agents and structure in an empirically convincing manner. Networks force attention to dimensions of power that conventional views of international politics neglect. Networked governance is an alternative to hierarchies and markets with its own roster of strengths and weaknesses.*

In recent work exploring the contributions of network tools and concepts to the study of international relations, Hafner-Burton, Kahler, & Montgomery (2009) argue that network concepts "challenge conventional views of power," network actors can increase their power by "enhancing and exploiting their network positions," and that the power of network actors is "fungible" in that power in networks can be used to "off-set or supplement other sources of power" (Hafner-Burton et al., 2009:573). Further, "cooperation and conflict are strongly influenced by network dynamics" and network analysis offers "a method for measuring the sources of socialization and diffusion of norms" among state actors (Hafner-Burton et al., 2009:569). An important factor of the application of network tools and concepts to the study of political environments is that network tools and concepts offer alternative structural reasons to explain outcomes among political and state actors (Hafner-Burton et al., 2009).

Despite the substantial advances in social network theory and analytical tools, scholarship using network applications in the context of international business is limited. Early work by Moran (1973) explored multinational firms' strategic use of transnational network alliances to effectively mitigate political risk by creating a coalition of diverse external political, financial and economic stakeholders to influence the extent of adverse government interventions. Despite the efficacy and rich complexity of this transnational network alliance, the network-based approach to understanding firm political strategy has remained largely unexplored.

Early work in the international business and multinational strategy area explored a largely dyadic approach to multinational "political behavior" (Boddewyn & Brewer, 1994) with a focus on the often hostile relations between firms and host country governments (Caves, 1996; Dunning, 1998; Encarnation & Wells, 1985; Fayerweather, 1969; Prahalad & Doz, 1987; Vernon, 1971). Scholars of political strategy have sought to understand the dyadic relations between firms and governments primarily through bargaining models exploring the change or transfer of relative power between these actors over the course of the firm's investment (Fagre et al., 1982; Kobrin, 1987; Ramamurti, 2001; Vernon, 1971). Rich theory explores the complexity of broader relations among foreign firms, governments and civil society actors (Boddewyn, 1988, 2003; Boddewyn et al., 1994), and more recent scholars argue that the increasing global reach, value creation, and impact of nongovernmental and other civil society organizations dramatically changes the global policy and economic environment requiring a move from a focus on the "two-sector" dyadic bargaining model between firms and governments to a "three-sector" bargaining model which includes actors from

civil society (Teegen et al., 2004). Work including civil society actors has augmented traditional understandings of bargaining models between firms and governments (Henisz & Zelner, 2005). While recent work has again turned to network approaches to examine the bargaining models among multinational firms, governments, and nongovernmental organizations (Kahler, 2009; Nebus et al., 2009), none theoretically or empirically leverages network concepts and tools to explore the complex relations between firms and stakeholders, outlines strategies firms may use to favorably influence these political, social and economic stakeholders, and explores the costs of such influence strategies.

In this application of network theory to the international business context, I follow prior work in the area of strategic networks, termed the "relational approach" to understanding strategic performance (cf. Gulati & Gargiulo, 1999; Gulati, Nohria, & Zaheer, 2000; McEvily & Zaheer, 1999), that posits significant performance benefits may be gained from a firm's strategic network position. Specifically, "the conduct and performance of firms can be more fully understood by examining the network of relationships in which they are embedded" (Gulati et al., 2000: 203). Recent scholarship in this area has further extended this work on static strategic networks to include the dynamic longitudinal perspectives of network emergence and evolution. As stated by Dagnino et al (2008 : 69):

> *To the extent that the processes underlying network emergence and evolution may be systematically influenced by the intentional actions taken by pivotal firms,…, it becomes of interest for firm executives to identify a limited number of variables which may be leveraged and managed in order to direct the evolution of the network they participate in towards a specific strategic aim and coherently with the requirements of the competitive domain in which they compete.*

I similarly apply a longitudinal perspective to identify and understand key strategic variables that managers of multinational firms can leverage to direct the evolution of their stakeholder networks and enhance firms' ability to engender cooperative ties and minimize conflict with stakeholders and thus enhance reputation, with implications for financial and operating returns.

I use the concepts and tools of network theory to explore the links between the existing network structure of relationships between a foreign firm and stakeholders in the nonmarket environment, or the strategic choices made by the firm to alter that stakeholder network structure, and the subsequent development of the stakeholder network. These drivers of the relations between firms and stakeholders are dynamic, interdependent and inter-temporal and together form components of an integrated (Baron, 1995) influence strategy firms can use to improve stakeholder relations in both the market and nonmarket environments. Network theorists and empiricists have consistently demonstrated the importance of network ties and structure for economic outcomes. Thus I examine not whether network concepts matter, but rather *how*, *when* and most importantly *why* network concepts matter for firms navigating politically uncertain environments. The goal of this stakeholder influence strategy for firms is to strategically form cooperative ties while minimizing or undermining conflictual ties with stakeholders, which enhances the firm's reputation and has important financial and operational implications. The stakeholder influence strategy I outline is a move from the normative primary focus of work within the stakeholder literature to the less-explored focus on instrumental stakeholder theory—that the "contracts (relationships)" or behavior between firms and stakeholders that is "trusting, trustworthy, and cooperative" will provide the

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firm with a competitive advantage as this trusting behavior helps to "solve problems" related to opportunistic behavior (Jones, 1995:432). I explore the strategic relations between firms and stakeholders in three paper chapters (one theoretical and two empirical). The theory paper is the foundational article in this dissertation which outlines an integrated nonmarket stakeholder influence strategy for firms. I test the propositions of this foundational article in the two empirical papers.

The first paper chapter, titled: *"Networks of Influence: Balancing Positional Benefits and Costs in Stakeholder Engagement Strategies,"* is a theory paper in which I develop a network-based theory of influence for firms to strategically form ties with stakeholders. This stakeholder influence strategy includes specific testable propositions that link firm, stakeholder or network characteristics to the degree of conflict and cooperation exhibited by stakeholders towards the focal firm or each other. This stakeholder influence strategy is positioned within the stakeholder, civic and political participation literatures and uses network theory and concepts to explore how the firm's strategic position within the network of stakeholders affords it positional benefits of information and reputation, while also highlighting the costs of exposure to pre-existing conflict and the fostering of conflict through asymmetric relations.

The goal of this paper is to outline a sociopolitical influence strategy for firms to navigate complex political environments and improve relations with stakeholders. I ground this influence strategy using three metaphors: (1) *networks as pipes* (Podolny, 2001) (i.e., that the firm's position within the stakeholder network affords it information benefits and impacts the firm's subsequent relations with stakeholders), (2) *networks as prisms* (Podolny, 2001) (i.e., that the stakeholder with whom the firm connects and the

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nature of the firm's engagement with stakeholders, affords it reputational benefits and impacts that firm's subsequent relations with stakeholders) and (3) *networks as structures* (Kahler, 2009) (i.e., that because of the interdependencies and endogenous network evolutionary dynamics among stakeholders themselves, firms seeking to gain such information and reputation benefits should be wary of exposing themselves to preexisting conflict among stakeholders or fostering conflict by forming asymmetric relations with and among stakeholders).

This paper seeks to augment our understanding of how firms can strategically manage stakeholders and thus favorably shape their nonmarket environments. While scholars of nonmarket strategy and international business have employed market-based mechanisms to mitigate uncertainty in the nonmarket environment, scholars of stakeholder theory have sought to understand relations between firms and stakeholders from a largely normative position, and firms themselves in practice have sought to mitigate nonmarket uncertainty through acts of corporate social responsibility and philanthropy without a full understanding of *how* to engage with stakeholders. In this first paper, I use the literatures on civic and political participation, and the tools and concepts of network theory to identify non-market strategies that generate the greatest returns to firm corporate social responsibility activities and stakeholder engagement practices in terms of information and reputation benefits as well as garnering political and social support.

The second empirical paper chapter, titled: *"Networks of influence: Pipes and Prisms of Political Influence,"* explores how firms manage the two types of uncertainty within the nonmarket environment—egocentric uncertainty (where the focal firm is

uncertain about the qualities of the stakeholders within the environment), and altercentric

uncertainty (where stakeholders are uncertain about the qualities and products of the

firm) (Podolny, 2001). I use tools and insights from network theory to build upon extant

insights and understandings of how best to manage egocentric and altercentric

uncertainty (Podolny, 2001) and I compare the efficacy of the *ex ante* strategies that the

firm can use to manage both egocentric and altercentric uncertainty. I hypothesize that

through strategic network positioning that affords it information, the firm can manage its

egocentric uncertainty; and, by managing how it is perceived through its associations, the

firm can also manage stakeholders' altercentric uncertainty. Of course, the management

of both types of uncertainty is not without cost and therefore, an important issue is to

understand which type of uncertainty should be the primary focus of firms in highly

uncertain nonmarket environments. My findings suggest that the key determinant of an

increase in cooperation and tie formation within the stakeholder network is the focal

firm's ability to mitigate altercentric uncertainty by forming ties with high status,

cooperative stakeholders and ensuring reciprocity in these relationships through joint

activity.

This second paper builds upon extant work exploring factors that mitigate

egocentric and altercentric uncertainty (Podolny, 2001) and empirically tests these factors

within the global gold mining industry—an industry rife with political and social tension

among firms and diverse stakeholders. Egocentric uncertainty is mitigated by access to

information through structural holes while altercentric uncertainty is mitigated by high

status (Podolny, 2001). I use a network lens to explore additional factors of the firm that

afford it information benefits (structural holes and network range), and I also explore

factors of the stakeholders with whom the firm is associated that may afford the firm reputational benefits of high quality (i.e., the degree of cooperation, status and reciprocation in joint activity of the stakeholders to whom the firm is connected). The dependent variables of interest in this paper are (1) the degree of cooperation or conflict between the focal firm and stakeholders and (2) the number of ties formed, and thus the level of analysis is at the level of the dyad. The insights from this paper contribute to extant work on strategies to mitigate egocentric and altercentric uncertainty by exploring network-based information and reputation mechanisms on the mitigation of these two types of uncertainty.

In the third empirical paper chapter, titled: *"Networks Of Influence: Homophily And Triadic Closure In Stakeholder Networks,"* I use insights from Simmelian (Simmel, 1950) and Balance (Cartwright & Harary, 1956; Heider, 1958) theories to explore the relationship between dyadic structure and triadic closure among networks of actors in the sociopolitical context. For each triple of actors forming an open triad, I explore how the homophily (or similarity) of the structural characteristics of the three actors comprising a triad impact the likelihood of that triad closing. I outline hypotheses of the homophily of four characteristics of the actors in the triad—access to resources, status, likeability and number of ties (popularity)—on the likelihood of a tie forming that closes the open triad. These four characteristics differ on whether their derived benefits are contingent on dependence between actors and are therefore zero-sum outcomes (i.e., access to resources and status) or are not contingent on dependence and are therefore not zero-sum outcomes (i.e., likeability and popularity).

I hypothesize that triadic closure is more likely when the actors of a triad have greater difference in the characteristics contingent on dependence (access to resources and status), and greater similarity or homophily in the characteristics that are not contingent on dependence (likeability and popularity). Holding constant the quality of existing ties (i.e., strength of the ties), symmetry of relations in the existing dyads, reciprocity of relations in the existing dyads, and the number of common others actors in existing dyads are connected to (i.e., for a triple of actors i, j, k, how many actors $l, m,...z,$ actors ij or jk or ki are connected to), I find that a link that closes an open directed triad is more likely when the actors of the triad have *different* access to resources, and *different* status, but that link is more likely when actors have *similar* numbers of ties to other actors. I also find that likeability among actors in the triad has no impact on the likelihood of closing that triad.

By exploring how the characteristics of actors in a network affect network dynamics, the insights of this third paper exploring triadic mechanisms add to our understanding of the contingent factors and mechanisms that affect network evolutionary dynamics. The outcome I explore in this paper, triadic closure, is also an underexplored network outcome which is of strategic importance to firms seeking to understand and manage their relations with stakeholders and the dynamics among stakeholders themselves as a firm that does not understand evolutionary dynamics may find its attempts to influence specific stakeholders thwarted or undone by unexpected changes in the structure of ties.

My empirical papers test the relationships among firms and stakeholders in a novel database of 51,754 stakeholder events linking 4,623 unique stakeholders of a

population of 19 publicly traded gold mining firms listed on the Toronto Stock Exchanges (TSX) which operate 26 mines in 20 largely emerging economies. The gold mining industry is a particularly salient context for this study because gold mining is widely considered one of the most socially irresponsible and environmentally rapacious industries (Humphreys, 2001) and therefore stakeholders (e.g., multilateral agencies, multiple levels of governments, NGOs, cultural or religious groups and firms or individuals with an economic stake in the mine or the community) are relatively more active in their relations with firms. Thus, the impact of firm strategic network-building and stakeholder engagement strategies may be greater in this industry. While this study is conducted in the global gold mining industry, the theories underlying the strategies are garnered from a wide range of literatures and have been applied in various contexts. I therefore argue that the findings of this dissertation are generalizable to both foreign and domestic firms whose operations are highly subject to stakeholder control and action, i.e., foreign multinational firms operating in politically hostile environments who are often plagued by the liabilities of foreignness, as well as domestic firms operating in environments and industries characterized by high nonmarket uncertainty and risk.

While the network literature and network concepts are well-established, the networks I explore are conceivably and possibly structurally different from those used by network scholars. Extant work employing networks in the strategy literature primarily employ alliance data, while social network scholars often use email data, friendship data, and simulations to understand network dynamics. Conversely, the networks I explore in this dissertation are based on media-reported, dynamic, multiplex relations among diverse political, social and economic stakeholders within the global gold mining industry and

are thus structurally different from the networks explored by alliance, strategy, and social network scholars. The application of network tools and concepts within this dynamic environment is an important means to explore the contingencies and antecedents of network concepts in highly uncertain nonmarket environments.

In the stakeholder networks I explore, I conceive of a "tie" as any link or connection between and among firms and political, social and economic stakeholders in the network that depicts an action, statement or expression of sentiment towards or relation between actors in the network. These ties are "events"—i.e., any media-reported action or statement by any actor that connotes cooperation or conflict between actors. These ties can be conflictual, cooperative or neutral in nature. In their work on negative relationships, Labianca and Brass (2006:607) broadly define negative relationships as embodying "elements of cognition and perception (judgments and enduring negative person schemas), affect (feelings), and behavioral intentions." I apply this definition to all the relations in the event data and thus define a tie within my networks as capturing the positive, negative or neutral relationships (events) that embody "elements of cognition and perception (judgments and enduring positive, negative or neutral person schemas), affect (feelings), and behavioral intentions" among actors in stakeholder networks. Because direct actions are outward visible and audible demonstrations of these implicit constructs, I capture the outward expressions of agency (as expressed in inter-stakeholder and firm relations) in this dissertation. I therefore conceptually follow the work of Snijders *et al.* on dynamic actor-based network evolution processes where the foreign firm, to an extent, determines or defines the next set of ties in its stakeholder network

(Burk, Steglich, & Snijders, 2007; Snijders, 2001, 2005; Snijders, 2006; Snijders & Baerveldt, 2003; Snijders, Steglich, & van de Bunt, 2008).

Together these three papers create a theoretical and empirical base for strategic analysis of firms' interactions with stakeholder networks. They combine a firm-centered perspective of outreach to stakeholders with a structure-centered perspective of triads and balance together forming the building blocks of an understanding of how a firm can best improve its position in a dynamically evolving stakeholder network. The importance of such a strategic analysis of stakeholder networks and relations with firms is due to the important financial and operational implications of these strategies. By understanding who the stakeholders are and strategically forming ties to engender cooperation and reduce conflict with these stakeholders, the firm favorably shapes its nonmarket environment to facilitate market-based operations and benefits.

In the international business field, Kobrin (1979: 77) has called for "better definitions of the [political risk] phenomena, a conceptual structure relating politics to the firm and a great deal of information about the impact of the political environment" to move the literature forward. Within the realms of political science and policymaking, although network methods applied to research on political power has "refocused the substantive issues…, raised provocative theoretical questions, and addressed important empirical relationships" (Knoke, 1993: 24), Knoke argues there is room for further "creative theoretical and methodological efforts" (Knoke, 1993: 42). I seek to jointly address the calls of Kobrin and Knoke by using the tools and concepts of network theory, as well as insights from the entrepreneurship, social psychology, and civic or political participation literatures, to outline an influence strategy for firms to strategically enhance

cooperation with stakeholders by forming cooperative ties while minimizing conflictual ties.

I contribute to the political risk and international business literatures by applying network tools to better define the political nonmarket environment for firms in terms of the political, social and economic stakeholders who can adversely impact, or benefit the firm and put forward and test hypotheses for firms to favorably manage their nonmarket environments. I contribute to the network literature by exploring established network tools and concepts in an understudied and novel network environment defined by complex and dynamic relations among a diverse set of actors. I contribute to the stakeholder literature by offering a network-based theoretical approach to instrumental stakeholder theory, and test this within a novel empirical setting. Further, through the use of this novel stakeholder relations dataset, I move from measuring at a corporate level whether a company is categorized as being more or less responsible according to some (self-reported) standards, principles or audits to a more objective measurement approach using event data at the stakeholder level on how stakeholders themselves perceive the firm.

CHAPTER 1

Networks of Influence: **Balancing Positional Benefits and Costs in Stakeholder Engagement Strategies**

A firm's performance, reputation, and sometimes survival, is contingent upon that firm's ability to strategically form ties with the individual actors and organizations that have a political, social or economic stake in its operations, i.e., that firm's stakeholders, so as to favorably influence the preferences, opinions and actions of these stakeholders. The set of ties between the firm and its stakeholders forms that firm's stakeholder network. Within a network, actors are interconnected and interdependent (Balkundi & Kilduff, 2006; Kahler, 2009). By forming ties to stakeholders and thereby bringing together actors of diverse expectations, needs, requirements, and demands, the formation of a firm's stakeholder network may foster conflict within the network itself. Firms therefore face a quandary: the strategy to influence stakeholders and thereby create value, protect assets, and manage reputation, requires the formation of ties with stakeholders; however, by forming ties with stakeholders, firms can incur a cost—the creation of conflict among these stakeholders and with the firm, thereby risking the firm's ability to favorably influence stakeholders, create value, protect assets, and manage reputation.

I use the concepts and tools of network theory and insights from the civic and political participation literatures to specify components of a network-based strategy firms can use to influence their stakeholders, and also outline the potential costs of this influence strategy and the means for the firm to mitigate these costs. I apply the metaphors of 'networks as pipes', 'networks as prisms' and 'networks as structures' to inform such a strategy calling attention to the positional benefits of information and

reputation as well as the positional costs of exposure to pre-existing conflict and the fostering of conflict due to asymmetry in the structure of relationships.

In contrast to the primary normative focus of extant stakeholder research, I explore an instrumental stakeholder approach for firms to favorably influence stakeholders in a bid to enhance that firm's reputation among these stakeholders, secure important information to guide the firm on how best to navigate among diverse stakeholders and thereby protect the firm's assets, facilitate operations, and improve performance. The outcomes of interest for the firm in this stakeholder influence strategy are the fostering of cooperation and the mitigation or minimization of conflict with stakeholders through strategic tie formation and the management of these ties.

Understanding the networks of stakeholders is important to a firm's ability to strategically influence these stakeholders. Influence is the relational ability to alter or change the beliefs, opinions or actions of an individual or group through communication or action often applying the use of persuasion or a demonstration of power. The adoption of a network approach that enables the mapping of actions, communication ties, resource exchanges and power dimensions among coalitions of stakeholders (Kahler, 2009; Knoke, 1993), in addition to well-established metrics regarding the characteristics of stakeholders, pairs of stakeholders or groups of stakeholders within that map, can provide useful analytic insight into the development of influence strategies. Despite the clear practical applicability of network concepts and analytical tools for the examination of stakeholder relations (Scott, 2000; Wasserman et al., 1994) and their implications (Wasserman et al., 1994:3), few examples of a network application exist within the nonmarket strategy and international business, corporate social responsibility and

stakeholder management literatures (for exceptions see Moran (1973) and Nebus & Rufin (2009) within the nonmarket strategy and international business literatures; Kahler (2009), Thomson & Boutilier (2009), Boutilier (2007), in the international relations/political sphere; and Rowley (1997) within the stakeholder management literature).

An important area of scholarship using network relations and ties is the alliance literature within the strategy field. Early work explored the nature or strength of ties and their attendant performance implications (Granovetter, 1983; Granovetter, 1973; Powell, 1990), the various structural factors of networks and their implications for performance (Burt, 1992) as well as the implications of direct and indirect ties (Ahuja, 2000a). A concept of importance to this discussion of a stakeholder influence strategy for firms to form ties is the inducements-opportunities framework underlying the process of strategic network-building and tie formation (Ahuja, 2000b). Within this framework, the probability of tie formation is contingent upon the inducements facing the firm (i.e., why the firm should or needs to form a tie) as well as the complementary concept of opportunities or resources (i.e., what the firm offers to potential partners). In this nuanced view, strategic network-building and tie formation is contingent upon the dual and complementary concepts of the multinational firm's internal strategic needs and external stakeholder requirements. Importantly, within the alliance-strategy arena, cooperative strategies among competitors referred to as co-opetition (simultaneous cooperative and competitive behavior) has been identified as an important source of competitive advantage (Brandenburger & Nalebuff, 1996; Gnyawali, He, & Madhavan, 2006; Gnyawali & Madhavan, 2001; Lado, Boyd, & Hanlon, 1997). Recent work by Gnyawali

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& Madhavan (2001) on structural embeddedness explores the impact of co-opetition on structural network factors and competitive dynamics. Further, within the alliance and network literature, Rowley, Behrens & Krackhardt (2000:370) explore the joint relational and structural characteristics of network ties on firm behavior and performance arguing that the interaction between relational and structural factors is "an important explanatory variable:" and that "whether firms should form their strategic alliances through strong or weak ties depends on how it is structurally embedded in the network." For firms seeking to manage their nonmarket environments through the strategic formation of ties, the relational and structural factors of stakeholders and their networks is indeed important.

Several factors are important to this discussion of a strategy for the firm to influence its stakeholders through strategic tie formation and management that affords the firm information and reputational benefits and also explores the possible structural costs of such a strategy: first, identifying the boundary of the firm's stakeholder network; second, determining the individuals comprising the stakeholder network; and third, understanding the pool from which stakeholders are drawn.

First, in adhering to the classic definition of "stakeholder" as any actor who can affect or is affected by the firm (Freeman, 1984), I conceive of the firm's stakeholder network as comprising those stakeholders who are directly or indirectly connected to the firm and the ties and interactions among and between these direct and indirect stakeholders. Stakeholders directly connected to the firm (i.e., that firm's *ego* network), can directly impact the firm through their relations with the firm (Frooman, 1999). Stakeholders indirectly connected to the firm, can still indirectly affect the firm through interactions with intermediate actors who are themselves directly connected to the firm

(Frooman, 1999). For example, an international nongovernmental organization with ties to a community in which the firm operates can indirectly affect the firm by changing the opinions of the community against the firm. While Frooman (1999:198) defines these "indirect strategies" as "those in which the stakeholder works through an ally, by having the ally manipulate the flow of resources to the firm," I generalize both the direct and indirect relations among firms and stakeholders to include all actions of influence and power including the manipulation of resources, manipulation of information to generate adverse opinions (Keck & Sikkink, 1999), persuasion (Watkins, 2001), bargaining, coalition formation and the informal and formal use of power and influence tactics (Barach & Lawler, 1980).

Second, because the formation and maintenance of a network is costly, a firm's stakeholder network comprises (or should comprise) select stakeholders who are important to both its operations and its reputation. Scholars have long sought to identify who important stakeholders are. Clarkson (1995) categorizes stakeholders as primary and secondary. Primary stakeholders are those stakeholders without whom the firm cannot operate including customers, suppliers, employees, shareholders and government, and secondary stakeholders are those actors who are not critical to the value chain of the firm but who have the ability to positively or negatively impact the firm, e.g., the media (Clarkson, 1995). This distinction between primary and secondary stakeholders is conceptually important to a firm strategically seeking to influence stakeholders within its environment and to the dynamic nature of the structure of this stakeholder network.

I consider the development of the firm's stakeholder network, and thus the dynamic nature of the firm's ability to influence these stakeholders, as a two-level

process. First, because the firm cannot operate, and thus survive, without the primary stakeholders required for operations, the firm's initial stakeholder network comprises direct ties to all stakeholders required for market-based operations (usually customers, suppliers, employees) as well as those stakeholders indirectly connected to the firm through ties with the actors who are directly connected to the firm. The second level of the firm's stakeholder network is the strategic formation and management of both direct and indirect ties with those secondary stakeholders not necessary for operations but who can directly or indirectly affect the firm's reputation, operations or performance, i.e., those stakeholders willing to engage for or against the firm on myriad factors, such as stakeholder rights (Donaldson et al., 1995), issues (Boutilier, 2012), interests and identities (Rowley et al., 2003). Actors in a network influence each other, and therefore, the firm's primary stakeholders (necessary for operations) may be influenced positively in favor of, or negatively against, the firm by the firm's secondary stakeholders. Thus secondary stakeholders may indirectly impact the operations of the firm and not just the reputation of the firm.

For many firms, the entry or development strategy comprises only the first level—the establishment of ties to those primary or key stakeholders that are necessary for the firm's operations, e.g., employees, customers, suppliers. For these firms, forming ties or relations with secondary external stakeholders is considered only during times of conflict or adverse intervention by these stakeholders. Under these conditions, firms assume a short-term "fire-fighting" approach to mitigate the impact of these stakeholders rather than foster long-term cooperative relations or a long-term strategy to mitigate conflict with stakeholders. Few firms consider the strategic second step of whether and

how to include those secondary stakeholders who are not necessary to the firm's operations but who may have the ability to positively or adversely impact the firm. However, for those firms operating in highly uncertain nonmarket environments (Baron, 1995), the second level of stakeholder network development and management is a critical step to shaping the market environment in which it jointly operates with its primary stakeholders.

Third, a firm's stakeholder network is drawn from a broader and more diverse set of stakeholders within the country or industry environment in which it operates. No firm is an island. Every firm enters, or is created in, an existing country or industry network of stakeholders comprising, governments, nongovernmental organizations, competitors, customers, suppliers, investors and communities. Depending on the country environment, the industry, the firm, and the issues surrounding the firm, ties are formed between the firm and specific stakeholders drawn from the external environment.

The firm's primary stakeholder network necessary for operations, those key secondary stakeholders who can affect the firm's reputation, and the broader network of stakeholders, may differ by country, industry and by firm. For example, the myriad social, political and economic actors in a developing or emerging country environment may differ from similar actors in developed country environments in number, resources and characteristics and ability to affect the firm such as the power, urgency and legitimacy (Mitchell, Agle, & Wood, 1997) of these stakeholders. The stakeholders in the stakeholder network of a technology firm may comprise only those primary stakeholders necessary for operations and possibly only a single strategic secondary stakeholder such as the media. However, the stakeholder networks of firms in politically salient industries

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such as the extractive industries (oil, gas, and mining) are much more diverse. Primary

stakeholders in the extractive industries may include the head of the local community

within which the mine is located, the relevant government body issuing the permit or

license (e.g., Ministry of Mines and Energy), in addition to suppliers, customers, and

investors. Secondary stakeholders of firms in the extractive industries often include other

government entities and ministries (e.g, Ministries of Health, Education, Environment

and Local Development), local and international nongovernmental organizations (NGOs),

politicians, legal entities and practitioners, other governments (e.g., the home country

government and governments of countries proximate to the host country), multilateral

organizations such as the United Nations, human rights activists, environmentalists,

community-based organizations, and various factions and groups of people within the

community who may disagree with their mayor, chief or leader.

Ties between firms and stakeholders may be initiated by the firm or by the

stakeholder, and thus may be voluntary or involuntary (Baron, 1995). The ties may be

formed due to inducements or opportunities (Ahuja, 2000b) by either the firm or a

stakeholder. Further, these ties may be cooperative in nature (i.e., comprise statements or

actions that connote positive relations) or conflictual in nature (i.e., comprise statements

or actions that connote negative relations or tensions). Within the nonmarket

environment, a firm expands its network by the creation of cooperative ties to

stakeholders including, making donations to NGOs, political campaigns and other

philanthropic and socially responsible activities. A firm expands its stakeholder network

through the creation of conflictual ties such as the initiation of a law suit against a

particular stakeholder. A stakeholder, such as an NGO, can expand the firm's network

through several means. An NGO that initiates an adverse campaign against the firm is considered to have formed a conflictual tie with the firm and becomes therefore, a part of that firm's stakeholder network. An NGO who lodges a complaint against the firm with a third party stakeholder from the broader environment who is not tied to the firm, such as a court or the United Nations or other multilateral entity, has taken a step that could potentially expand that firm's stakeholder network. If that court or the United Nations takes an action for or against the firm, that third-party stakeholder becomes a part of the firm's stakeholder network. Indeed, a strategic means of mitigating the actions of the conflictual NGO would be for the firm to establish a tie directly with the third party (court or United Nations) in a bid to directly obtain the support of this third party actor. Therefore, the firm's stakeholder network can be expanded positively through the creation of cooperative ties by the firm or by a stakeholder (i.e., a stakeholder praising the firm), and can alternatively be expanded adversely through the creation of conflictual ties by the firm or conflictual ties by a stakeholder (i.e., a stakeholder initiating an adverse campaign against the firm).

The expansion of the firm's stakeholder network through the formation of both cooperative and conflictual ties from both the firm and stakeholders brings together diverse actors who the firm must manage and who may have adverse impacts on those stakeholders who are already connected to the firm. For example, while the ministry of mines (which may support the mine) may be in conflict with the ministry of environment and environmental NGOs (which may be against the mine), the firm operating that mine must engage with both ministries and the NGOs in order to protect its operations. By associating with both supporters and opponents the firm brings together diverse

organizations and must therefore manage or mitigate any existing or historical conflict or prevent the fostering of potential new conflict between these stakeholders.

For many firms, the formation of ties with primary stakeholders is often strategic, whereas the formation of ties with secondary actors is often initiated by the stakeholder (i.e., accusations of poor practices and harmful effects from the firm's operations) and frequently conflictual in nature. Ties with secondary actors, when initiated by the firm, are often ad hoc such as a firm's philanthropic work in times of crisis. For the politically savvy firm, the formation of ties with both primary and secondary stakeholders is part of its long-term strategy. Such politically savvy firms monitor the potential stakeholders within the broader external environment and strategically seek to form cooperative ties with these stakeholders. Because expansion of the firm's stakeholder network may itself have detrimental effects on the network by bringing together diverse stakeholders, I explore how firms expand their stakeholder networks to include secondary stakeholders and I also explore the potential cost of this tie formation strategy on relations between the firm and its stakeholders, and relations among stakeholders themselves.

I develop a network-based theory of stakeholder influence strategy including specific testable propositions that link firm, stakeholder or network characteristics to the degree of conflict and cooperation exhibited by stakeholders towards the focal firm or each other. I explore two themes of relevance to firms seeking to influence the stakeholders in their network and those potential stakeholders within the external environment: first, the network advantages afforded by the firm's strategic positions and relationships, and second, the concurrent network costs of these strategic positions and relationships.

The firm's ability to favorably shape its nonmarket environment by forming ties with stakeholders is contingent on that firm obtaining a rich understanding of who the actors in the environment are (Bernays, 1947; McVea & Freeman, 2005; Schoemaker, 1991; Watkins, 2001; Watkins & Rosegrant, 1996). Thus the firm requires information on and an understanding of the actors directly and indirectly connected to it as well as those potential actors within the environment who may be important links to mitigate existing conflict or may be possible sources of new conflict. By forming ties to stakeholders, firms obtain information and reputation benefits. However, a strategy to influence stakeholders requires the firm to obtain information on many actors within the environment by forming ties with diverse stakeholders. These diverse stakeholders may themselves hold preexisting or historical conflict (e.g., an important factor for firms navigating foreign environments is an understanding of historical, ethnic and political tensions among stakeholders) and therefore the firm must be careful not to exacerbate existing conflict between feuding stakeholders. Indeed how the firm behaves towards specific stakeholders can foster conflict among stakeholders. For example, within the extractive industries, the practice of only heeding the concerns of communities within the immediate vicinity of the mine or asset fosters inter-community conflict by creating a superficial "insiders versus outsiders" (or host and non-host) distinction between "host" communities that receive material benefits (such as infrastructure, schools, and hospitals) and "non-host" communities which do not receive benefits from the firm. An example of community strife narrated to Frynas (2005) in his study of the engagement activities of oil firms in Nigeria, the closest non-host community to the firm's operations burnt down the "host" community to benefit from "host community status themselves" (Frynas,

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2005:593). Forming diverse ties to stakeholders will also bring together stakeholders, who may not already be in conflict, but how the firm manages these relations or the existing asymmetries between these actors may foster conflict. Lastly, the structure of the network itself may foster conflict. Because actors within a network are interdependent and interconnected (Kahler, 2009), conflict within the network may destabilize the network or change previously cooperative relations to conflictual relations. Of course, while ties to some primary stakeholders who are critical for the firm's operations may themselves be hostile toward firms, i.e., traditional or historical relations between multinational firms and host country governments (Vernon, 1971), the strategic formation of ties to diverse secondary stakeholders may minimize the degree of conflict, i.e., strong ties to host country governments and other strategic political, social and economic actors (Moran, 1973). Thus strategic tie formation can also be used to mitigate or undermine existing conflict within a firm's stakeholder network.

Firms seeking to strategically manage their nonmarket environments through strategically forming ties with stakeholders face a dilemma. On the one hand, these firms should seek to secure advantageous network positions that provide them with valuable resources to manage relations with existing stakeholders and strategically form ties with potential external stakeholders. On the other hand, these firms should avoid perturbing existing relationships in a manner that exposes them to pre-existing conflict or fosters conflict through asymmetry in relationships. Below I outline a stakeholder influence strategy that highlights both the positional benefits of information and reputation and the costs of exposure to pre-existing conflict and the fostering of conflict through asymmetric relations. I then discuss the implications and contributions of this theory and conclude.

A NETWORK-BASED STAKEHOLDER INFLUENCE STRATEGY

Positional Benefits: Securing Information and Enhancing Reputation

I draw upon two widely known network metaphors: *Networks as Pipes* and *Networks as Prisms* (Podolny, 2001) in the development of my theoretical arguments on the benefits of network position. Using the metaphor of 'networks as pipes,' I explore how the structural characteristics of the firm's existing stakeholder network may afford it information to strategically form cooperative ties with potential stakeholders. Using the metaphor of 'networks as prisms,' I explore how the characteristics of the stakeholders within the firm's ego network are perceived by potential stakeholders within the broader external stakeholder network, and how this perception may result in the formation of new cooperative or conflictual ties between the firm and these potential stakeholders.

Networks as Pipes

Strategically forming cooperative ties and minimizing or undermining conflict with stakeholders is contingent on an accurate and comprehensive understanding of stakeholders, specifically their identity, preferences, values, beliefs, and expectations (Bernays, 1947). Armed with this information, the firm can meet the expectations, espouse the values, address the needs and navigate the concerns of stakeholders within its network, and also prioritize outreach efforts to potential stakeholders within the broader environment. Through the formation of (cooperative) ties with stakeholders, the firm may also diffuse information about itself throughout its existing network, and because the firm's stakeholders are connected to other stakeholders with whom the firm is not directly tied, the firm may also diffuse information about itself throughout the broader external stakeholder network in order to dispel untrue and unfounded rumors, meet

expectations, acknowledge biases, and address specific issues of concern to stakeholders. Both incoming and outgoing information should be timely and relevant.

Network ties are pipes which channel the flow of information and other resources (Gulati, 1999; Podolny, 2001), and specific network positions afford different "information benefits" akin to the benefits of social capital (Gulati, 1999; Putnam, 1993). Certain network positions are associated with greater information volume (a function of the quantity of information through the number of partners and ties to these partners), information diversity (a function of the range of information from diverse sources), and information richness (a function of information quality based on prior experience and trust which affords fine-grained nuanced information) (Koka & Prescott, 2002). The quest to achieve a favorable network position among stakeholders however, changes the firm's ego network (i.e., the structure of both cooperative and conflictual existing relations with those stakeholders already directly connected to the firm) in a manner that may introduce important costs, including the destabilization of the firm's existing stakeholder network by creating competition and conflict among the firm's existing stakeholders.

Information volume. By increasing the number of stakeholders to whom it is connected and the number of ties to these stakeholders the firm can increase the flow or volume of information that it can access or distribute (Koka et al., 2002). Holding constant the number of ties, some network positions enable more efficient access or diffusion of information (Freeman, 1979). An actor with high centrality is a focal point within communication networks, is considered to be "in the thick of things" by other actors in the network and by themselves, and is strategically positioned for active

participation in the communication of information (Freeman, 1979: 219). The most central actor in communication networks is also the most powerful (Mizruchi & Potts, 1998). Because the high visibility of central actors enables them to signal their ability to access resources from the network, they are desired targets for alliances (Gulati, 1999). The central position of an actor also affords it more ties according to preferential-attachment theory where actors with a greater number of ties have an "accumulative advantage" (Barabasi & Albert, 1999) and therefore, as the number of ties increases, the probability of tie formation also increases (Powell, Koput, & Smith-Doerr, 1996).

Further, within network-building central actors are more likely to form ties with other central actors (Gulati et al., 1999). Structural positions that afford voluminous information also afford access to redundant information which can enhance reliability that can be critical in periods of uncertainty or crisis. Reliable and accurate information on the interrelationships among stakeholders is crucial to engendering cooperative stakeholder relations (Balkundi et al., 2006; Bernays, 1947; Krackhardt, 1990). An example of a central organization within a network of other stakeholders which has many ties and connections to many stakeholders is often the government. A firm seeking to gain a central position must also have a broad network of ties to many stakeholders from whom it can obtain information.

> P1a: *Firms in network positions conveying voluminous information increase cooperation with existing stakeholders in those firms' stakeholder networks.*

P1b: *Firms in network positions conveying voluminous information increase tie formation with potential new stakeholders from the broader external stakeholder network.*

Figure 1.1 depicts an organization in a network position conveying voluminous information.

Information diversity. By increasing the range of ties across qualitatively different stakeholders the firm can increase the diversity of information that it can access and diffuse (Koka et al., 2002). Diverse information is also "commensurate with a richer set of opportunities" (McEvily et al., 1999:1138). Stakeholders in any political environment vary across a broad range of parameters including their prioritization of issues (Polsby, 1959; Wolfinger, 1960), the cognitive schema that creates a sense of identity (Rowley et al., 2003), and the basis (i.e., informal vs. formal) and magnitude of power. These differences may be driven by variation in ethnicity, demographics, religion, ideology, education and myriad other factors. Due to this variation, stakeholders may have difficulty interacting with each other, possibly due to age-old conflicts, resulting in information or relational gaps within the network. Filling the resulting gaps in network structure (i.e., structural holes) can provide the firm with unique and valuable combinations of information (Burt, 1992). These gains may be particularly large when a tie is made to previously unconnected stakeholders (Burt, 1992) including building a network of ties to stakeholders of diverse demographic and social characteristics, stakeholders who are not directly connected to the firm (i.e., isolated stakeholders) and stakeholders who are in highly peripheral network positions (Hart & Sharma, 2004). Ties with different types of stakeholders who themselves disagree is critical to the firm's

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ability to relate to, and manage its relations with, these stakeholders by affording the firm access to their different points of view. Also, powerful coalitions are more effective when they comprise diverse stakeholder types (c.f. Henisz, Dorobantu, & Gray, 2008; Moran, 1973). Ties to diverse stakeholders may enable the firm to mitigate the impacts of adverse coalitions by providing the firm with early warning signs and a better understanding of the stakeholders comprising the coalition. Similarly, should the firm need to form its own supportive coalition of stakeholders (for example, to help lobby government or to build social support for its operations), ties to diverse stakeholders are critical.

> P2a: *Firms in network positions conveying diverse information increase cooperation with existing stakeholders in those firms' stakeholder networks.*

> P2b: *Firms in network positions conveying diverse information increase tie formation with potential new stakeholders from the broader external stakeholder network.*

Figure 1.2 depicts an organization in a network position conveying diverse information.

Information richness. By increasing the depth or quality of a given relationship the firm can increase the richness of the information that it can access or distribute (Koka et al., 2002). As the information the firm seeks or wishes to distribute "is imbued with value, context and meaning," it requires information exchange processes that are fine-grained and facilitate joint problem-solving (Koka et al., 2002; Uzzi, 1996, 1997). Firms need to be able to understand nuances (such as expectations, beliefs, norms, values) in each unique context. Such information exchange is contingent upon strong relationships

repeatedly activated over long periods of time within which counterparties may develop

trust (Uzzi, 1997) and social capital, defined by Putnam (1993:35) as "features of social

organizations, such as networks, norms, and trust, that facilitate action and cooperation

for mutual benefit." Within such relationships, firms and stakeholders develop better

understandings of each other. Prior research has emphasized how such embeddedness

facilitates the dissemination of shared norms (Meyer & Rowan, 1977) and greater

coordination and information exchange (Oliver, 1991) which increases cooperation

(Coleman, 1988; Rowley, 1997). Embeddedness also increases with the formation of

transitive relations, which affords the firm access to trusted partners of stakeholders, such

as through referrals or private introductions (Gulati, 1995a, b; Hallen, 2008). For

example, a focal firm with rich network ties to specific members of a community is more

likely to gain the trust of the whole community and gain information on what the

community in general expects from the firm. For firms seeking to influence stakeholders,

establishing an intimate understanding and relationship with these stakeholders to the

point of recognizing and acknowledging "names and faces" (McVea et al., 2005) is

critical.

> P3a: *Firms in network positions conveying rich information increase*
>
> *cooperation with existing stakeholders in those firms' stakeholder*
>
> *networks.*
>
> P3b: *Firms in network positions conveying rich information increase tie*
>
> *formation with potential new stakeholders from the broader external*
>
> *stakeholder network.*

Figure 1.3 depicts an organization in a network position conveying rich information.

Networks as Prisms

As perceptions influence action, strategies that impact stakeholders' perceptions of the focal firm can impact the subsequent level of stakeholder conflict and cooperation (Kilduff & Krackhardt, 1994: 87). The strength of this relationship is greater in the presence of greater altercentric uncertainty (Podolny, 2001) in which the stakeholders lack other bases to form judgments about the focal firm. In addition to the use of symbols and rhetoric (Elsbach, 1994; Elsbach & Sutton, 1992), scholars of impression management advocate that firms seeking to enhance their reputation strategically demonstrate their connections with individuals and organizations widely considered positively or favorably, a strategy that enables the firm to "bask in the reflected glory" of these favorably perceived individuals and organizations (Cialdini, 1989; Cialdini & Richardson, 1980; Wann, Hamlet, Wilson, & Hodges, 1995). The concept of "homophily" that assumes "similar" actors associate with and cooperate with each other (Lazarsfeld & Merton, 1954; cf. McPherson, Smith-Lovin, & Cook, 2001) leads external stakeholders who observe an unknown actor's associations with a known actor to cognitively ascribe the observable or acknowledged traits of the known actor to the unknown actor (Stuart, Hoang, & Hybels, 1999: 317). Critical to this process is the expectation that the unknown actor will, as a result of this similarity, behave like the known actor, and as a result, external stakeholders will develop relations with the unknown actor that would parallel their relations with the known actor.

Studies within the entrepreneurship literature highlight the importance of the network structure of an organization's or individual's connections to how other members of the network perceive the focal organization's legitimacy (Baum & Oliver 1992). In his

work on structural embeddedness of firms in the New York garment industry, Uzzi (1997:48) found that a third party actor, the go-between, "transfers the expectations and opportunities of an existing embedded social structure to a newly formed one, furnishing a basis for trust and subsequent commitments to be offered and discharged." In their study of young biotech companies, Stuart, Hoang & Hybels (1999) find that firms 'endorsed' by prominent venture capital firms performed better than firms without ties to prominent firms. And, in his study of venture capitalist markets, Podonly (2001) finds that having associations with high quality actors signals high quality to potential exchange partners.

I explore three characteristics of the stakeholders with whom the firm connects that may impact the perceptions of other stakeholders and, as a result, that firm's subsequent ability to engender cooperative relations and form ties with these stakeholders: (1) stakeholder status—i.e., how "important" the stakeholder is relative to other stakeholders, (2) stakeholder centrality—i.e., the degree to which the stakeholder is directly connected to many other stakeholders within the stakeholder network, and (3) the stakeholder's degree of cooperation—i.e., how cooperative the stakeholder is in their relations with other stakeholders. Arguably, many different stakeholder characteristics are perceived favorably by stakeholders in the broader environment. However, my choice of these three variables—stakeholder status, centrality and cooperation—is driven by how observable these characteristics may be from public discourse such as the media and through discussions with local actors.

Stakeholder's status. The status of the stakeholder with whom a firm connects is an indication of that stakeholder's importance within the network of other stakeholders.

Status is a form of social stratification, i.e., a function of the collective statuses of the actors to whom an focal actor is connected (Bonacich, 1987). Put simply, actors connected to high status others are themselves considered to be high status. Status is a principal determinant of influence (Goffman, 1967; Ridgeway, 2006: 301; Ridgeway & Walker, 1995; Weber, 1968), deference (Turk & Lefcowitz, 1962), as well as a reflection of competence (Fiske, Xu, Cuddy, & Glick, 1999; Thye, 2000). Status also affords *ex ante* exchange benefits (Thye, Willer, & Markovsky, 2006). Thye *et al.* (2006: 1472) find that "high status actors are more competent and influential in establishing the initial conditions for exchange," i.e., high status actors obtain more favorable *ex ante* conditions for exchange as people are more willing to compromise when bargaining with actors they perceive to be of higher status. Additionally, in repeated transactions, high status individuals benefit more than low status individuals (Thye et al., 2006). Therefore, associating with high status stakeholders may afford the firm the ascribed benefits of influence, deference, competence and favorable *ex ante* conditions for subsequent firm-stakeholder negotiations. For example, by forming connections with multilateral organizations that are perceived to be of high status, such as the United Nations and World Bank, the firm itself is perceived to be of high status and therefore "good" by external stakeholders such as local governments, communities and NGOs. The high status of such multilateral stakeholders connects them to other stakeholders who are also considered to be of high status.

> *P4a: Firms with ties to high status stakeholders increase cooperation with existing stakeholders.*

P4b: *Firms with ties to high status stakeholders increase tie formation with potential new stakeholders from the broader external stakeholder network.*

Stakeholder's centrality. An actor with high centrality—i.e., the extent to which a given individual is connected to others in a network (Sparrowe, Liden, Wayne, & Kraimer, 2001:316)—is a focal point within communication networks, is considered to be "in the thick of things" by other actors in the network, and is strategically positioned for active participation in the communication of information (Freeman, 1979: 219). The most central actor in a communication network is also the most powerful (Mizruchi et al., 1998). Because the high visibility of central actors enables them to signal their ability to access resources from the network, they are therefore desired targets for alliances (Gulati, 1999). Additionally, according to preferential-attachment theory (Barabasi et al., 1999), actors with a greater number of ties have an "accumulative advantage" where, as the number of ties increases, the probability of tie formation also increases (Powell et al., 1996). Conversely, peripheral actors face a liability of unconnectedness (Powell et al., 1996). Within network-building, central actors are more likely to form ties with other central actors (Gulati et al., 1999). Therefore by associating with stakeholders of high centrality, a firm is afforded greater visibility and thus increased opportunities to engender cooperative relations and form new ties with stakeholders.

P5a: *Firms with ties to central stakeholders increase cooperation with existing stakeholders.*

P5b: *Firms with ties to central stakeholders increase tie formation with potential new stakeholders from the broader external stakeholder network.*

Stakeholder cooperation. Cooperation is an important factor of network outcomes. Early work exploring cooperative or friendship relations among actors explored network outcomes based on friendship dynamics among actors (Heider, 1944; Newcomb, 1981) specifically, how friendship evolved in triples of actors. More recent work studying cooperation within networks of actors has explored friendship relations among adolescent and school-children, specifically how friendship influences the behavior of actors in networks (Mercken, Snijders, Steglich, Vartiainen, & de Vries, 2009; Snijders et al., 2003). The degree of cooperation between the stakeholder with whom the firm connects and other stakeholders in the network is an indication of that stakeholder's "cooperativeness" and thus that stakeholder's ability to establish cooperative ties. Stakeholders with cooperative relations have a greater potential to induce and extend cooperative ties (i.e., cooperative individuals generally beget more cooperative ties). Alternatively, stakeholders with low degrees of cooperation (i.e., those who engender conflictual relations) will have difficulty forming cooperative ties with other stakeholders (i.e., uncooperative individuals generate few cooperative ties). These stakeholders are also more likely to induce conflictual ties from, and extend conflictual ties to, other stakeholders. Therefore, by associating with cooperative stakeholders the firm is also expected to be cooperative, and therefore has an increased likelihood of engendering cooperative relations with stakeholders.

P6a: *Firms with ties to highly cooperative stakeholders increase cooperation with existing stakeholders.*

P6b: *Firms with ties to highly cooperative stakeholders increase tie formation with potential new stakeholders from the broader external stakeholder network.*

Who the firm is connected to will impact how third party actors view the firm, but in addition, how these third parties view the nature of the relationship between the firm and its existing stakeholders (i.e., those connected to the firm) is also an important determinant of whether and how these third parties choose to connect to the firm. Also, how the firm behaves towards the stakeholders with whom it is connected determines the continued nature of those relations. I explore how the tenor of the firm's relations with existing stakeholders impacts the firm's relations with both existing and potential new stakeholders from the external stakeholder network.

Tenor of relations. How the firm interacts with its existing stakeholders alters how it is broadly perceived by other stakeholders in the environment, and how stakeholders connected to the firm will behave towards the firm. "Corporations ARE what they DO" (Post et al., 2002b:8, capitalization in original) as the actions of the firm are considered visible demonstrations of the firm's policies, practices, values, ethics, and commitment to stakeholders. Scholarship on citizen participation, political participation, collective action, and stakeholder networks, support the insight that the content of the firm's engagement with stakeholders is a key determinant of its ability to engender cooperative stakeholder relations. These literatures suggest that when the tenor of the relations with stakeholders builds trust and forges a common identity between the firm and stakeholders and empowers stakeholders, cooperation is enhanced.

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The citizen participation literature advocates that effective citizen participation is contingent on two-way information flows or "exchange of information/dialogue" (Rowe & Frewer, 2005:254) that builds trust between actors (Glass, 1979; Rowe & Frewer, 2005). Critical to effective citizen participation is also the "redistribution of power" where stakeholders are "deliberately included" in decisionmaking (Arnstein, 1969:216). True citizen participation affords citizens a "voice" in, and the power to implement (Arnstein, 1969) planning and decisionmaking with the goal of improving these plans, decisions, and the services delivered (Benz, 1975; Rossi, 1969). Participation results in better (policy and project) outcomes (Munro-Clark, 1992; Steelman & Asher, 1997) and improved relations and rapport between actors (Buchy & Race, 2001).

The literature on political participation suggests similar insights. Through effective political participation citizens feel that the political system (or the political leadership) is "responsive" to attempted influence (Craig, 1979; Ginsberg, 1982). This feeling of "being heard" and "being able to effect change" creates feelings of trust (Balch, 1974) and legitimizes governments (or political authorities) in the eyes of the individual, subsequently resulting in "acquiescence" of the populace to the political system (Ginsberg, 1982; Olsen, 1982) and general political support for the regime (Iyengar, 1980). Scholarship on identity and collective action among groups argues that a shared identity impacts cooperation and participation (Simon, 2004). "Respectful treatment (i.e. a fair, trustworthy and dignified treatment)" of others is an important antecedent factor of cooperation. The concept of "convening stakeholder networks" (Svendsen & Laberge, 2005) within the stakeholder engagement literature suggests that by encouraging broad and inclusive participation and relationship-building in their

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dealings with stakeholders, firms develop the benefits of social capital, a concept widely associated with trust (Putnam, 1993).

P7a: Firms that structure their stakeholder relations to provide greater effective voice to stakeholders will increase cooperation with existing stakeholders.

P7b: Firms that structure their stakeholder relations to provide greater effective voice to stakeholders will increase tie formation with potential new stakeholders from the broader external stakeholder network.

Positional Costs: Exposure to Conflict and Fostering of Conflict via Asymmetric Relations

While certain network positions may allow a firm to access or distribute voluminous, rich and diverse information or to favorably influence how stakeholders perceive them and thereby increase cooperation with stakeholders, strategies to pursue these positions can also impose costs which undermine cooperation with stakeholders and may even foster or enhance conflict. Specifically, the same network positions associated with these resource benefits may also expose the firm to pre-existing conflict among the stakeholders with whom the firm is now tied, and into which the firm may become entangled. Further, any asymmetry in the structure of the firm's relationships with these tied stakeholders could trigger resentment and/or competition among them which fosters novel conflict. In the next section, I outline the stakeholder-level and firm-stakeholder relationship-level determinants of these costs.

Networks as Structures

A competing metaphor to the network as a system of interconnected pipes or prisms is that of "networks as *structures* that influence [, shape and constrain] the behavior of network members, and, through them, produce consequential network effects" (Kahler, 2009:5). An important structural concept of networks is the "triad," i.e., the introduction of the third actor, due to the significant intrinsic differences between dyadic and triadic relations (Simmel, 1950). In one of the earliest explications of the unique factors that distinguish between dyads and triads Simmel (1950: 145) states, "the dyad represents both the first social synthesis and unification, and the first separation and antithesis. The appearance of the third party indicates transition, conciliation, and abandonment of absolute contrast." A key insight of the triad is that actors are interrelated and their actions constrain each other. Summing their understanding of Simmel's (1950) argument on triads, Krackhardt and Handcock (2007: 17) state,

> *the foregoing line of Simmelian reasoning suggests that knowing the specific content, nature and strength of a relationship between pairs of people is insufficient to understand the dynamics that might emerge in a social system. Even at the dyadic level, it is critical to know whether any particular dyad is embedded in a group.*

Two important concepts of network theory on triads is that: (1) specific triadic configurations are more "stable" or enduring over time (Cartwright et al., 1956; Heider, 1944; Stokman & Doreian, 1997), and (2) network-based power is a function of a "structural position in a field of connections to other agents as well as actor capabilities or attributes" (Kahler, 2009:4). The literature on stakeholder networks similarly argues that power and resulting influence within stakeholder networks are network-wide phenomena contingent on the collective interactions and dependencies of all the actors

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within the network (Balkundi et al., 2006; Salancik, 1986). An understanding of the interrelationships among stakeholders, specifically the "influence networks" or "established patterns that characterize who defers to whom on critical issues" (Krackhardt & Hanson, 1993; Watkins, 2001:118) is fundamental to improving relations with specific groups of stakeholders.

Transitive Relations. Transitivity, a "central proposition in structural sociometry" (Davis, Holland, & Leinhardt, 1971), posits that the friend of my friend will be my friend (Rapoport, 1963: 541). Consider a triplet of actors, *p*, *o* and *x*, with signed directed cooperative relations such as liking, agreement, acceptance, or conflictual relations such as disliking, disagreement, rejection. "Interpersonal choices tend to be transitive if *p* chooses *o* [cooperative relations] and *o* chooses *x* [cooperative relations], then *p* is likely to choose *x* [cooperative relations]" (Davis et al., 1971: 309) (Cartwright et al., 1956; Davis, 1963; Heider, 1958; Hummon & Doreian, 2003). Figure 1.4 describes the transitive mechanism.

In the context of the firm's strategy to secure a preferential position in the stakeholder network that conveys useful information and signals strong reputation, the firm must consider the consequences of forming potentially unstable triads in which the new ties that they form expose them to pre-existing conflict. By contrast, they may seek to take advantage of pre-transitive ties in which an indirect connection between the two stakeholders would be expected and stable. Forming new ties has consequences for the relational dynamics among the firm's tied stakeholders which may reverberate into their relations with the firm.

> *P8:* *Cooperative [conflictual] ties by the firm to stakeholders whose pre-*
>
> *existing relationships are cooperative [conflictual] are less expensive to*
>
> *form and maintain due to their inherent stability.*

Influence Relations. Emerson's (1962) theory of power posits that because of the power I have over my friend, my enemy is their enemy and my friend is their friend. The classical concept of power defined by Dahl (1957: 202-3) is that "A has power over B to the extent that he can get B to do something that B would not otherwise do." Power is not an attribute of the actor, but is rather "a property of the social relation" (Emerson, 1962: 32). Because interpersonal or social relations are primarily built upon mutual dependence, the intent and ability of an actor to influence another actor is contingent upon the ability of one actor, *A,* to control something of value to the second actor, *B*. That is, "*power resides implicitly in the other's dependency*" (Emerson, 1962: 32, italics in original). Figure 1.5 describes the influence mechanism.

In their study of representative roles and relations, Turk and Lefcowitz (1962) explore the hierarchy of esteem and deference among individuals, and posit that under conditions of "legitimated equality" (that is, representatives holding legitimate and equal status and power) the relationship between representatives from different groups is characterized by "mutual deference and mutual indulgence" (Turk and Lefcowitz, 1962:339). They further state that "such a relationship is not only symbolic of working harmony but fosters an image of joint importance and worth of the intergroup pair" (Turk and Lefcowitz, 1962:339). Alternatively, under conditions of legitimated inequality (i.e., one representative is of a higher status or importance than the other), the relationship

between representatives is characterized by "indulgence-deference" (Turk and Lefcowitz, 1962:339).

> P9: *Cooperative [conflictual] ties by the firm to stakeholders whose pre-existing relationships are conflictual [cooperative] are more likely to transform into conflict [cooperation] in a manner that conforms with the more powerful stakeholder in the triad.*

Fairness and Symmetry in Relations. In empirical work on competitive behavior, Garcia, Tor, & Gonzalez (2006) find that highly ranked individuals engage in greater competitive behavior than intermediate individuals, but more importantly, that there is a general tendency for "competition among commensurate rivals on a relevant dimension to intensify in the proximity of a meaningful standard" (Garcia, Tor & Gonzalez, 2006: 970). Individuals across a wide array of contexts engage in competitive behavior to protect their 'superiority' and reduce discrepancies (Festinger, 1954). I expect this same dynamic to occur within triads where the relationships are characterized by varying intensity or depth of participation.

> P10: *Triads in which relationships are symmetrical in the intensity of their interaction or in the depth of their participation are less expensive to form and maintain due to their inherent stability.*

A similar dynamic can be triggered by differences in the characteristics of the firm and the stakeholder with whom it is tied. There is an inherent 'cost' to a high status or central actor by associating with the firm. In his study of investment bank syndicates, Podolny (1994) finds associations of high status firms with low status firms result in the loss of status, and that status constrains firms to associate with firms of similar status

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(i.e., low status firms associate other firms of similarly low status, and high status firms associate with other firms of similarly high status). Associating with the firm may cause the high status stakeholder to lose its high status, thus generating resentment. Stakeholders may employ measures to distance themselves from the firm thereby potentially increasing conflict with the firm.

> P11: *Triads in which stakeholders are symmetrical in their status, centrality or degree of cooperation are less expensive to form and maintain due to their inherent stability.*

Insular Networks. While social capital is largely thought to be positive, negative consequences are also prevalent (Putnam, 1993; Olson, 1982; Adler & Kwon, 2002). Portes (1998:15, Portes & Sensenbrenner, 1993; Portes & Landolt, 1996) identifies these negative consequences of social capital as (1) "exclusion of outsiders" (Waldinger, 1995); (2) "excessive claims on group members" (Geetz, 1963); (3) "restrictions on individual freedoms" by societal demands for conformity (Boissevain, 1974; Rumbaut, 1977); and (4) "downward leveling norms" (Bourgois, 1991; Stepick, 1992; Suarez-Orozco, 1987). These constraints impede the development of new ties to outsiders and may lock the firm into a set of pre-existing relationships which, while advantageous in certain respects, are costly in others.

> P12: *Joining triads in which relationships are symmetrical in the intensity of their interaction or the depth of their participation increases the cost of forming subsequent relationships to stakeholders not closely connected to the triad.*

Relative power. An important factor of triads of actors is that the interdependencies among them are exacerbated by relative power differentials. According to Simmelian theory, the third actor in a triad can take the position of the tertius gaudens—"the third who enjoys" (Simmel, 1950:154). The tertius acts as the partial partisan who seeks his own gain by taking advantage of the conflict of two others and can, by supporting or granting favor to one of the two parties, change the power and influence dynamic between them. An important insight on the role of the tertius is that the power of the tertius who seeks to influence the relationship between the actors in the dyad is "determined exclusively by the strength which each [of the two parties in the dyad] has relative to the other" (Simmel, 1950:157). Thus the difference in relative power of the two parties in the dyad is fundamental to determining how the third can benefit. Therefore the significance of the third who takes the position of the tertius is contingent on the power structure of the actors in the initial dyad.

For the firm seeking to form a tie with a particular actor within the environment, it is important to understand how the power structure of the dyad (i.e., the power structures between the firm's targeted stakeholder and the other stakeholders with whom that stakeholder is connected) impacts that firm's ability to form cooperative or conflictual ties with this new actor. For two stakeholders in conflict, the firm's ability to mitigate conflict between them may be contingent on the relative power difference between these two feuding stakeholders and critically, whether the firm has enough relative power to help a significantly weaker actor overcome the resistance of a relatively much stronger actor, or whether the firm has enough power to support a slightly stronger actor subdue a slightly weaker actor.

P13:   Joining triads in which relative power relationships are symmetrical (asymmetrical) in their relative power increases (decreases) the cost of forming subsequent relationships to stakeholders not closely connected to the triad.

DISCUSSION

Applying concepts and tools of network theory and insights from the entrepreneurship, social psychology, and civic or political participation literatures, I develop thirteen propositions to guide strategic tie formation within a stakeholder network. Such strategies are of particular importance for firms in politically or socially salient foreign environments. Scholars of international business, CSR and stakeholder management have all highlighted the importance of improving relations with stakeholders through bargaining, philanthropy and engagement; however, these strategies have, as of yet, provided limited guidance on the questions of with whom a firm should connect, how, and when. I apply the metaphors of 'networks as pipes', 'networks as prisms' and 'networks as structures' to inform such a strategy calling attention to the positional benefits of information and reputation as well as the positional costs of exposure to pre-existing conflict and the fostering of conflict due to asymmetry in the structure of relationships. Further theoretical and empirical work is necessary to augment and test these arguments.

One important area for development is the inherent tradeoffs across some of the first-order relationships identified here. What is the manageable range of voluminous, diverse and rich information, as well as the manageable range of status, centrality and cooperation? For example, although forming ties with a wide range of stakeholders to

obtain diverse information is important to the firm's ability to understand and influence stakeholders, this diversity may itself breed competition and conflict as more diverse stakeholders are more likely to be in pre-existing conflict or to exhibit asymmetries in relationships or underlying characteristics that lead to competition and conflict. A possible means to resolve this tension may be in the firm establishing a 'manageable range' of diversity among stakeholders which might give the firm a more limited view of the network of stakeholders, but which gives the firm a broader understanding of the environment at a manageable cost. Similarly, although forming ties to a high status stakeholder increases the status of the firm, the cost of forming this tie (i.e., assuming a position of deference and possibly loss of autonomy) may outweigh the benefits. Because status is a form of power, the best strategy for the firm is not to aim to form ties with the highest status stakeholder, but rather, to aim to form ties with stakeholders whose level of status the firm can 'manage' whose level of status is at par with, or slightly above that of the firm, thus reducing the asymmetric power between the firm and that stakeholder.

Another set of tradeoffs or potential complementarities lie across the metaphors of pipes and prisms. Networks are pipes of information that help the firm strategically form ties with high quality stakeholders. Ties with these high quality stakeholders, as viewed by third party actors, will increase the formation of ties with other stakeholders and will increase cooperation with these new stakeholders. Thus networks as pipes and networks as prisms can be complementary and mutually reinforcing. Further work should explore under what conditions the firm should focus on building networks that afford it voluminous, diverse and rich information, and under what conditions the firm should

focus on forming strategic ties with high quality actors to positively influence its reputation with other stakeholders.

In the theoretical analysis presented here, I have emphasized the dependent variables of firm-stakeholder cooperation and when ties will be formed but future work could expand the scope of inquiry to examine more traditional network constructs including status. Another related approach would be to consider measures of financial or operational performance as the dependent variable and consider whether the strategies outlined here can be shown to increase financial value or reduce delays and disruptions to operations.

Another area for further development is the environmental contingencies including the context-specific question of the 'acceptable' degree of conflict and cooperation between firms and stakeholders. Maintaining cooperative relations is costly and therefore an understanding of how much cooperation is 'enough' is important. Conflictual relations are also costly, but conflict can also have positive externalities (e.g., conflict is an inherent part of negotiations) and therefore it is important to understand when, and how much is conflict is manageable for firms in politically risky environments. Country-level variation in formal and informal political institutions as well as cultural norms could play a large role in these tradeoffs. The prior actions of stakeholders towards the firm and other firms could also play a role. Strategies for a firm moving into a heavily conflictual or even crisis environment may differ substantively from one who is seeking to build up its political and social capital in the absence of such pre-existing conflict.

The theory presented here emphasizes the impact of network position and firm- and stakeholder-level characteristics on the subsequent evolution of firm-stakeholder conflict and cooperation. Feedbacks leading from the latter to the former also merit exploration. More cooperative relationships or more stable triads could, for example, lead to a network structure that is more effective at conveying information. Positive feedbacks could enhance the efficacy of certain strategies outlined here through a multiplier effect whereas negative feedbacks, beyond those outlined with respect to pre-existing conflict and relational asymmetry, could undermine strategy implementation.

The relations between firms and stakeholders, and even between stakeholders themselves, vary on multiple dimensions and are not limited to merely conflict and cooperation but also include acquiescence, deference, etc. Future work building upon the concepts in this model should explore additional dimensions, particularly in terms of how the firm manages different types of relations with different actors at different times. Further, the formation and dissolution of ties with stakeholders is an important factor of firm strategy with many parallels to the quest for greater cooperation but, potentially, important differences as well.

Given the complex theoretical and empirical relationships already uncovered and their interdependence, formalization of the underlying behavioral model of conflict and cooperation could be useful. Current work on endogenous network dynamics allows for a relatively limited scope of agency by actors in the network (Brandes, Lerner, & Snijders, 2009; Snijders, 2001; Snijders, 2006; Snijders, Steglich, & Schweinberger, 2007). Expanding that scope to include strategic tie formation with the aim of altering collective

decisionmaking through coalition politics would be an exciting development that could link agent-based models in political economy and social networks.

A growing body of relational data linking political, social and economic stakeholders through economic, social, political and event-based data allows for the development of stakeholder network datasets to test the framework that I have outlined. Many large multinational corporations either develop themselves, or work with stakeholder consultancies to develop, stakeholder influence maps which contain information on stakeholder power, relations and polarity necessary to construct such a model. Other strategies would rely on secondary data such as the coding of relations across individuals and organizations using linkages between their websites, linkages found in event data in the formal media (King & Lowe, 2003a) or even blogs and other internet-based sources of information. One could supplement this analysis of unstructured text with financial or other transactional data as well as communication and other logs of activity. A growing body of research develops and analyzes sociometric data from sources other than surveys and tombstones. The potential for further expansion of this work to transform our understanding of strategies by firms to win the hearts and minds of external stakeholders is dramatic.

A network-based stakeholder influence strategy begins with the assumption that a firm's ability to create value is contingent upon the cooperation of external stakeholders. It models the dynamic interaction among the network that links these stakeholders and the focal firm providing guidance to that firm as to whom they should form connections with and how. That decision involves important first-order tradeoffs between the benefits and costs of a given position in the network which I describe here. Future work should

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build upon this initial framework to incorporate additional contingencies and feedbacks,

pursue more formal theoretical analysis of network dynamics and tradeoffs and subject

the propositions to empirical testing. Such efforts would contribute strategic insight to the

literatures of international business, corporate social responsibility and stakeholder

theories as well as other empirical domains for network theorists.

CHAPTER 2

Networks of Influence: **Pipes and Prisms of Political Influence**

Strategic management scholars have long sought to understand how firms navigate environments characterized by uncertainty. In seminal work using a network lens, Podolny (2001) outlines two types of market uncertainty: egocentric uncertainty, where the focal actor is uncertain about the characteristics, qualities, and products of its potential exchange partners, i.e., the alters, within the marketplace; and altercentric uncertainty, where the potential exchange partners in the marketplace are uncertain about the characteristics, qualities, and products of the focal actor. He further argues and empirically finds that distinct network positions and characteristics mitigate egocentric and altercentric uncertainty, respectively (Podolny, 2001). Egocentric uncertainty of the focal actor is mitigated by that focal actor possessing a network rich in structural holes, i.e., it is the sole connection between two otherwise disconnected actors (Burt, 1992). The focal actor, by virtue of its rich network of structural holes, gains unique information that enables it to manage its egocentric uncertainty. Altercentric uncertainty on the other hand, is mitigated by high status. Producers or partners in the market rely upon the status metric to distinguish one actor from many similar others.

I explore how firms overcome egocentric and altercentric uncertainty when diversifying into new geographical markets that span national boundaries. In the international context, the ability to operate profitability and thus survive is contingent upon the firm eliciting cooperation and minimizing conflict with 'alters' or external

stakeholders (i.e., those political social and economic actors who have a stake in the firm's operations) (Donaldson et al., 1995; Henisz, Dorobantu, & Nartey, 2011; Post et al., 2002b). The distinctions between egocentric and altercentric uncertainty may provide key insights to understand how firms can more effectively manage their stakeholder relationships in uncertain nonmarket environments (Baron, 1995). While greater relative amounts of egocentric uncertainty or altercentric uncertainty can characterize particular markets (Podolny, 2001), I explore nonmarket environments characterized by both egocentric and altercentric uncertainty. That is, environments where the investing firm is uncertain about the characteristics of its external stakeholders and these stakeholders themselves also face uncertainty about the characteristics and quality of the investing firm. High degrees of egocentric and altercentric uncertainty may occur in the international context when a foreign firm seeks to enter a new market or nonmarket environment. However this scenario may arise also for firms seeking to change perspectives stakeholders have developed about them based on the characteristics of these firms. For example, foreign firms face liabilities due to their foreignness (Hymer, 1960/1976) and firms in specific industries, particularly the extractive industries, face liabilities due to their association with an industry which has a long history of adverse relations with stakeholders.

I use tools and concepts from network theory to build upon the insights of Podolny (2001) and compare the efficacy of the *ex ante* strategies that firms can use to manage both egocentric and altercentric uncertainty. I hypothesize that through strategic network positioning that affords it information, the firm can manage its egocentric uncertainty; and, by managing how it is perceived through its associations, the firm can

also manage stakeholders' altercentric uncertainty. Of course, the management of both types of uncertainty is not without cost. Therefore an important question to understand is which type of uncertainty should be the primary focus given limited resources.

My analysis contributes to our understanding of the strategic relationship between firms and their external stakeholders within politically uncertain contexts. In contrast to the present focus on how the firm's strategic positioning within networks impacts relevant outcomes to the firm, I explore how the network positions and characteristics of the firm as well as the network positions and characteristics of its external stakeholders directly impact relational dynamics between the firm and these stakeholders. I specifically focus on the evolution of conflict and cooperation between stakeholders with whom the focal firm has existing ties, as well as the propensity of that firm to form new stakeholder ties. Because network creation is not without cost, I also seek to understand which set of network characteristics provide the greatest returns to the firm in-terms of generating external stakeholder cooperation, mitigating stakeholder conflict, and forming new ties in politically uncertain environments.

I explore these questions in the context of entrepreneurial firms in the global gold mining industry, an industry widely associated with conflictual events between firms and their external stakeholders. While much of this conflict is based on the historical perceptions of rapacious and destructive mining practices by mining companies that have led to an entrenched distrust of newly entering unknown mining companies by their external stakeholders, even those firms who seek to engage these stakeholders so as to avoid conflict and enhance cooperation face the problems of not knowing which stakeholders to seek out in order to best achieve this goal (i.e., firm egocentric

uncertainty). Conversely, stakeholders face the problem of not knowing with which mining companies they can genuinely cooperate to achieve shared goals as opposed to which companies are engaging in greenwash[3] or otherwise seeking to manipulate their environment (i.e., stakeholder altercentric uncertainty) in order to maximize their short-term profit without regard to the long-term implications of their actions. The global mining industry faces tough profit margins (Azapagic, 2004). With high capital costs, substantial costs of environmental protection, and considerable operational and business costs such as taxes and employee benefits, any additional costs significantly impact revenues. An important source of additional costs arises from the adverse activities of stakeholders and community activists (Gifford & Kestler, 2008; Humphreys, 2000). The, often substantial, costs of activism not only include direct operational disruptions and litigation but also include indirect costs. For example, wary of losses to their investments, investors who perceive high adverse community activism targeting a mining firm may reduce or discontinue financing (Humphreys, 2001). Relatedly, credit raters may also downgrade a firm's rating in the presence of activism. Thus for firms in the global mining industry, the management of egocentric uncertainty by securing information benefits through its strategic position within the network, and the management of altercentric uncertainty by securing reputational benefits, is particularly important.

My empirical analysis uses a novel dataset of over 51,754 stakeholder events among 4,623 external stakeholders of the population of 19 mining firms with three or fewer mines in emerging markets primarily involved in the extraction of gold that are

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[3] The term "greenwashing," coined by environmentalist Jay Westerveld in 1986, is defined as "disinformation disseminated by an organization so as to present an environmentally responsible public image" by the Oxford Dictionary.

listed on the Toronto Stock Exchanges (a total of 26 gold mines in 20 economies). Each stakeholder event is a media-reported incident in which a person or organization acts or speaks in a manner that conveys cooperation or conflict with another person or organization. This novel dataset is constructed from the hand-coding of 22,229 news articles gathered from FACTIVA. The media-reported stakeholder events are scaled using an adapted conflict-cooperation scale widely used in the literature on international conflict (Goldstein, 1992; McClelland, 1971) and range from highly conflictual to highly cooperative relations across 20 categories. My novel dataset of relations between stakeholders and firms, and among stakeholders themselves, is sensitive to the direction (i.e., who does what to whom), the polarity (i.e., whether cooperative or conflictual) and the strength (i.e., degree of cooperation or conflict) of the relation. I use this novel dataset to plot existing network relationships for each mine across time. Using network tools and concepts, I explore how the structural positions of a focal firm afford it information to mitigate egocentric uncertainty, while the characteristics of the stakeholders with whom the focal firm is connected and the nature of these ties afford the focal firm reputation benefits to mitigate altercentric uncertainty.

I find that firms can mitigate their own egocentric uncertainty through increasing their access to information by bridging structural holes in stakeholder networks and forming ties to actors at both the core and periphery of the stakeholder network. I also find that firms can mitigate stakeholder altercentric uncertainty through forming ties with stakeholders who are high in status and highly cooperative with other stakeholders and by engaging in joint activities with these actors. Both of these tie formation strategies independently increase cooperation and decrease conflict with existing stakeholders and

increase the formation of new ties with new stakeholders. Interestingly, when I include

measures to mitigate both firm egocentric uncertainty and stakeholder altercentric

uncertainty in a single empirical specification, only the latter are statistically significant

determinants of the evolution of conflict and cooperation within existing ties and the

probability of forming a new tie. Thus, in contrast to present practice and scholarship

which focus on the firm's ability to manage its own egocentric uncertainty through

strategic network positions that bridge structural holes and connect to stakeholders at

both the core and periphery of the network, my findings suggest that the key determinant

of an increase in cooperation and tie formation within the stakeholder network is the focal

firm's ability to mitigate altercentric uncertainty by forming ties with high status,

cooperative stakeholders and engaging in joint participatory activities with these actors.

THEORY

In Podonly's (2001) seminal article developing the metaphors of networks as

pipes and prisms, he posits a relationship between the network structure of firms and the

type of uncertainty that dominates the market, i.e., whether altercentric or egocentric. The

argument he puts forward is that firms whose networks are rich in structural holes should

sort themselves into markets characterized by high egocentric uncertainty as their

network position affords them the critical information they need to overcome uncertainty

about these markets. Conversely, firms or actors who enjoy high status should sort

themselves into markets that have high altercentric uncertainty as their network position

signals high quality and thus mitigates the altercentric uncertainty of other actors in that

market or market segment. Thus, an important argument in this work is that when firms

understand and leverage the relative strengths of their network positions (i.e., the ability

to bridge structural holes or signal high status), these firms can better choose the environment in which they are more likely to succeed by overcoming the disadvantages of egocentric uncertainty or altercentric uncertainty. Holding the environment constant and allowing the investing firm agency over their network position generates the strategic prediction that firms facing an environment high in egocentric uncertainty should seek to bridge existing structural holes, whereas a firm facing an environment high in altercentric uncertainty should seek to enhance its status.

I expand upon this premise and apply it to the case of firms diversifying into a new geographic market spanning a national boundary (i.e., a foreign market). This context is characterized by both egocentric uncertainty (i.e., the firm does not possess critical information on external stakeholders or alters in the network) (Podolny, 1994, 2001) and altercentric uncertainty (i.e., external stakeholders or alters in the network are uncertain about the quality of the focal firm) (Podolny, 1994, 2001). For example, foreign firms have traditionally sought politically expedient relations with government actors as a means to mitigate egocentric uncertainty and secure political advantages. More recently, politically savvy firms have sought to mitigate altercentric uncertainty by holding town hall meetings to disseminate information about their operations and intentions to stakeholders. I explore network positioning strategies firms can employ to mitigate both egocentric and altercentric uncertainty within the nonmarket environment.

Overcoming firm egocentric uncertainty

Podolny (2001) argues that the key to overcoming egocentric uncertainty is through ego's access to information. Network ties are pipes which channel the flow of information and other resources (Gulati, 1999) among actors in the network. Importantly,

the flow of information through these network ties includes information about the actors who themselves comprise the network. I explore two aspects of a firm's network position that are known to influence access to information: the extent to which the firm bridges structural holes and the breadth of that firm's connections to actors across the core and periphery of the network.

Structural Holes. Conceiving of the network as a set of pipes through which information flows, certain structural positions afford the firm access to relatively more valuable or scarce information that is not accessible via the pipes that connect to other positions. Podolny (2001) argues that a key means to overcome egocentric uncertainty is to secure such positions that bridge structural holes in the network (Burt, 1992). Structural holes are defined as the network positions that bridge non-redundant actors within the network which enable occupiers of these network gaps to gain brokerage advantages of information and control (Burt, 1992). Occupying networks rich in structural holes has performance impacts on innovation (Ahuja, 2000a; Hargadon & Sutton, 1997), early promotion (Burt, 1992) and career mobility (Podolny & Baron, 1997).

Speaking to the relationship between uncertainty and structural holes Podolny (2005:231) writes:

> *Though Burt does not use the concept of egocentric uncertainty in*
> *discussing the information benefits of structural holes, it seems clear that*
> *this conception of uncertainty is strongly aligned to his understanding of*
> *information benefits. The structural holes in a focal actor's network are*
> *not a basis for others to make inferences about the actor; rather they*
> *determine the extent to which the focal actor overcomes uncertainty about*
> *how to best act to realize his or her interest.*

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A network rich in structural holes affords the focal firm the necessary information to overcome egocentric uncertainty from the environment. By forming exclusive ties to disconnected others within the wider network, firms who occupy structural holes or network positions of brokerage obtain unique information on the stakeholders themselves which the firm can use to discern quality or different types of characteristics or infer relations among stakeholders and thus obtain guidance on which stakeholders to strategically form what type of ties with. Because the key structural benefit of structural holes is brokerage opportunities and access to diverse information, this strategy is most efficient in heterogeneous environments as structural holes provide little performance benefit in redundant or closed networks in which actors have ties to each other and homogeneity is high (Burt, 2001).

> *H1a.   Firms whose network positions bridge a greater number of structural holes will experience increased cooperation and decreased conflict with existing stakeholders.*

> *H1b.   Firms whose network positions bridge a greater number of structural holes will be more likely to form a new tie with an external stakeholder.*

Firm Range (Core-Periphery). Another strategy to overcome egocentric uncertainty in a foreign environment is to form ties with a diverse set of external stakeholders which collectively possess the information needed by the investing firm. Therefore the range of the firm's network is contingent upon ties to qualitatively different partners (Koka et al., 2002) at different parts of the network. Improving stakeholder relations is stymied by the complexity and diversity of stakeholders in the network in terms of types, issues (Polsby, 1959; Wolfinger, 1960), identities (Rowley et al., 2003),

power (informal vs. formal), ethnicity, beliefs, religion, political affiliations, education, and myriad other factors. Further, different stakeholders have different abilities to impact the firm (Eesley & Lenox, 2006; Mitchell et al., 1997). Because various stakeholder groups may not interact with each other, the firm's strategic network-building efforts should ensure ties to different stakeholders to maximize relevant and diverse information.

Networks are structural depictions of relations among stakeholders and therefore different types of stakeholders, who may not interact with each other, will plausibly occupy different parts of the network. One dimension of stakeholder diversity is the extent to which these stakeholders span the core of the stakeholder network as well as its periphery. The information benefits of having ties to stakeholders at the core and at the periphery are different. Stakeholders positioned at the core of the network are expected to hold important but redundant (widely known) information, whereas stakeholders positioned at the periphery of the network are often the sources of radical or new information (Hart et al., 2004). For better performance, ties ranging across both the core and periphery are important. In their study of core-periphery dynamics in the Hollywood motion picture industry, Cattani and Ferriani (2008) found that individuals with ties to others at the core and periphery of the network achieved greater creative results.

Important insights on core-periphery issues that may impact firm relations with stakeholders can be gained from the geography and economic development literature where the concept of core-periphery speaks to inequality in economic development due to specific spatial localities being favored with development whereas other localities are neglected. Often the distinction is between the "dominating core and dominated periphery" (Friedmann, 1966, 1972) where core areas of economic development are the

source of political and social power and technological advancement and innovation. The stakeholders at the core areas of economic development are very different from stakeholders occupying peripheral areas of economic development (Ilbery, 1984) as depicted in the business concept of the bottom of the pyramid (Prahalad, 2004) and the associated strategies to reach actors in these peripheral areas of the country and associated stakeholder networks (London & Hart, 2004; Schwartz & Carroll, 2003). The impact of the core-periphery distinction is particularly important for mining and extractive firms who often have to bridge associations between actors in the economic core, such as the government, and disadvantaged actors in the economic periphery where their mining operations are often located (Jackson, Emerson, & Welsch, 1980; Mountjoy, 1984).

For a firm facing egocentric uncertainty, access to stakeholders at the core and periphery of the network and the information these different types of stakeholders hold is important to fostering cooperation, mitigating conflict and forming new ties.

> *H2a.* *Firms with greater diversity in ties spanning external stakeholders at both the core and periphery of the network will experience increased cooperation and decreased conflict with existing external stakeholders.*

> *H2b.* *Firms with greater diversity in ties spanning external stakeholders at both the core and periphery of the network will be more likely to form a new tie with an external stakeholder.*

Overcoming stakeholder altercentric uncertainty

Podolny (2001) argues that a focal actor can overcome altercentric uncertainty by exhibiting high quality. Thus an investing firm seeking to overcome its stakeholders'

altercentric uncertainty should similarly seek to exhibit high quality within that environment. The key dilemma for the firm here is that even if it does consider itself to be of high quality (for example, it may be a market leader within its industry), the stakeholders within the host country environment may not know or understand this foreign measure of high quality or may not perceive this measure of high quality to be favorable. For example, an entrepreneurial mining firm with an executive team that has had past success in difficult foreign markets may be considered to be of high quality by investors and peers in the mining industry of their home country, but may not be afforded similar high status and could even be perceived negatively (and thus of relatively low quality) by external stakeholders within the new environment who would prefer a local management team even if that team is relatively inexperienced internationally. Because high quality is a relatively subjective metric, it is important for the firm to identify measures of quality that are important to the *stakeholders* within that particular environment and to find a means to associate itself with stakeholders who exemplify these subjective measures of high quality. The strategy to demonstrate quality through symbolism and rhetoric (Elsbach, 1994; Elsbach et al., 1992) as well as through strategic associations (Kim, 2009; Kim & Laumann, 2003) is well documented within the reputation literature as well as in practice by firms who seek to change how they are perceived by stakeholders, often after a negative event, by associating with other stakeholders who are widely favored. An anecdote demonstrating the performance benefits of strategic association is given by Cialdini (1989):

> *At the height of his wealth and success, the financier Baron de Rothschild was petitioned for a loan by an acquaintance. Reputedly, the great man replied, "I won't give you a loan myself; but I will walk arm-in-arm with*

you across the floor of the Stock Exchange, and you soon shall have willing lenders to spare" (Cialdini, 1989:45 in Kilduff & Krackhardt, 1994:87).

Pursuing Podolny's (2001) metaphor of networks as prisms through which third-party actors ascribe some quality to the firm by virtue of its associations, the firm can reduce the altercentric uncertainty of stakeholders within the broader environment *ex ante* by strategically managing its associations (i.e., those actors with whom it is associated or connected). By associating with stakeholders who are themselves considered to be of high quality, the firm is itself associated with, or ascribed, high quality thus mitigating altercentric uncertainty. I explore three characteristics of the stakeholders connected to the firm that exhibit high quality: (1) the stakeholder's status relative to other actors in the environment, (2) the stakeholder's degree of cooperation with other stakeholders in the environment, and (3) the joint actions of firms with stakeholders that together influence how external stakeholders in the environment perceive the quality of the investing firm.

Stakeholder's own status. The status of an external stakeholder with whom the firm connects is an indication of that stakeholder's quality. By being associated with a stakeholder of high status the firm can itself enjoy a similarly privileged perception. Status is a principal determinant of influence (Goffman, 1967; Ridgeway, 2006: 301; Ridgeway et al., 1995; Weber, 1968), deference (Turk et al., 1962) and is a reflection of competence (Fiske et al., 1999; Thye, 2000). In the network literature, status can be objectively determined. Status is considered a function of the statuses of those to whom an actor is connected (Bonacich, 1987), i.e., actors connected to high status others are themselves considered to be high status. Status is also reinforcing as the high status of

actors subsequently leads to more connections with other actors of high status. In network

building and evolution, status increases tie formation (Hallen, 2008; Podolny, 2001) and

facilitates the formation of bridging ties and "pendant ties" to network isolates

(Amburgey, Al-Laham, Tzabbar, & Aharonson, 2008). Further, in exchange events,

status affords *ex ante* exchange benefits and greater benefit in repeated transactions (Thye

et al., 2006). Therefore, associating with high status stakeholders may afford the firm the

ascribed benefits of influence, deference, perceived competence, and favorable *ex ante*

conditions for subsequent firm-stakeholder negotiations, and may also set the tone for

long-term cooperative events and the formation of ties with new stakeholders.

> *H3a.* *Firms with more ties to higher status stakeholders will experience*
>
> *increased cooperation and decreased conflict with existing external*
>
> *stakeholders.*
>
> *H3b.* *Firms with more ties to higher status stakeholders will be more likely to*
>
> *form a new tie with an external stakeholder.*

Stakeholder's own degree of cooperation. An uncertain environment is often

characterized by mistrust and conflict. In such an environment, the ability to elicit

cooperation and reduce potential conflict with other alters (stakeholders) can be a key

driver of performance. Thus, ties to stakeholders who are themselves cooperative with

their peers is an important measure of quality that can be ascribed to the foreign firm

through its associations and observed by peer stakeholders. The cooperation construct has

been explored within the literature on networks particularly with regard to friendship

dynamics and behavioral outcomes of friendship (Heider, 1944; Newcomb, 1981;

Snijders et al., 2003). The degree of cooperation between an external stakeholder with

whom the firm forms a tie and its peers is an indication of that stakeholder's ability to foster cooperation or to cooperate and to avoid or mitigate conflict. Forming ties to more cooperative stakeholders will enhance the investing firm's likelihood of inducing and extending its own cooperation with these peer stakeholders. Alternatively, forming ties to external stakeholders engaged in more conflict will enhance the risk of inducing and extending its own conflict with these peer stakeholders.

> *H4a.* *Firms with more ties to more cooperative stakeholders will experience increased cooperation and decreased conflict with existing external stakeholders.*

> *H4b.* *Firms with more ties to more cooperative stakeholders will be more likely to form a new tie with an external stakeholder.*

Joint Activity. The actions of the firm are considered visible demonstrations of the firm's policies, practices, values, ethics, and commitment to stakeholders and therefore the firm's actions within the network alters how it is broadly perceived. Scholars of corporate social responsibility, stakeholder engagement and business ethics have argued that specific characteristics of a firm's interactions with its stakeholders will alter the perception of the investing firm by the stakeholders with whom it is tied as well as by peer stakeholders with whom it does not yet possess a tie (Post et al., 2002b; Zandvliet, 2004). An important insight from the literature on community development and participatory models of political governance to the behavior of firms with stakeholders is a hierarchy of interactions ranging from one-way communication to joint and reciprocated activity (Arnstein, 1969; Choguill, 1996). I also argue that relationships based on joint participatory activities with stakeholders will signal high quality to third

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party actors (as well as demonstrate values and commitment to existing stakeholders) and improve stakeholder network dynamics.

Understanding the importance of their actions to their subsequent ability to engender political support, firms often seek to positively influence stakeholders by engaging in actions that result in observable and objective outcomes, particularly infrastructure development and philanthropy. An important insight from the development literature is that the often generous philanthropic efforts and impressive infrastructure development projects fail to (consistently) gain and or sustain stakeholder support as these initiatives are often identified and implemented solely by the firm without prior consultation or ongoing engagement with stakeholders. The lack of consultation and effective engagement heightens the sense of mistrust and suspicion from stakeholders thus increasing the risk of adverse action against the firm by stakeholders.

Scholarship on citizen and political participation suggest relations are improved through participatory engagement (Buchy et al., 2001) that builds trust between actors, engenders feelings of empowerment (Arnstein, 1969) or of "being heard" (Craig, 1979; Ginsberg, 1982), and builds a shared or common identity (thus overcoming the "us" verses "them" mentality). By encouraging broad and inclusive participation and relationship-building in their dealings with stakeholders, foreign firms can develop the benefits of social capital, a concept widely associated with trust (Putnam, 1993).

> *H5a. Firms with more ties to stakeholders with which they engage in reciprocal joint actions will experience increased cooperation and decreased conflict with existing external stakeholders.*

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H5b.   *Firms with more ties to stakeholders with which they engage in reciprocal*

joint actions will be more likely to form a new tie with an external

stakeholder.

Podolny (2001) highlighted that in environments characterized by high firm

egocentric uncertainty, a firm should focus on information gathering and management

whereas in environments characterized by high altercentric uncertainty, a firm should

focus on managing how it is perceived by alters. I empirically explore the question of

which of these strategies is most important for firms entering into and operating in

nonmarket environments characterized by both high egocentric and altercentric

uncertainty.

DATA AND METHODS

Sample, Data Construction, and Unit of Analysis

I explore how firms mitigate both their own egocentric uncertainty and

stakeholder altercentric uncertainty in the context of entrepreneurial firms in the global

gold mining industry. I define a stakeholder "event" as any media-reported instance in

which an actor or organization acts or expresses sentiment towards another actor or

organization that connotes cooperation or conflict. I draw upon extensive research in

international relations examining the escalation of inter-state conflict and cooperation to

identify relevant verbs and verb phrases and code them on a scale of conflict and

cooperation.

Mining is widely considered one of the most socially irresponsible and

environmentally rapacious industries. Due to this perception, mining firms often face

significant conflict with a diverse set of relatively powerful external stakeholders

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including, NGOs, governments, multilateral agencies, legal practitioners, environmentalists, development specialists and members of the community in which the mine is situated. Further, the high price of gold increases tensions among firms, governments and communities over who can and should legitimately extract and appropriate the large economic rents. In fact, my prior research demonstrates that variation in the degree of cooperation with external stakeholders explains twice as much variance in market capitalization for these companies as does variation in the net present value of the gold reserves these firms ostensibly control (Henisz et al., 2011). Given the importance of stakeholder conflict and cooperation to firm performance, this context is well-suited to my analysis of strategies to enhance cooperation and reduce conflict.

My sample is the population of firms listed on the Toronto Stock Exchanges (TSX) who own and operate up to three mines primarily containing gold in emerging markets. The sample includes 19 firms who operate 26 mines in 20 countries. Of all publicly-traded mining firms, 58%[4] are listed on the TSX providing some assurance that I have a representative sample of global entrepreneurial mining firms investing outside of their home country. The restriction on the numbers of mines owned and operated made the task of coding the full population of stakeholder events tractable as compared to a potential expansion of my sample to include a greater number of mid-cap and major mining companies.

I gather longitudinal panel data on the population of dyadic events reported in the media between firms operating the mines and media-relevant stakeholders (i.e., I rely

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[4] TSX Mining Sector Sheet (as of October 12, 2011)
http://www.tmx.com/en/listings/sector_profiles/mining-pdac.html

upon the media to define the set of actors and organizations that have a political, social or economic stake in the mine) as well as the events between stakeholders themselves. For each mine, I create a corpus of news articles by extracting those articles that reference both the firm and the mine from the full set of media documents in the comprehensive FACTIVA[5] database. No temporal restrictions are employed and thus each corpus of articles contains all stakeholder events documented in FACTIVA from entry to exit for each mine of each firm in my sample thereby enabling longitudinal study of the firm's events with stakeholders in each host country environment. For each mine's corpus of articles, every sentence of every article is read and all stakeholder events are hand-coded according to a detailed coding protocol adapted from coding protocols widely employed in international conflict studies (Bond, Bond, Oh, Jenkins, & Taylor, 2003; King & Lowe, 2003b) (see Appendix 2.1).

Events in my database vary by their degree of cooperation or conflict. I distinguish between the initiator of the event and the target of the event by coding which source actor did what to or expressed what sentiment towards which target actor. For example, consider a sentence from a fictional New York Times article dated February 13, 2000 that states "Yesterday, Greenpeace accused Firm X of causing environmental damage," the SOURCE actor is *Greenpeace*, the TARGET actor is *Firm X*, and the VERB or VERB PHRASE is *accuse*. To obtain a longitudinal view of events between firms and stakeholders and among stakeholders for each mine, I also code the reported date of each article and the date each stakeholder event occurred, e.g., in the NYT article

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[5] FACTIVA comprises over 28,000 information sources from over 157 countries as well as almost 600 continuously updated newswires of which 147 specifically cover the global "Metals and Mining" sector.

example given above the reported date is February 13, 2000 while the event date (reported as "yesterday") is February 12, 2000. Appendix 2.2 provides more examples of the coding.

My stakeholder events dataset is coded from 22,229 articles (i.e., an average of almost 1,000 articles per mine, ranging from roughly 300 to 2,700 articles per mine) which yields 51,754 stakeholder events linking 4,623 unique stakeholders. The number of stakeholder events per mine ranges from 97 to over 6,600; the number of stakeholders per mine ranges from 19 to just over 1,000; the number of unique ties ranges from 20 to over 800; and the number of years of the life of the mine range from 2 to 16 years. Based on these characteristics, this novel dataset of stakeholder events provides a comprehensive view of the dynamic events within firm-stakeholder networks and facilitates valid and objective quantitative analysis. Table 2.1 provides the summary statistics of the stakeholder dataset.

To empirically measure conflict and cooperation between firms and stakeholders and among stakeholders themselves, I code the verbs or verb phrases of each event using a conflict-cooperation scale—a modification of the Goldstein (1992) weighted events conflict-cooperation scale altered to apply to events between firms and stakeholders in the business context. The Goldstein conflict-cooperation scale is based upon McClelland's (1971) World Events Interaction Survey (WEIS) which groups international relations events into 22 verb categories ranging from conflictual to cooperative using verbs such as "accuse," "promise," "threaten." My modified conflict-cooperation scale is a measure of the degree of cooperation or conflict between firms and stakeholders and among stakeholders and ranges from conflictual events of value 1,

denoting the launch of violent attacks with actual or potential serious deaths or injury, through highly cooperative events of value 20, denoting the provision of armed support or defense (see Appendix 2.3).

The modified conflict-cooperation scale is richly populated by a lexicon of over 11,000 verbs and verb phrases. Each coded stakeholder event from the media is categorized along the modified conflict-cooperation scale (i.e., valued according to the degree of cooperation or conflict in the relation between the source and target actor) using a fuzzy matching technique which matches the verb or verb phrase used within the media-reported event to a verb or verb phrase within the lexicon of verbs and verb phrases. For ambiguous or politically-nuanced verbs or verb phrases, a synonym is used as defined by online dictionaries. For the fictional NYT article example given above, the verb "accuse" is roughly 8 on my conflict-cooperation scale. Events ranging across the scale are observed in my dataset of stakeholder relations, particularly for mines in former conflict zones (e.g., rebel attacks on UN peacekeepers and provision of Zimbabwean armed support to Congo, in the case of Banro Corporation's Twangiza mine in the DRC). However, the majority of stakeholder events lie within the 3 (e.g., arrest, restrain, blockade) through 15 (e.g., rally in support, policy decision in support of the firm or a stakeholder) range. For empirical tractability this modified conflict-cooperation scale is later re-scaled to between -9 and +10, where neutral events are valued 0.

Like similar relational scales applied in international relations and international conflict studies, my conflict-cooperation scale is continuous including both conflictual and cooperative events (i.e., cooperative events and conflictual events are dependent). In my analysis however, following seminal work on multiplex ties (c.f., Farace, Monge, &

Russell, 1977; Lewicki, McAllister, & Bies, 1998), I disaggregate the conflictual and cooperative components of the scale to explore instances when cooperative and conflictual relations are jointly occurring, similar to the Positive Affect Negative Affect Scale (PANAS) [6] widely applied in the literature on organizational behavior which considers positive affect and negative affect as independent constructs.

Using this coding scheme and matching process, I create a longitudinal database of daily, directed source-verb-target events between firms and stakeholders and among stakeholders themselves. Using the source-verb-target events, dynamic depictions of the stakeholder network reflecting the level of connectedness and the degree of cooperation or conflict can be constructed for each mine. Specifically, I am able to capture who is connected to whom by stakeholder events, where each event falls on the scale of conflict and cooperation and, as a result, the average conflict and cooperation for each dyad in the network over a given length of time. The dynamic depiction of each stakeholder network is reflected by snapshots of the events on an annual basis over the life of the mine. Appendix 2.4 is a visual depiction of the events between the firm and stakeholders and events among stakeholders in the stakeholder network of Banro Resources Corporation's Twangiza mine in the Democratic Republic of Congo for the year 2001. For each such snapshot, I use algorithms, as described in more detail below, to derive multiple network-based metrics characterizing the structure of a stakeholder network at a moment in time. To my knowledge, with the exception of work done by Stark and Vedres (2006), few extant studies have constructed stakeholder networks of such depth in the emerging

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[6] The PANAS scale is a "mood" scale, i.e. based on an individual's "moods" and therefore cannot be applied in this study on dyadic relations.

market context, and no extant work of which I am aware applies content analysis of media articles to construct this network.

The use of media articles referencing the firm and mine is important to defining the risk set of stakeholders—i.e., those stakeholders "at risk" of forming an event with the firm or with other stakeholders. Correct specification of the risk set is critical to addressing potential problems of unobserved heterogeneity (Gulati, 1999). Conceptually, all existing local stakeholders within the host country (as well as foreign stakeholders with established relations with a host country such as The United Nations, The World Bank and international non-governmental organizations) are "at risk" of forming ties with the firm and with each other. However, this conceptual set of stakeholders is too broad to be empirically tractable. Arguing that all "relevant" stakeholders have been identified in the media over the life of the mine, I limit my risk set to the actual set of stakeholders referenced in all the articles referencing the mine.

The use of media articles also introduces several points of possible bias, however. An important limitation of note are the unobservable events created in informal networks and connections that happen behind closed doors which, because they are not reported in the media, cannot be taken into account in this dataset. Although these informal events are important to network dynamics (Balkundi et al., 2006) and thus to performance, because the informal events often lead to tangible outcomes (e.g., the formation of alliances or the awarding of grants and permits) which often are reported, I argue that the formal network as seen in the media proxy as the outcomes of the informal ties and connections.

My database of stakeholder events also cannot capture the inherent motivations of the actors. But because firms are unlikely to have first-hand knowledge of the motivations of stakeholders in practice, the absence of an understanding of the underlying motivations is inherent to any host country environment and is therefore an intrinsic unknown variable in any political influence strategy. In addition, as media reportage is limited by cultural and cognitive bias (Zelner, Henisz, & Holburn, 2009), broad generalization across different country environments is limited. However, because my TSX-derived sample includes gold mines in 20 countries, my findings may be more generalizable across different country contexts. Finally, whereas the use of articles written in the spoken language of each country and published by (often smaller) local newspapers may provide more accurate understandings of stakeholder events and also more detailed and nuanced stakeholder events, I am limited by language to the use of only English articles or articles translated into English before posting onto FACTIVA. Finally, given the magnitude of these mines relative to the Gross Domestic Product (GDP) of the countries and the high potential profits successful investors aspire to, I would argue that the combination of translated national, international and industry media provides sufficient coverage of stakeholder events to partially mitigate concerns about national media bias or censorship.

Sociometric data

The database of stakeholder events comprises the source actor, verb or verb phrase, and target actor for each media-reported event. I use this coded stakeholder events database to create sociometric data to construct my network-based measures. I create adjacency matrices representing firm-stakeholder and stakeholder-stakeholder

dyadic events (i.e., symmetric signed and directed data of who is connected to whom) for each rolling three-year period in which the mine is in operation. I use these $n \times n$ adjacency matrixes comprising nodes (stakeholders or the firm) $X = \{1,...,n\}$ to draw network graphs (N,g) of firm-stakeholder and stakeholder-stakeholder events for each three-year rolling window. By convention, the diagonal elements in all my network matrices are 0 (Marsden, 2002).

The adjacency matrix comprises directed and signed firm-stakeholder or stakeholder-stakeholder events, r_{ij}, gathered from the coded event data and scaled according to my conflict-cooperation scale. Events initiated by firm i to stakeholder j and events from j to i are differentiated, i.e., $r_{ij} \neq r_{ji}$. Stakeholders or firms with no events between them are reflected as $r_{ij} = 0$ or $r_{ji} = 0$. Because events are signed and directed actions or expressions of sentiment, to uphold the fidelity of the data, r_{ji} can be 0 while $r_{ij} \neq 0$, e.g., a stakeholder can initiate an adverse action against the firm, but the firm may not have prior events with that stakeholder and may not reciprocate the action or otherwise respond. My event data and resulting networks are sensitive therefore to the (1) direction, (2) polarity (sign), and (3) relative "strength" of the events between the firm and a stakeholder, or between two stakeholders.

Dependent Variables

I use two sets of dependent variables specifically examining (1) the degree of cooperation or conflict between the firm operating the mine and existing stakeholders, and (2) the number of ties formed with new stakeholders. The first dependent variable, the *Degree of Conflict-Cooperation* between the firm i and any stakeholder j in the stakeholder network is the simple mean of the conflict-cooperation scale for all the events

between the firm and that particular stakeholder within any given three-year rolling window. To add richness to the exploration of egocentric and altercentric uncertainty, I also separately analyze the *Degree of Cooperation* and the *Degree of Conflict* between firms and stakeholders. The second dependent variable is the *Number of New Ties* formed between the firm i and any given stakeholder j. The dependent variable *Number of New Ties* formed is simply a count of the number of direct ties between firm i and any *new* stakeholder j with whom the firm has its first ever reported event. I also separately examine the *Number of New Positive (Cooperative) Ties* and the *Number of New Negative (Conflictual) Ties* formed.

Although the sociometric data comprises all events between all the actors within the host country environment during a specified three-year rolling window (i.e., also include stakeholder-stakeholder events), because I seek to examine the events between firms and their stakeholders my dependent variables are limited only to events between the focal firm and any stakeholder thus excluding events only between stakeholders.

Independent Variables

To examine the impact of the firm- and stakeholder-level variables on events between firms and stakeholders, I use (1) firm-based measures which mitigate firm egocentric uncertainty: access to structural holes and firm range across the core-periphery of the network; and (2) altercentric measures of the characteristics of the stakeholders with whom the firm is connected which mitigate altercentric uncertainty faced by other stakeholders: stakeholder status, cooperation and joint activity. I also include a set of controls for country, mine, network and time.

<u>Firm egocentric uncertainty</u>

I use two measures of the firm's strategic network position that afford it information to overcome its egocentric uncertainty: *Structural Holes* and *Core-Periphery.*

Structural Holes. To measure how diverse the firm's sources of information are, I use its access to structural holes (Burt, 1992) in the stakeholder network. Structural holes are defined as network positions that bridge non-redundant actors within the network thereby enabling actors occupying these network gaps to gain brokerage advantages via access to and control of diverse and possibly unique information (Burt, 1992). A position that links stakeholders who are themselves already connected will, by contrast, provide information more likely to be redundant (Burt, 1992). For the firm, connections with stakeholders who are themselves not connected may include ties to new stakeholders within the host country, politicians from different political parties that are not connected, and NGOs which are not connected. use the structural holes constraint measure which is a standard measure in network theory used to determine the firm's *lack of access* to structural holes (i.e., the smaller the value, the greater the firm's access to structural holes). I multiply the measure of structural holes by -1 to determine the impact of the firm's *access* to structural holes and thus to diverse information. I use the formula below to compute this measure for each firm in each time period (Burt, 1992: 54).

$$StructuralHoles_{it} = (g_{ij} + \sum_{k=1}^{n} g_{ik}g_{ki}) * -1 \qquad k \neq i,j$$

Where,

g_{ij} are direct ties between firm i and stakeholders j in the stakeholder network

$g_{ik}g_{ki}$ is the sum of the indirect ties from firm i to all stakeholders k via all

intermediate stakeholders j.

Core Periphery. Stakeholders differ in their location within the network. My *Core*

Periphery measure, per convention, uses a block modeling approach to distinguish

between stakeholders across different sections of the stakeholder network, specifically

those stakeholders at the core of the network and those stakeholders at the periphery of

the network. Primary or more well-known stakeholders are central to the network and are

located at the core of the network while marginalized stakeholders are located at the

periphery of the network (Hart et al., 2004). Due to the different locations of these

stakeholders in the network, these stakeholders have different or more relevant

information. Core stakeholders have redundant but important information and peripheral

stakeholders have more radical or transformative information (Hart et al., 2004). For

example, while ties to high-profile politicians and NGOs may provide the firm with

information on the country's mining and development policies, this information is

relatively widely-known and is thus readily available from various sources. Direct ties to

marginalized communities however, may provide the firm with more relevant location-

specific information, e.g., community expectations of the mine, specific development

needs of the community, and relevant information on other communities surrounding the

mine.

To compute *Core Periphery* I first employ a simple block modeling core-

periphery algorithm provided in UCINET (Borgatti, 2002) which identifies core and

peripheral stakeholders from their location in the network. I then create a ratio of the

number of the firm's stakeholders who are peripheral stakeholders to the number of

stakeholders who are core stakeholders. However, because the core-to-periphery[7] ratio of

the stakeholder network itself may differ by country (i.e., in some countries the network

core could be relatively small or large), I normalize the core-to-periphery ratio of the

firm's network of stakeholders by dividing by the core-to-periphery ratio of the larger

stakeholder network. I include both incoming and outgoing ties in the analysis. *Core*

Periphery values smaller than 1 reflect a higher focus of firm ties on core stakeholders,

while values greater than 1 reflect a greater focus of firm ties on peripheral stakeholders.

Core Periphery is computed as:

$$CorePeriphery_{it} = \frac{\sum x_{it,j-periphery}}{\sum x_{it,j-core}} \bigg/ \frac{\sum x_{Gt,k-periphery}}{\sum x_{Gt,k-core}}$$

Where,

$CorePeriphery_{it}$ is the ratio of core stakeholders versus peripheral stakeholders

who are connected with firm *i* at time *t*, normalized by dividing by the core-

periphery ratio of the stakeholder network itself

G_{jk} is a matrix of events g_{jk}

$x_{it,j-core}$ are firm *i's* stakeholders who are core stakeholders *j* at time *t*

$x_{it,j-periphery}$ are firm *i's* stakeholders who are peripheral stakeholders *j* at time *t*

$x_{Gt,k-core}$ are all stakeholders within the network matrix of events who are core

stakeholders *k* at time *t*

$x_{Gt,k-periphery}$ are all stakeholders within the network matrix of events who are

peripheral stakeholders *k* at time *t*.

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[7] My Core-Periphery ratio is calculated Periphery/Core.

Stakeholder altercentric uncertainty

I use three measures of the characteristics of stakeholder j who is directly connected to the firm which affords the firm high quality and thereby enables it to mitigate the altercentric uncertainty of other stakeholders: *Stakeholder status, Stakeholder cooperation,* and *Joint activity.*

Stakeholder Status. Stakeholder status is a reflection of the importance of a specific stakeholder among other stakeholders in the network. Within a network, each stakeholder's status is proxied by its eigenvector centrality (Bonacich, 1987) based on the premise that the status of a node in a network is a function of the statuses of the nodes with which it is directly tied. Thus the eigenvector centrality measure captures how important stakeholder j is within the political environment based upon the importance of the other stakeholders k who are connected to stakeholder j. The eigenvector centrality utilizes both direct and indirect ties to compute the position of a specific node in the network (Podolny, 1993). A well-connected (i.e., high status) stakeholder is one who is connected to other well-connected (i.e., high status) stakeholders, who are themselves well-connected (i.e., high status). Stakeholder status is computed:

$$StakeholderStatus_{jt} = \lambda e_j = \sum_k G_{jk} \, e_k$$

Where,

G_{jk} is a matrix of events g_{jk} (G_{jk} can be both symmetric or asymmetric) (Bonacich, 1987)

e_j is the eigenvector centrality of stakeholder j

λ is a constant known as the eigenvalue, it is required to ensure equations have a

nonzero solution.

Stakeholder Cooperation. The degree of cooperation (or conflict) exhibited by a

stakeholder j in its events with other stakeholders k is the simple mean degree of

cooperation or conflict of all stakeholder j's ties with all other stakeholders k in the

network (i.e., excluding the stakeholder in the dyadic pair currently under analysis). The

stakeholder's degree of cooperation or conflict is determined from my conflict-

cooperation scale. Stakeholders with high degrees of cooperation are those whose

interactions with other stakeholders are, on average, cooperative. Stakeholders with low

degrees of cooperation (i.e., high degrees of conflict) are those whose interactions with

other stakeholders are, on average, conflictual.

$$StakeholderCooperationConflict_{jt} = \sum_{k=1}^{n} (r_{jkt})/n \qquad (r_{ij} = r_{ji})$$

Where,

r_{jkt} is the degree of cooperation or conflict in the event between stakeholder j and

any other stakeholder k in the network at time t

n is the number of stakeholders k in the stakeholder network.

Joint Activity. To empirically analyze how firms act with stakeholders, i.e.,

measure the tenor of the events between the firms and stakeholders, I also code the

engagement activities stated in the media.[8] These engagement activities are coded along

an engagement hierarchy. I developed this engagement hierarchy using insights gathered

from in-depth interviews on stakeholder engagement with practitioners and specialists in

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[8] The type of engagement is coded as part of the stakeholder events database.

the development community (i.e., NGOs, World Bank and other multilateral organizations, consultancies), academic scholars, as well as lessons from the literatures on corporate social responsibility, stakeholder engagement, and citizen participation. The engagement hierarchy progresses from superficial (i.e., communication, financial or transactional) engagement through engagement that requires firms to more deeply involve and collaborate with stakeholders. At one end of the continuum are announcements, meetings, data gathering, payment, activity, claims and requests. At the other end are monitoring and evaluation and the production of a good or service (e.g., executives from the mine and the community building a new community center together). In addition, within each category of engagement, I code whether the activity is unilateral (i.e., a firm makes an announcement), bilateral (i.e., a firm and government make a joint announcement), or multilateral (i.e., a firm, the United Nations, Government and local NGO meet to jointly discuss regional development). See Appendix 2.5 for the full coding scheme.

Although the types of events are coded along this engagement hierarchy, the hierarchy is not numerically scaled. I therefore compute joint activity by identifying all joint actions between the focal firm and stakeholders within each three-year rolling window and create a measure of the proportion of joint activities between firms and stakeholders to all activities between firms and stakeholders. Joint activity is computed:

$$Joint\ Activity_{ijt} = \frac{\sum c_{it,p-fs}}{\sum c_{it,p}}$$

Where,

$c_{it,p-fs}$ is a count of the number of joint firm and stakeholder activities for firm i

at time t

$c_{it,p}$ is the total number of activites between stakeholders and firm i at time t.

Control variables

I include variables controlling for country, firm, mine and network factors in the

empirical analyses. At the country-level, I include a measure of "Voice" within the host

country—essentially, a measure of the freedom of the media and freedom of speech

within each country. I obtain this perception-based measure from the World Bank

Institute's World Governance Indicators (WGI)(Kaufmann, Kraay, & Mastruzzi, 2010).

This measure is obtained from statistical compilation of surveys from a wide variety of

civil society actors, including NGOs, think tanks, international organizations and industry

experts, within different countries.

At the level of the firm, I control for the firm's percentage ownership of the mine.

This percentage is a measure of how much ownership the focal firm has at stake relative

to other owners of the mine. As my sample is limited to small firms, many with only 1, 2

or 3 mines, the loss of a mine has a significant adverse impact on the value of the firm.

The percentage of ownership may also impact how the government will perceive the

mine; for example joint ventures may decrease the level of government interference.

At the mine level, I control for the development stage of the mine in terms of

whether the mine is in exploration, feasibility, construction, production or the mining

process has been suspended. Because exploration and feasibility are relatively early

stages prior to the significant outlays of resources by firms to develop the mine, I code

the binary Mine Status (Construction and Production) variable which is coded 1 if the

mine is at the construction or production stage, and 0 otherwise. Also, because the suspension of a mine is a significant event with performance implications, and because the suspension of the mine can occur at any stage of the mine development and mining process, I code the Mine Status Suspension variable which is a binary variable coded 1 if the mine has been suspended within that year or not.

I also control for the price of gold. This variable is particularly important as the price of gold has risen sharply over the past few years passing $500 per ounce for the first time in December 2005, $1,000 per ounce in March 2008, and toping $1,900 an ounce in August 2011. As gold is used as a hedge in times of financial crisis, the sharply rising price of gold heightens tensions over who has the right to appropriate this value and may thus significantly impact relations between firms and stakeholders.

As a robustness measure, I also include a measure of the value of the mine[9] in proportion to the host country gross domestic product. This measure is important as firms operating larger more valuable mines are more likely to face greater tensions and opposition from stakeholders. However, because the value of the mine can only be computed once the firm is listed on one of the Toronto Stock Exchanges, much of the media-reported stakeholder event precedes the periods in which the mine is valued. Therefore the periods in which the mine valuation occurs, for this study, present a biased sample of relations between firms and stakeholders.

Due to the nature of the mining industry and the political salience of gold mining in particular, the global gold mining industry plausibly has networks of relations that are more diverse and more dense than networks of stakeholder relations for firms in other

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[9] For the valuation model see Henisz, Dorobantu, Nartey, 2011

industries. I therefore control for the density of interactions in this industry by including a measure of the potential number of ties that could be formed by actors in the networks. I first compute the total possible number of directed ties that could be formed given the number of actors (both firms and stakeholders) in the network:

$$TotalPossibleTies_{gt} = x_{gt} * (x_{gt} - 1)$$

Where,

x_{gt} is the number of actors in the network at time t.

I then obtain a count of the ties not formed by subtracting a count of the existing directed tie relations in each network at time t from the total number of possible ties that could be formed at time t based on the number of actors in the network. Although my stakeholder dataset includes multiple ties to the same actor, for this computation, I do not count the number of directed ties between actors but rather, if 1 or more directed ties exist between two actors, i.e., an actor k with multiple ties to another actor j is counted only as 1 tie from k to j. If actor j reciprocates with one or more ties to actor k, that relation is also counted as 1 tie.

I next create a proportion of these ties by dividing the number of ties not formed by the total number of possible ties.

$$PotentialTies_{gt} = \frac{\sum TiesNotFormed_{gt}}{\sum TotalPossibleTies_{gt}}$$

Where,

$Ties\ Not\ Formed_{gt}$ is the total number of possible new ties that can be formed among actors in a network g at time t

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$TotalPossibleTies_{gt}$ is the total number of directed ties that could exist in a

network of actors g at time t.

Importantly, I then lag this variable to obtain a measure of the potential ties in the

previous time period.

To control for the media-based data, I control for stakeholder events reported by

major news outlets as this will have an impact on how widely the news is reported. The

media source of the event (i.e., the name of the newspaper or media outlet) is coded in the

stakeholder events database. I then use the media categories reported by FACTIVA to

determine whether the reported media source is a major news outlet or not. For each

network (i.e., mine-subperiod), I create a measure of the proportion of stakeholder events

reported by major news outlets from the total number of reported stakeholder events.

I also control for two additional cultural distance and media-related factors that

may impact relations between firms and stakeholders. The first is a control for whether

the country in which the mine is located speaks English as one of its official languages.

This is important as media reports from English speaking countries may more fully

reflect the relations between firms and stakeholders and therefore the media reports may

be more accurate in their depictions of stakeholder relations. Further, a host country

environment that officially governs in the English language may be an easier host country

environment for Canadian mining executives to strategically relate with stakeholders. My

measure of English Language is a binary variable coded 1 for English as the Official

Language and 0 otherwise. I obtain this data from the CIA's World Fact Book website.[10]

The second distance-based control is the measure of the distance between Toronto,

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[10] https://www.cia.gov/library/publications/the-world-factbook/

Canada where the firm is listed on the TSX and the capital city of that host country. I obtain the measures of distance from the Indo.com website.[11]

Finally, I also include indicator variables for year and mine.

Models

Degree of Conflict and Cooperation. As my event data is an unbalanced panel and my first dependent variable—*Degree of Cooperation* and *Degree of Conflict*—is a continuous scaled variable, I use a tobit model (xttobit) with fixed effects for mine and year. My panel variable is specified as the mine(firm)-stakeholder dyad within each mine. I fit the following model:

$Degree\ of\ Conflict - Cooperation_{ijt}$

$$= B_0\alpha_{jit} + B_1 FirmStructuralHoles_{jt} + B_2 FirmCorePeriphery_{it}$$

$$+ B_3 StakeholderCooperation_{jt} + B_4 StakeholderStatus_{jt}$$

$$+ B_5 JointActivity_{ijt} + Controls\boldsymbol{B} + \varepsilon$$

Number of New Ties. My event data is an unbalanced panel and the dependent variables for all new ties formed between the firm and individual stakeholders are count variables. I use the 'xtqmlp' procedure written by Tim Simcoe[12] which corrects the standard errors from a fixed effects Poisson model for overdispersion (Rysman & Simcoe, 2008) addressing concerns on interpreting a conditional fixed effects negative binomial model as a true fixed effects estimator (Wooldridge 1999, Allison and Waterman 2002). The use of the of the traditional Poisson regression with year fixed

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[11] http://www.indo.com/distance/index.html
[12] This procedure is publicly available for download at http://scripts.mit.edu/~pazoulay/docs/xtqmlp.ado. The xtpoisson with fixed effects and robust standard errors is equivalent to the fixed-effects Poisson (Quasi-ML) regression (xtpqml stata module) with robust standard errors created by Tim Simcoe.

effects and robust standard errors clustered by each unique firm-stakeholder group is a similar and also appropriate empirical model to employ. I re-estimate the model shown above with the *New Ties* dependent variable.

For both the main Degree of Conflict-Cooperation and New Ties Formed empirical specifications, I also run the disaggregated Degree of Cooperation, Degree of Conflict, New Positive Ties and New Negative Ties specifications. For all the full and disaggregated Degree of Conflict-Cooperation and New Ties Formed empirical specifications, I run three models: first, the model with only the two firm egocentric mitigating variables (structural holes and core-periphery); second, the model with only the three stakeholder altercentric mitigating variables (stakeholder status, stakeholder cooperation and joint activity); and third, the joint model with all the firm-level egocentric uncertainty variables and the stakeholder-level altercentric uncertainty variables. All models are run using Stata 11.

RESULTS AND DISCUSSION

Tables 2.2 and 2.3 present the descriptive statistics and correlations for the variables in the two sets of analyses. Table 2.4 presents the results for the analyses of the *Degree of Conflict-Cooperation* estimation model and Tables 2.5 and 2.6 present the results of the disaggregated Degree of Cooperation and Degree of Conflict models, respectively. Table 2.7 presents the results of the *New Ties* estimation models, and Tables 2.8 and 2.9 present the results of the disaggregated New Positive Ties and New Negative Ties models, respectively.

In the Degree of Conflict-Cooperation and the disaggregated Degree of Cooperation models, Models 1, 2 and 3 present the results of the base specifications,

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Models 4, 5 and 6 present the results of the base specifications with mine and year fixed

effects, Models 7, 8 and 9 include the major media outlets variable, Models 10, 11 and 12

include the mine status variables, and Models 13, 14 and 15 present the base models all

control and robustness variables: major media, mine status and mine and year fixed

effects variables. I then present the models including the Mine Value variable. Models

16, 17 and 18 present the results including the Mine Value (NPV) to the base model with

mine and fixed effects, and Models 19, 20 and 21 present the results of full model, all the

robustness variables and the Mine Value variable. Due to the nature of the mining

industry in which firms often engage in exploration and feasibility studies prior to listing

on the TSX, my dataset of media-reported events on firm-stakeholder relations precedes

the valuations of the firms. Analyses of the data indicate a sample bias when only the

observations using NPV are included in the model. Due to this bias, I discuss the results

of the full model, including all other variables with the exception of the Mine Value (i.e.,

Models 13, 14 and 15). However, as the value of the mine is a variable of importance

within the mining, I also present the models with the NPV.

For each set of Degree of Conflict-Cooperation and Degree of Cooperation

models, the first column presents the results of models including only the firm egocentric

variables (Firm Structural Holes and Firm Range), the second column presents the results

of models including only the stakeholder altercentric variables (Stakeholder Cooperation,

Stakeholder Status and Joint Activity), and the third column presents the results of the

joint models including both the firm egocentric and stakeholder altercentric variables. In

the disaggregated Degree of Conflict models, I present only the full models (i.e., the

separate models of the stakeholder altercentric and firm egocentric variables are not included).

Due to the robust nature of the results across the Degree of Conflict-Cooperation and Degree of Cooperation models, I discuss the results presented in Models 13, 14 and 15—i.e., the base model, with mine and year fixed effects and all the robustness variables. For the Degree of Conflict models, the base model, with mine and year fixed effects and the robustness variables are presented in Model 5 which I discuss.

I begin with a brief discussion of the impacts of the control and robustness variables on the aggregated Degree of Conflict-Cooperation between firms and stakeholders. The only variable that significantly impacts the aggregated degree of conflict-cooperation between firms and stakeholders is country Voice. The positive impact of voice implies that a country environment characterized by relatively high degrees of public discourse and freedom of speech has a significant and positive impact on the degree of conflict and cooperation between firms and stakeholders. In the disaggregated degree of cooperation model, Voice, the type of media, in addition to the status of the mines (construction and production and even the suspension stages) are all factors that significantly and positively impact the degree of cooperation between firms and stakeholders. The degree of conflict is significantly and negatively impacted by Voice.

I next explore the impact of the variables that mitigate egocentric and altercentric uncertainty on the *Degree of Conflict-Cooperation* analyses. H1a is supported in the egocentric uncertainty model as access to *Structural Holes* significantly and positively impacts the degree of conflict and cooperation between the firm and its existing

stakeholders. This finding supports the empirical findings of Podolny (2001) that firms whose networks are rich in structural holes overcome egocentric uncertainty. By overcoming this egocentric uncertainty through their access to new information by bridging structural holes, these firms increase cooperation and decrease conflict with existing stakeholders. The economic significance of a one standard deviation increase in a firm's access to structural holes is associated with a predicted change in its dyadic conflict-cooperation of 0.379 (i.e., a move from 10 to almost 10.4 on the 20-category conflict-cooperation scale) which is equivalent to 12% of one standard deviation of the dependent variable.

H2a is also supported in the egocentric uncertainty model as access to stakeholders who span the *CorePeriphery* significantly impacts the degree of conflict and cooperation with existing stakeholders. Of interest however, is that the sign of the *CorePeriphery* variable is negative. The economic significance of a one standard deviation increase in the firm range in terms of access to actors in the core and periphery of the network is associated with a reduction in its dyadic conflict-cooperation of 0.158 (i.e., a move from 10 to 9.842 on the 20-category conflict-cooperation scale) which is equivalent to 5% of one standard deviation of the dependent variable. This indicates that firms who have a greater degree of their ties to peripheral stakeholders decrease cooperation and increase conflict with their existing stakeholders, while ties with core stakeholders increases cooperation and decreases conflict between the firm and existing stakeholders. This finding implies that while radically new information, perhaps from a wide number of stakeholders, is significant, this radical information may be a source of tension and conflict as firms may find it difficult to manage stakeholders who have

disparate information. Therefore, it is important for firms to form ties to stakeholders who have access to new information, but these ties must be carefully and strategically managed by a greater number of ties to core stakeholders who are more central and have more 'mainstream' ideas and information than those stakeholders at the periphery of the network.

Examining the stakeholder altercentric mitigating variables—*Stakeholder Cooperation*, *Stakeholder Status* and *Joint Activity*—on the Degree of Conflict-Cooperation with existing stakeholders, I find empirical support for H3a (Stakeholder Cooperation) and H4a (Stakeholder Status), that both variables significantly and positively impact the degree of conflict and cooperation with existing stakeholders. I however do not find empirical support for H5a (Joint Activity). These findings suggest that the characteristics of the stakeholders to whom the firm is connected, specifically how cooperative these stakeholders are and the status of these stakeholders, as determined by their relations with other stakeholders, are important mitigating factors of the altercentric uncertainty stakeholders in the environment face about the firm. A one standard deviation increase in stakeholder status is associated with a predicted increase in dyadic conflict-cooperation of 0.253 which is equivalent to 8% of one standard deviation of the dependent variable. A one standard deviation increase in the degree of stakeholder cooperation is associated with an increase in the dyadic conflict-cooperation of 9.075 which is equivalent to 287% of one standard deviation of the dependent variable (i.e., a significant move from 10 to 19 on the 20-category conflict-cooperation scale).

To answer the question of the relative importance of these two sets of variables, I examine the results in the full model (Model 15 in Table 2.4). In this model, both firm

egocentric uncertainty mitigating variables, *structural holes* and *core-periphery*, lose

their significance with the introduction of the stakeholder altercentric uncertainty

mitigating variables: *stakeholder status*, *stakeholder cooperation* and *joint activity*.

However, in the full model, the altercentric uncertainty mitigating variables *stakeholder*

cooperation and *stakeholder status* remain statistically significant and positive. In the

joint model, the economic significance of stakeholder status remains unchanged while the

economic significance of stakeholder cooperation increases marginally. Therefore, in the

face of both ego and altercentric uncertainty the greater return to the firm is to manage

the altercentric uncertainty of stakeholders.

The disaggregated models of Degree of Cooperation present a similar pattern of

results to those of the full models of Degree of Conflict-Cooperation. The firm egocentric

uncertainty mitigating variables, *structural holes* and *core-periphery*, are significant

when only these variables are included in the model, supporting the hypotheses that firms

whose networks are rich in structural holes increase cooperation with stakeholders, while

firms with ties to core actors increase cooperation with stakeholders. In only the

egocentric models, a one standard deviation increase in access to structural holes is

associated with an increase in the predicted dyadic cooperation of 0.166 degrees of

cooperation which is equivalent to 9.0% of one standard deviation of the dependent

variable. A one standard deviation increase in spanning core-periphery is associated with

an increase in the predicted dyadic cooperation of 0.09 which is equivalent to 4.9% of

one standard deviation of the dependent variable.

The stakeholder altercentric uncertainty mitigating variables, *stakeholder status*

and *stakeholder cooperation* are also significant and positive in the models with only the

stakeholder-level variables, supporting the hypotheses that associating with high quality stakeholders in terms of their status and degree of cooperation mitigates stakeholder altercentric uncertainty and increases firm cooperation with stakeholders. In addition, the positive and significant impact of joint activities with stakeholders indicates that firms who engage in deeper engagement activities with stakeholders mitigate altercentric uncertainty and increase cooperation. A one standard deviation increase in stakeholder status is associated with a predicted increase in cooperation of 0.13 which is equivalent to an increase of 7.1% of one standard deviation of the dependent variable. A one standard deviation increase in stakeholder cooperation is associated with a predicted increase in cooperation of 2.695 which is equivalent to an increase of 146% of one standard deviation of the dependent variable. A one standard deviation increase in joint activity is associated with a predicted increase in dyadic cooperation of 0.14 which is equivalent to an increase of 7.8% of one standard deviation of the dependent variable.

When all egocentric and altercentric variables are included in the full disaggregated cooperation model, both firm egocentric structural holes and core-periphery variables lose their significance while all three stakeholder altercentric mitigating variables remain significant and positive. The economic significance of these variables on cooperation between firms and stakeholders remain high. A one standard deviation increase in *stakeholder status* is associated with a predicted increase in stakeholder cooperation of 0.13 which is equivalent to 7.4% of one standard deviation of the dependent variable. A one standard deviation increase in *stakeholder cooperation* is associated with a predicted increase in stakeholder cooperation of 2.695 which is equivalent to 146% of one standard deviation of the dependent variable. And, a one

standard deviation increase in *joint activity* is associated with a predicted increase in stakeholder cooperation of 0.15 which is equivalent to 8.3% of one standard deviation of the dependent variable.

The disaggregated Degree of Conflict models present an interesting alternative scenario. In the full models including both egocentric and altercentric mitigating variables, conflict is statistically significantly impacted by having networks with a greater proportion of ties with core stakeholders, though these results have marginal economic significance. Conflict is also predicted to increase as the firm increases its cooperation with other stakeholders. A one standard deviation increase in conflict-cooperation with other stakeholders is associated with a predicted increase in stakeholder conflict of 1.5 degrees which is equivalent to 88% of one standard deviation of the dependent variable. Conflict is, however, negatively associated with engagement in *joint activity* with a one standard deviation increase in this independent variable associated with a predicted decrease in conflict of 0.125 degrees which is equivalent to 12% of one standard deviation of the dependent variable.

These findings have interesting implications for relations between firms and stakeholders. Insights from the aggregated degree of conflict-cooperation model allude to the question of which stakeholder attribute might be a more important indicator of high quality to stakeholders (at least in the global mining domain), i.e., the characteristics of the stakeholders versus the activities of the firm with and towards stakeholders. While 'how' firms act with stakeholders is an important attribute of quality, these results suggest that the characteristics of the stakeholders associated with the firm is a relatively higher indicator of quality with greater economic impact on the degree of conflict and

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cooperation between the firm and stakeholders. Importantly, the insights from the disaggregated Degree of Cooperation and Degree of Conflict models have implications for how firms should act when facing different types of stakeholders. For example, in environments where the firm has already garnered significant support, to increase that support the firm should focus on only the stakeholder altercentric strategies of forming ties to high status and highly cooperative stakeholders while also engaging in joint activities with these stakeholders. Conversely, in times of crisis when the firm is facing hostile stakeholder relations, the strategy to decrease conflict should be to engage in joint activities with peripheral stakeholders.

I continue with a discussion of the results of the Ties Formed empirical models. Models 1, 2 and 3 present the results of the base model, Models 4, 5 and 6 present the results controlling for the type of media, Models 7, 8 and 9 present the results of models including both mine status variables, and Models 10, 11 and 12 present the base models with the media and mine status variables. The Mine Value variables are introduced into the base models in Models 13, 14 and 15 and into the full model in Models 16, 17 and 18. Again, due to the biases of the sample including the mine value, I discuss the full models presented in Models 10, 11 and 12 for the All New Ties, New Positive Ties and New Negative Ties models. As with the aggregated and disaggregated Degree of Conflict-Cooperation models, for each set of results, I first present the separate results of the egocentric uncertainty (first column) and altercentric uncertainty models (second column) and then present the results for the joint egocentric and altercentric model (third column).

Beginning with a brief discussion of the control variables in the aggregated and disaggregated New Ties models, I find country voice significantly and negatively impacts

tie formation (all new ties, positive new ties and negative new ties) when included in the firm egocentric model but has no impact when included in the stakeholder altercentric uncertainty model. In the joint egocentric and altercentric uncertainty model, country Voice significantly (weakly) and positively impacts the formation of positive ties, but has no impact on the formation of new ties generally, nor on the formation of negative ties. The previous structure of the network (i.e., in terms of the available possible ties that could be formed), and the price of gold significantly decrease the formation of all new ties, including both positive and negative ties in both the stakeholder altercentric uncertainty and the joint egocentric and altercentric models. In only the egocentric uncertainty models, previous network structure has a positive and significant impact on all tie formation, and the formation of positive new ties, but no impact on the formation of new negative ties. In the egocentric uncertainty models, the price of gold has no impact on tie formation (all, positive or negative ties). Whether the stakeholder events are, on average, reported by a major media outlet significantly (weakly) and positively impacts the general formation of new ties (only in the joint egocentric and altercentric uncertainty models), but has no significant impact on whether these new ties are positive or negative. The stage of development of the mine also significantly impacts the formation of ties. At the construction and production stages, the formation of all new ties and new positive ties significantly decreases. But at the construction and production stages there is no impact on the formation of new negative ties in the stakeholder altercentric and joint ego-altercentric models. Interestingly, at the construction and production stages, the formation of negative ties is significant and positive when only the egocentric model is considered. This positive result is lost (i.e., there is no significant

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formation of negative ties) when the stakeholder altercentric variables are introduced. As expected, the suspension of a mine results in a significant decrease in the formation of new positive and new negative ties between firms and stakeholders in the egocentric, altercentric and joint models. However, in the stakeholder altercentric and joint models there is a significant but positive increase in the formation of all new ties (regardless of sign) at the mine suspension stage.

Moving to the analysis of the impact of the altercentric and egocentric variables on the aggregate *New Ties* formed with new stakeholders, H1b is supported in the separate egocentric uncertainty model, i.e., the firm's access to *structural holes* significantly impacts the formation of ties with new stakeholders. By having access to unconnected actors, the firm can significantly increase the formation of ties to stakeholders with whom it has never been previously connected. This may be because the stakeholders themselves may be bridging structural holes to other different types of stakeholders with whom the firm can form new ties. In fact, by forming ties to unconnected stakeholders, these stakeholders may 'refer' the firm to other stakeholders it can connect to. This finding supports extant theoretical and empirical research on the relationship between access to structural holes and the mitigation of egocentric uncertainty (Benjamin & Podolny, 1999; Podolny, 1993, 2005). By contrast, H2b is not supported as the firm's range of ties to peripheral or core stakeholders in the network has no impact on the formation of ties with new stakeholders in the separate egocentric uncertainty model.

Examining the results of the stakeholder altercentric characteristics on the formation of *New Ties*, I find support for only H4b, that the degree of cooperation of the

stakeholders with whom the firm is connected significantly and positively increases the formation of new ties with other stakeholders. Neither H3b (associations with stakeholders of high status) nor H5 (joint activity with stakeholders) have a significant impact on the formation of new ties.

Exploring the question of the relative importance of these two sets of egocentric and altercentric variables, I again find that access to *structural holes* loses its significance when included in the joint model with the stakeholder variables mitigating altercentric uncertainty. Although not significant in the models without the altercentric variables, in the joint model the *core-periphery* variable is significant and positive. In terms of economic significance, a one standard deviation increase in *core-periphery* is associated with a predicted change in the number of new ties of 0.9 ties which is equivalent to 16% of one standard deviation of the dependent variable. That is, firms whose networks include a greater proportion of ties with peripheral stakeholders significantly increase the formation of ties with new stakeholders. Forming ties to stakeholders with high cooperation remains significant and positive with a high economic significance. A one standard deviation increase in the conflict-cooperation with other stakeholders is associated with a predicted increase of 7.5 new ties which is equivalent to 131% of one standard deviation of the dependent variable. Therefore for firms seeking to increase tie formation with stakeholders, the strategy should focus on associating with stakeholders of high cooperation while targeting tie formation with peripheral actors.

An examination of the results of the Positive New tie formation models shows a very similar pattern of results. When considering only the egocentric uncertainty mitigating variables, firms whose networks afford greater access to structural holes form

more positive ties. When considering only the stakeholder altercentric uncertainty variables, firms who associate with stakeholders of high degrees of cooperation form more positive new ties. In the joint egocentric and altercentric uncertainty models, while the structural holes variable loses its significance, the stakeholder conflict-cooperation variable remains significant, implying that forming ties with stakeholders who are highly cooperative significantly and positively increases the formation of positive ties. The economic significance of ties to highly cooperative stakeholders roughly doubles in magnitude. As with the formation of All New ties, the core-periphery variable is significant and positive in the joint model (although not significant in the model with only egocentric variables), implying that firms whose stakeholder networks span a broader network range form a significantly greater number of positive ties than those firms whose networks do not include peripheral actors. The economic significance of spanning the core and periphery also increased substantively, here by 63% (i.e., 2.6 new positive ties). An interesting difference from the joint All New ties model is the significant and positive relationship between associating with stakeholders of high status and the formation of positive new ties. A one standard deviation increase in stakeholder status is associated with a predicted increase of 5.6 positive new ties which is equivalent to 136% of one standard deviation of the dependent variable. Therefore, for firms seeking to form cooperative new ties with new stakeholders, a focus on forming strategic associations with stakeholders of high status and high cooperation as well as spanning a greater network range is important to strategic tie formation.

In the Negative New ties formed models, firms whose networks are rich in structural holes and therefore are afforded access to novel information and opportunities

for brokerage significantly (weakly) increase the formation of negative new ties. Thus occupying structural holes presents a cost to the firm, however this cost is lost when jointly examining both sets of egocentric and altercentric mitigation variables. No altercentric uncertainty variables are significant in the models with only the stakeholder characteristics and joint activity variables and therefore strategic associations with stakeholders has no impact on the formation of new negative ties. However, when considering both the ego and altercentric models, firms who engage in joint activities with stakeholders significantly (weakly) and positively decrease the formation of new negative ties. Importantly, the economic significance of joint activities is substantial with a one standard deviation increase in joint activities between firms and stakeholders associated with a predicted decrease in negative ties of 2.8 which is equivalent to 99.9% of one standard deviation of the dependent variable.

Insights from both types of models (degree of conflict-cooperation and formation of new ties) demonstrate interesting complementarities to the mitigation of both egocentric and altercentric uncertainty. In the egocentric uncertainty models, firms whose networks are rich in structural holes significantly and positively impact the degree of conflict-cooperation as well as the degree of cooperation and significantly and positively impact the formation of all types of new ties (including positive and negative ties). Firms whose networks are wide-ranging impact the aggregated and disaggregated degrees of conflict and cooperation, however, the impacts differ. To increase cooperation, a firm's network should not be wide ranging but should focus on ties to core stakeholders; however, focusing on ties to core stakeholders significantly and positively increases the

degree of conflict with stakeholders. Within the egocentric models, forming networks with wide ranges has no impact on any form of tie formation.

Although access to structural holes significantly increases the formation of all ties, positive ties and negative ties in the egocentric uncertainty models, in the presence of the altercentric variables, i.e., when considering both egocentric and altercentric uncertainty, access to structural holes has no impact on the formation of any ties. Those firms whose networks are wide-ranging and include actors from both the core and periphery of the broader stakeholder network significantly increase tie formation, particularly the formation of positive ties.

Forming ties to stakeholders of high status significantly and positively impacts the degree of conflict-cooperation, specifically through increasing cooperation, but has no significant impact on conflict. In the models jointly explaining egocentric and altercentric uncertainty, forming ties to stakeholders of high status has a complementary impact on tie formation by significantly and positively increasing the formation of positive ties, but has no impact on the formation of negative ties. Thus for firms seeking to mitigate altercentric uncertainty, strategic associations with stakeholders who are considered high status are beneficial to both increasing cooperation and increasing the formation of positive new ties.

Forming ties to stakeholders of high conflict-cooperation significantly and positively impacts the degree of conflict-cooperation, the degree of cooperation and the degree of conflict between firms and stakeholders in both the altercentric and joint egocentric-altercentric models. However, associating with stakeholders of high

cooperation significantly increases the formation of all new ties, and new positive ties, but has a negative, but not significant, impact on the formation of new conflictual ties.

Engaging in joint activities has no impact on the degree of conflict and cooperation when considered together. However, when disaggregated, firms who engage in joint participatory activities with stakeholders significantly increase cooperation and significantly decrease conflict with stakeholders. Although engaging in joint activities with stakeholders has no impact on the general formation of new ties, or the formation of positive ties, firms who engage in joint activities with stakeholders significantly (but weakly) decrease the formation of negative ties.

Perceiving the stakeholder network as *both* a set of pipes through which the firm can overcome egocentric uncertainty and a set of prisms which enables the stakeholders to overcome altercentric uncertainty is an important means for firms to understand how best to navigate the uncertainty in their environments. I explore how the strategic network positions of firms, specifically, their access to structural holes and the range of their networks, impact their degree of conflict and cooperation and tie formation with stakeholders. I also explore how the characteristics of the stakeholders with whom the firm is tied, and the nature of the firm's relations with stakeholders, impact the degree of conflict and cooperation and tie formation between the firm and stakeholders. I also explore which strategy is more important given a firm's limited resources. I find that while having a network rich in structural holes which ranges across stakeholders in the core and periphery of the network is important to the mitigation of egocentric uncertainty and the subsequent engendering of cooperation, mitigation of conflict and formation of

cooperative ties, rather, how the firm is perceived, based on its stakeholder associations and how the firm acts with these stakeholders, are more significantly important.

Implications for Theory, Policy and Practice and Future Work

The insights and findings of this work contribute to managerial practice as well as to the literatures on strategic management, international business and stakeholder engagement. I empirically evaluate the relative efficacy of foreign firms' efforts to navigate foreign environments characterized by both egocentric and altercentric uncertainty through an emphasis on the position of the firm in the foreign stakeholder network (i.e., access to structural holes and ties to actors in the core vs. periphery of the network) which mitigates egocentric uncertainty as compared to an emphasis on the firm's strategic associations with stakeholders and the characteristics of these stakeholders (i.e., status and cooperation) as well as the tenor of these relations (i.e., joint activity). My key findings augment the initial insights proposed by Podolny (2001) and empirically support his findings that egocentric uncertainty is mitigated by a network rich in structural holes and altercentric uncertainty is mitigated by demonstrating high status. I further find that in addition to having a network rich in structural holes, firms can also mitigate egocentric uncertainty by having ties to actors at different strategic parts of the network—the network core and the network periphery—with a greater focus on ties to core actors. I also find that the cooperation and joint activity with tied actors are also important factors through which alters perceive the quality of the investing firm.

In present practice, many firms focus on reducing their egocentric uncertainty about a new market, often through strategic expeditious associations with politically-connected stakeholders, without stopping to consider how their actions are influencing

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the altercentric uncertainty of stakeholders in this new market. The perceptions of alters becomes paramount only after an adverse event or crisis that requires a rehabilitation of the investor's reputation. My results should reinforce a growing trend in the literature to consider the worth of *ex ante* investments in political and social or reputational capital. By strategically managing how it is perceived by stakeholders, firms can increase their subsequent cooperation and decrease their subsequent conflict with existing stakeholders, and also increase the formation of ties with new stakeholders.

In contrast to the strategic management literature's focus on the purported performance benefits of network position, I draw attention to the intermediate construct of the conflict and cooperation exhibited by alters towards peers. While increasing cooperation and reducing such conflict is an implicit element of many studies of alliance, investor and other networks, the conflict and cooperation itself is unobserved. My analysis of the evolution of this conflict and cooperation revealed unexpected differences in the efficacy of different tie formation strategies which merit further analysis in more traditional network contexts.

The international business literature has long been interested in political and social risk management emphasizing the importance of overcoming the liability of foreignness (Hymer, 1960) and the obsolescing bargain (Vernon, 1971) as well as, more recently, more complex multi-stakeholder conflicts with NGOs and civil society actors (Henisz et al., 2005; Zelner et al., 2009). With relatively few exceptions (cf.Nebus et al., 2009) however, this literature has not examined the underlying relationships between foreign investors and stakeholders and the determinants of their evolution across time. I believe the network methodology that I employ has wide applicability in international

business particularly in the analysis of strategic interactions to win the hearts and minds of local stakeholders that are increasingly critical not only in the mining sector, oil, gas and other extractives but also in construction, infrastructure services, agriculture, pharmaceuticals, high-technology and numerous other politically or socially salient industries.

My analysis also provides important insights for scholars of stakeholder management and engagement as well as corporate social responsibility (CSR). The failure of many firm CSR activities and strategies lies in the inability of these firms to move first from a charity or philanthropic basis to a strategic one and then from an instrumental cost or output-based stakeholder strategy (i.e., how many schools have been built?) to the deeper level of an engagement or outcome-based stakeholder strategy (i.e., how many students have graduated from this school and how important was that outcome to the local community?) My finding that the key to navigating an environment characterized by both egocentric and altercentric uncertainty is through managing how the stakeholders in the environment view the firm by strategically associating with stakeholders of high status and cooperation through joint and reciprocal activity, alludes to this issue of 'going deeper' with the firm's engagement with stakeholders.

These findings also raise important avenues of future research. First, although the stakeholder events data used for this study provides a rich empirical context in which to conduct this analysis, an important means to augment these findings is to explore the underlying mechanisms and motivations behind the firm's actions through conducting comparative qualitative studies. Additionally, while present practice and the present focus of extant literature supports a largely reactionary approach to managing the political

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environment, the insights from my findings suggest a proactive approach to the development of the firm's network of stakeholders can have significant benefits to the firm. Thus an important avenue of future research is to consider the contrasting impacts of a proactive versus reactive approach by the firm.

Lastly, while this work considers the impact and implications of the firm's events with stakeholders upon the firm, an important avenue of research is to determine the impact and implications of these strategies on measures of firm-level financial and operational performance as well as on the stakeholders themselves. Although I limit the scope of this research to a strategic or instrumental approach to stakeholder engagement,[13] an increase in cooperation with the firm implies a strategic benefit for both firms and stakeholders and future work should explore and measure the value created for both firms and stakeholders.

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[13] Other scholars have also questioned whether stakeholder theory alone is useful to explicate the important but complex moral and normative issues of business ethics (Orts, E. & Strudler, A. 2009. Putting a Stake in Stakeholder Theory. Journal of Business Ethics, 88: 605 – 615).

CHAPTER 3

Networks of Influence: **Homophily and Triadic Closure in Stakeholder Networks**

An organization's ability to manage the sociopolitical environment is contingent

on its strategic influence within the network of actors in which it is embedded, and on the

endogenous or independent evolution of the structure of that network. Organizations seek

to manage their sociopolitical environments by strategically forming ties to influence

other political, social and economic organizations and actors[14] (i.e., stakeholders) within

their environments who together form a network. Strategic actions to form ties are critical

to that firm's ability to bargain, form coalitions and use influence tactics to obtain or

control resources (Bacharach & Lawler, 1980:1) as well as that firm's ability to change

attitudes and opinions of stakeholders in support of that firm. An important factor of

networks and their evolution however, is that the actors and organizations within them

collectively interact and are interdependent (Balkundi et al., 2006; Salancik, 1986). The

resulting network structures formed by these collective interactions and dependencies

themselves "influence [, shape and constrain] the behavior of network members, and,

through them, produce consequential network effects" (Kahler, 2009:5).

Organizations seeking to strategically manage stakeholders in their environments

therefore face an interesting dilemma. As they seek to strategically influence and shape

their relations, interactions and interdependencies with other actors, these very actions to

influence other actors through the formation of ties themselves induce evolutionary

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[14] I use the term "actors" to refer generally to all possible entities and nodes within a sociopolitical network, including, firms, nongovernmental organizations, bilateral and multilateral entities, communities, and individuals.

network effects that result in specific network outcomes. Or, in sociological terms, as organizations seek to change the behavior of others in their network environment, their very actions change the structure of the environment itself (Weick, 1979). Therefore, an organization seeking to strategically influence other organizations within its environment must also understand what network characteristics endogenously create what specific network outcomes, especially as these network outcomes may be beneficial or detrimental to that firm. A firm that does not understand the relationships between specific network characteristics and the endogenous evolution of the structure of that network may find its strategic attempts to influence other actors thwarted or undone by unexpected changes in the structure of ties. Arguing for a systematic approach to identifying and managing network evolutionary processes, Dagnino et al (2008 : 69) write:

> To the extent that the processes underlying network emergence and evolution may be systematically influenced by the intentional actions taken by pivotal firms,…, it becomes of interest for firm executives to identify a limited number of variables which may be leveraged and managed in order to direct the evolution of the network they participate in towards a specific strategic aim and coherently with the requirements of the competitive domain in which they compete.

I explore how homophily of the characteristics of the actors connected in a triad impact an important but underexplored network outcome—the closure of that triad. The performance benefits of triadic closure are well-documented in the literature and are founded upon the different concepts of Burt (1997a) and Coleman (1988) on social capital. According to Burt (1997a), social capital comprises information and control benefits which can only be obtained when actors bridge non-redundant networks.

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Coleman (1988) alternatively argues that social capital is a function of embeddedness or closure of the network. Embeddedness within the network affords both opportunities and constraints in tie formation (Kenis & Knoke, 2002). I do not explore the benefits or costs of triadic closure, but rather explore what factors of the network cause triadic closure. Specifically, I explore whether homophily or difference in the node-level (i.e., actor specific) or structural characteristics of actors in a triad impact the closure of that triad. Figure 3.1 depicts open and closed triads.

Whether, and how, a triad closes or remains open is important to firms seeking to manage their networks of stakeholders. Relationships among the actors in closed triads may be inherently more complex than those of open triads because of the greater degree of interdependency among the actors in closed triads. Influence and power relations among actors in open and closed triads may also differ where actors in open triads may be (knowingly or unknowingly) used against each other to the benefit of the third actor (Burt, 1992; Simmel, 1950). For example, in a triple of actors i, j, and k, actor i who has ties to both the other actors j and k in the triad, who are not themselves connected, is said to occupy a structural hole and can strategically benefit by leveraging information from one actor against the other (Burt, 1992). Because all actors in closed triads are interconnected, there are no leverage or information benefits. Influence and power relations and dynamics differ in open and closed triads also due to the possible formation of alliances among actors—whereas two actors in closed triads can form alliances against a common third threat (Simmel, 1950), actors in open triads cannot (unless, of course, the triad becomes closed). Lastly, actors in closed triads are subjected to the evolutionary mechanism of balance (Cartwright et al., 1956; Heider, 1958) and therefore the structure

of the relations may be more stable or unstable. Open triads are not subject to the

evolutionary balancing mechanism but may be subject to the closely-related network

evolutionary mechanism of transitivity, which is considered a precursor of some balanced

structures (Davis, 1970; Doreian & Krackhardt, 2001; Holland & Leinhardt, 1972;

Johnsen, 1986).

I use insights from Simmelian (Simmel, 1950) and Balance (Cartwright et al.,

1956; Heider, 1958) theories to explore the relationship between dyadic structure and

triadic closure among networks of actors in the sociopolitical context. For each triple of

actors forming an open triad, I explore how the homophily (or similarity) of the

characteristics of the three actors comprising the triad impact the likelihood of that triad

closing. I outline hypotheses of four types of structural homophily of the actors in the

triad—access to resources, status, likeability and number of ties (centrality)—on the

likelihood of the closure of that triad. I test these hypotheses in a novel database of the

interactions among firms and political, social and economic actors in the global gold

mining industry. Holding constant the quality of existing ties (i.e., strength and

cooperation of the ties), symmetry of relations in the existing dyads, reciprocity of

relations in the existing dyads, and the number of common others actors in existing dyads

are connected to (i.e., for a triple of actors i, j, k, how many actors l, m,…z, actors ij or jk

or ki are connected to), I find that a link that closes an open directed triad is more likely

when the actors of the triad have *different* access to resources, and *different* status but that

link is more likely when actors have similar numbers of ties to other actors. I also find

that likeability among actors in the triad has no impact on the likelihood of closing that

triad.

These findings suggest that for firms seeking to understand and manage their political environments, an understanding of how similar or dissimilar triples of actors are may provide insight into how relationships among actors may change. For firms establishing diverse networks of stakeholders, knowing which actors are more likely to form clusters (of triads) based on the similarity or dissimilarity of their access to resources, status, likeability and centrality may be critical to (1) predicting the formation of coalitions among actors, (2) determining whether to expend resources trying to form strategic ties with specific stakeholders or to allow network evolutionary processes to "help" in that tie formation, and (3) predicting how the formation of ties with specific other stakeholders can impact the structure of the existing ties in the firm's stakeholder network and that firm's ability to mitigate or leverage these impacts.

I contribute to the existing body of literature on homophily by exploring the impact of homophily of the structural characteristics among actors in a network on triadic closure. I hypothesize that although the principle of homophily would suggest that actors of similar characteristics are more likely to form a tie that closes an open directed triad, the nature of these characteristics in terms of their dyadic implications on dependence and zero-sum outcomes will determine whether the principle of homophily is supported or rejected. My finding that structural dissimilarity in terms of differential access to resources and differential status has a *greater* likelihood of closing directed triads is therefore an important complement to the existing body of work on the value of bridging structural holes. I use a theoretically well-documented but empirically underexplored approach to triadic closure using directed ties to structure the triads and thus contribute to the nascent body of empirical work on triadic structure. I also contribute to the nonmarket

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and international business literatures, which have long explored interactions among firms and stakeholders in the sociopolitical context by identifying and empirically testing additional factors of strategic importance that firms can use to navigate their nonmarket environments. Also, I contribute to the network literature that has primarily used simulations to understand interactions among directed triads, by exploring how evolutionary network processes occur in the sociopolitical arena. Another important empirical contribution to the nonmarket, strategy and network literatures is the novel hand-coded dataset of stakeholder interactions in the global gold mining industry which I employ to explore the impact of homophily of the structural characteristics of actors in open triads on the likelihood of that triad closing.

The remaining sections of the paper proceed as follows. I next outline the theory behind the strategic importance of the triad and the evolutionary mechanisms underlying change in triadic structures. I then outline my hypotheses on the relationships between four types of structural homophily among the actors forming an open directed triad— specifically, access to resources, status, likeability and number of ties—and the likelihood of that triad closing. I then present my model, discuss the results and conclude with implications and future extensions of this work.

THEORY

Strategic influence in the dyad

Organizations are "politically negotiated orders …perpetually bargaining, repeatedly forming and reforming coalitions and constantly availing themselves of influence tactics" often involving the "tactical use of power to retain or obtain control of real or symbolic resources" (Bacharach et al., 1980:1). Power and influence between

actors has long been a focus of organizational scholarship (Blau, 1964; Cook & Emerson, 1978; Dahl, 1957; Etzioni, 1961; French & Raven, 1959; Pfeffer, 1981; Weber, 1964). The classical concept of power defined by Dahl (1957: 202-3) is that "A has power over B to the extent that he can get B to do something that B would not otherwise do." Within exchange relations, power is not an attribute of the actor, but rather "a property of the social relation" (Emerson, 1962: 32) and because social relations are primarily built upon mutual dependence, the intent and ability to influence an actor is contingent upon the ability of one actor, *A* to control something of value to a second actor, *B*. That is, "*power resides implicitly in the other's dependency*" (Emerson, 1962: 32, italics in original). In this dyadic relational view of influence, the ability of an actor to influence another is contingent primarily on the characteristics of the target actor and the influencing actor. That is, the ability of an actor A to influence an actor B is contingent on the dependency relationship between them. Within networks of actors however, because actors are interconnected and interdependent, power and influence is dependent on the collective interactions and dependencies of all the actors within the network (Balkundi et al., 2006; Salancik, 1986), and not limited only to the interactions between actors in a dyad. Therefore, an explication of the relationships among actors at the level of the triad is necessary to understand how similarities and differences among actors impact the structure of the network in which their relations are embedded.

The Structure of the Triad and Balance and Transitive mechanisms

Two primary literatures explore interactions among actors in triads: Simmelian theory (Simmel, 1950) and Balance theory (Cartwright et al., 1956; Heider, 1958). Simmelian theory explores how the introduction of the third actor changes relations and power between the actors of the initial dyad. Simmel argues that "the dyad represents both the first social synthesis and unification, and the first separation and antithesis" whereas, "the appearance of the third party indicates transition, conciliation, and abandonment of absolute contrast" (Simmel, 1950:145). The introduction of the third "emerges as a new relationship" characterized by the interactions between actors in the dyad and the interactions of each of these actors with the newly introduced third (Simmel, 1950:154). Consider an existing dyad of actors A and B. The introduction of actor C changes the influence dynamics between A and B because actor C's relationship with A may impact A's relationship with B.

In Simmel's discussion, the third actor interacting between two actors in a dyad can take primarily three positions or roles: the position of an impartial nonpartisan who (1) arbitrates or (2) mediates between the two actors in the dyad (for example mediators between labor and management), or the position of the (3) tertius gaudens—"the third who enjoys" (Simmel, 1950:154)—the partial partisan who seeks his own gain by taking advantage of the conflict of two others and can, by supporting or granting favor to one of the two parties, change the power and influence dynamic between them. Importantly, the power of the tertius who seeks to influence the relationship between the actors in the dyad is "determined exclusively by the strength which each [of the two parties in the dyad] has relative to the other" (Simmel, 1950:157). Specifically, the ability of an actor A

to influence actor B, is contingent on the relations between actor B and other actors, C…Z, with whom B is connected. This is because, actor A's influence over actor B may be mitigated by B's relationship with C. A classic example of these relationships is a host country government seeking to influence a foreign firm operating within its country. If that firm has (strong) ties with its home country, and the firm's home country provides foreign aid to the host country government, the host country government's ability to influence the firm, both positively or negatively, is contingent upon the firm's relationship with its home country government (i.e., the willingness and ability of the home country government to act against the host country government in support of the firm by leveraging its power through tactics such as withholding aid support). Alternatively, a host country government may treat a foreign firm favorably because of its positive relationship with that firm's home country government (e.g., the case of Chinese firms in African countries, and Russian firms in Venezuela). Early work exploring the insights and concept of Simmelian theory explored the formation of coalitions and the impact of the differences in power and other characteristics of the actors in the triad on the formation of coalitions (Caplow, 1956, 1959; Gamson, 1961). The insight here, is that the structural alignment of the triad is contingent on the degree of similarity or difference in the characteristics of the actors who form the triad.

The second theory of triadic interaction, Balance theory (Cartwright et al., 1956; Heider, 1944; Heider, 1958) explores the relative stability or "balance" among actors already connected within a triad. In Heider's (1946, 1958) discussion of cognitive and affective "balance," social actors move towards balance in their relationships. A triad is balanced when all interactions between the three actors are positive or when two are

negative and one is positive, i.,e, (+,+,+), (+,-,-), (-,+,-), (-,-,+). Balanced triads are more "stable" or enduring over time (Cartwright et al., 1956; Doreian et al., 2001; Heider, 1944; Heider, 1958; Hummon et al., 2003; Krackhardt et al., 2007; Shaffer, 1981; Stokman et al., 1997). A triad is imbalanced when all the interactions between the three actors are negative or when one is negative and two are positive, i.e., (-,-,-), (+,+,-),(-,+,+), (+,-,+). Imbalance invokes a form of "tension" or strain which induces actors to change their social positions to reduce this imbalance, and thus imbalanced triads are inherently unstable. The balance process is not a single step, but rather a multi-step process (Doreian et al., 2001) and while not all structures become balanced, there is a move towards or against balance (Doreian et al., 2001). An important predictor of a balanced outcome is the presence of a positive relationship between the two initial actors in the dyad (Doreian et al., 2001) suggesting that the balancing mechanism is feasible only when the "primary tie" is positive. Figure 3.2 outlines the balancing mechanism.

The balancing mechanism is contingent on the nature of the ties among all three actors in the triad. Newcomb (1978) argues that Heider's initial discussion of balance of the triad implicitly assumes that the three ties within a triad have an equal weight upon balance, but in fact the three ties have different weights upon balance. That is, the structure of the triad is a function of the three different types of ties. In stochastic actor-based dynamic network models, the nature of the ties between actors is a *choice* determined by the actor "sending" the tie, and is contingent on the attributes of the sending and target actors, the positions of actors in the network and actor perceptions about the network (Snijders, van de Bunt, & Steglich, 2010). That is, the nature of a tie is based on the characteristics of the actors. And therefore, the structure of a triad is

contingent upon the characteristics of the actors as these determine the nature of the ties formed.

Limited but significant empirical work explores structural balance not as an outcome in and of itself, but rather as an underlying mechanism that shapes strategic outcomes among actors in a network. Exploring states of "equilibrium and disequilibrium" in the interactions among nation states, Harary (1961) finds that balanced configurations of nation states tend to maintain the status quo, and predicts that in imbalanced configurations the weakest bond will change sign to attain structural balance. Visser (1994) explores mechanisms of attaining cognitive balance in voting behavior and finds that persuasion and projection have a greater impact than policy voting. Burt's (1997) study of entrepreneurs, distrust and third parties also finds a relationship between balance and trust: "the stronger the aggregate connection between the ego and alter through third parties, the more likely that ego and alter trust one another" (Burt, 1997b:6). Kilduff and Krackhardt (1994) find support for the balancing mechanism: that an observer's strain for cognitive balance in perceptions of friendship ties with prominent others boosts that actor's reputation, but actually having a prominent friend has no impact on reputation. More recently, Nakamura, Tita and Krackhardt (2007) examine the balance of relationships among rival and ally networks of gangs in Los Angeles and find under conditions of imbalance irrational violence between gangs increases, whereas under conditions of balance gang violence is more rational and occurs only to obtain strategic advantages.

While structural balance theory explores how endogenous changes occur in triads of actors based on their relations, a more strategic application is how actors "balance"

constraints they face due to power, inequality and dependence in their relations with others (Blau, 1964; Blau, 1977; Emerson, 1962). Important applications of balance theory and balancing mechanisms have been explored by scholars of alliances in the international relations and strategic management fields. International relations scholars have explored alliance formation or more broadly the phenomenon of "alignment" among nation states as a function of the inequalities of power and the relative strength of these nations (Snyder, 1991). The inequalities among actors can lead to alliances to either "balance (ally in opposition to the principal source of danger) or bandwagon (ally with the state that poses the major threat)" (Walt, 1985:4). Related work in the strategic management domain explores strategic alignment to mitigate constraint. In his theory on "two-step leverage" Gargiulo (1993) explores how actors seek to alleviate political constraints in the workplace by using cooptive strategies—i.e., forming strategic alliances with other actors who can mitigate the behavior of the actor who is the source of the constraint. In ongoing work, Gimeno & Jeong (2001) use structural balance theory to explain competitive and cooperative alliance behavior among firms in the airline industry.

Transitivity, a mechanism closely related to structural balance, has long been explored as a component or mechanism of triadic closure within the network literature. Transitivity is a "central proposition in structural sociometry" (Davis et al., 1971) and is conceptually understood as: *the friend of my friend will be my friend* (Rapoport, 1963: 541). For a triple of actors, *p*, *o* and *x*, with signed directed relations (e.g., cooperative relations such as liking, agreement, acceptance, or conflictual relations such as disliking, disagreement, rejection), "Interpersonal choices tend to be transitive if *p* chooses *o*

[cooperative relations] and *o* chooses *x* [cooperative relations], then *p* is likely to choose *x* [cooperative relations]" (Davis et al., 1971: 309). Of the eight (8) possible configurations of relations among three actors identified in balance theory—i.e., $(+ + +), (+ + -), (+ - -), (+ - +), (- + +), (- + -), (- - +),\ (- - -)$—only the $(+ + +)$ triplet is *transitive*, i.e., if *p* cooperates with *o*, and *o* cooperates with *x*, *p* will *always* cooperate with *o* (Davis & Leinhardt, 1972: 222). The $(+ + -)$ triplet is considered *intransitive* and all other triplets are *vacuously intransitive* (Holland & Leinhardt, 1970). The transitive mechanism is active only when all relations are cooperative (Davis et al., 1972: 222).

Due to the directed nature of the transitive mechanism (i.e., i→j, j→k and i→k), triads of actors can be distinguished by whether they are transitive (i.e., subject to the transitive mechanism) or cyclical (i.e., i→j, j→k, k→i) and therefore not subject to the transitive mechanism (Figure 3.3 depicts transitive and cyclic triads).

The Open Triad

Simmelian theory (Simmel, 1950) explores how the introduction of the third actor changes the dynamics between the two actors already connected in a dyad based on an implicit assumption that the third actor is known by, and directly connected to, both actors in the dyad, e.g., a mediator or arbiter negotiates between two actors who are connected, such as a mediator between two nations in conflict or an arbiter between management and labor unions. Balance theory (Cartwright et al., 1956; Heider, 1958) explores dynamics among the three actors in the triad once all ties among them have been formed and argues that the three actors must have balanced relationships for the triad to

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be stable. Both Simmelian and Balance theories thus describe relations among "closed" triads when all actors are known to (i.e., tied to) each other.

An intermediate triadic structure is one in which the third actor is introduced to only one of the two actors in the existing dyad, creating an open triad. An example of an open triad and the strategic problem of network closure within the sociopolitical sphere is a firm connected to two small nongovernmental organizations (NGOs), A and B, who are themselves not connected. Because of their small size, the firm may be able to "ignore" these two NGOs, however, if they should unite and effectively join forces against the firm, the firm may no longer be able to ignore them. If the probability of these two NGOs connecting is low, the firm can continue to ignore them. However, if the characteristics of the firm and each of the NGOs together induce an endogenous network evolutionary mechanism which causes these NGOs to connect (sooner rather than later), then the firm must strategically act to engender cooperation and support from A and/or B to mitigate the need for an alliance against it.

Because the characteristics of all three actors (the firm, and NGOs A and B) collectively determine the structure of the triad, I explore how the homophily of the structural characteristics of all three actors impact the likelihood of a tie forming between NGOs A and B thus closing the firm, NGO A, and NGO B triad.

Structural Homophily and Triadic Closure

Within the literatures examining relations among triads of actors, of importance is the discussion on how inequalities or differences among actors results in cooptive balancing mechanisms and in specific balanced or imbalanced structures (Blau, 1964; Caplow, 1956, 1959; Emerson, 1962; Gargiulo, 1993). An important alternative relational

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concept that also affects how actors in networks behave is homophily. Homophily, the principle that actors with similar characteristics are more likely to associate with each other and cooperate with each other (Lazarsfeld et al., 1954; cf. McPherson et al., 2001) has long been associated with tie formation. Early work on social relations argued that the formation of ties between similar actors is a function of the similarity of these actors bringing about similar attitudes (Newcomb, 1978). Newcomb (1978) states: "the possession of similar characteristics predisposes individuals to be attracted to each other to the degree that those characteristics are both observable and valued by those who observe them—in short, insofar as they provide a basis for similarity of attitudes." Homophily has been associated with diverse outcomes of strategic importance to cooperation and tie formation. Similar actors offer information relevant to each other (Festinger, 1954) and are more likely to cooperate and form stronger relationships (Buchan, Croson, & Dawes, 2002) while competition is greater among dissimilar actors (Nebus, 2006; Reagans, 2005). Ties between similar actors are more stable and last longer (Felmlee, Sprecher, & Bassin, 1990) and the cost of maintaining these ties between similar actors is plausibly lower than the cost of maintaining ties between dissimilar actors (Kossinets & Watts, 2009).

I explore the impact of similiarity and differences among actors in a triad on the closure of that triad. While the mechanism of homophily argues consistent formation of ties between actors of similar characteristics, the balancing mechanisms created by inequality or differences argue the formation of ties between actors of dissimilar characteristics. Using insights from the literatures exploring the mechanisms of homophily and dependence, I explore the contingent factors of the actors in a triad that

would close or keep open the triad. I specifically explore how homophily or difference of four characteristics of actors in a directed triad—access to resources, status, likeability and ties to others—impacts the likelihood of a tie forming to close the triad. Access to resources and status are two concepts widely associated with dependence, that is, access to resources and status are possible only in the face of inequality and are therefore the outcomes of zero-sum games. Conversely, while likeability and popularity are two concepts widely associated with homophily and are possible without dependence, that is, likeability and popularity are not zero-sum outcomes.

Zero-sum outcomes: Access to resources and Status

Access to resources. Access to and control of resources is a form of power or influence which can be defined as the "inverse of dependence" (Brass, 1984). According to the dependency framework (Emerson, 1962; Hickson, Hinings, Lee, Schneck, & Pennings, 1971; Salancik & Pfeffer, 1977) power is obtained or created by an actor's access to and control of resources. By providing access to people, information and other resources, an actor's structural position within a network is an important source of power. Scholars have explored several "bases" of structural power—that is, the specific benefit structural positions afford actors who occupy those positions which "enables [these actors] to manipulate the behavior of others" (Bacharach et al., 1980:34). Bases of structural power include: control of coercive resources—those resources that can be used for sanction or punitive measures; control of remunerative resources—those resources that are used for reward; control of symbolic rewards—resources associated with normative and symbolic value (Bacharach et al., 1980; Etzioni, 1961). By providing unique information as well as the control of information (Pettigrew, 1973) structural

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position also affords power. Those organizations that occupy structural holes, especially structural holes that span organizational and other boundaries, have access to and control of unique information (Burt, 1992) and have more power over organizations who do not occupy structural holes (Brass, 1984).

Actors with greater access to resources maintain that power when associated with other actors who do not have the same access to resources. Further, because of the resource differential, those actors who have little access to resources actively seek out others with access to resources. Because the benefit of access to resources is a function of dependency,

H1:   *A link that closes a directed triad is more likely when actors in the triad have different access to resources.*

Status. Status is defined as "social esteem and respect that typically yields influence" (Ridgeway, 2006: 301) and can be understood as "an evaluative hierarchy between groups in society" (Ridgeway, 2006: 301; Weber, 1968) and as a "hierarchy of esteem and deference between individuals" (Goffman, 1967; Ridgeway, 2006: 301; Ridgeway *et al.*, 1995). Status is also considered a function of the statuses of those to whom an actor is connected (Bonacich, 1987). In communication networks, status is reinforcing: higher status actors are connected to other actors of high status. However, in exchange networks, status is a result of dependence, that is, the status of the central actor is a function of the number of dependent ties (Cook *et al.*, 1978) The transfer of status across ties and the subsequent performance benefit is a hallmark of social network theory. Traditional performance benefits afforded to actors of high status include deference (Turk *et al.*, 1962) and influence. A fundamental aspect of network evolution is that status

increases tie formation (Hallen, 2008; Podolny, 2001). The performance benefit of high

status is well documented. Burt (1987) in his study of the adoption of a new antibiotic by

physicians finds that the diffusion of adoption is a function of prominence of the adopting

physician with prominent physicians adopting the drug early. Status also affords

exchange benefits (Thye *et al.*, 2006). Melding the concepts of power from social

characteristics theory and network exchange theory, Thye *et al.* (2006: 1472) find that

"high status actors are more competent and influential in establishing the initial

conditions for exchange." That is, high status actors obtain more favorable *ex ante*

conditions for exchange as people are more willing to compromise when bargaining with

actors they perceive to be of higher status. Further, in repeated transactions, high status

individuals benefit more than low status individuals (Thye *et al.*, 2006). An actor of high

status obtains the benefits of influence, deference, and favorable *ex ante* conditions for

exchange. Because the benefits of high status are zero sum,

> *H2:* *A link that closes a directed triad is more likely when actors have different*
>
> *status.*

Non-zero sum outcomes: Likeability and Popularity

Likeability. Likeability is an outcome of affect—"the positive or negative

evaluation of an object, idea, or mental image" (Lorenzoni, Leiserowitz, De Franca

Doria, Poortinga, & Pidgeon, 2006: 265; Poortinga & Pidgeon, 2005). Affect influences

decision-making and the processing of information (Epstein, 1994), is closely associated

with trust (Lewis & Weigert, 1984), and is perceived to be the underlying "motor" of

behavior (Tomkins, 1962). Likeability is strongly predicted by political preference

(Abelson, Kinder, Peters, & Fiske, 1982), and directly impacts the willingness of actors

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to create ties (Casciaro & Lobo, 2008). Likeability is also strongly associated with homophily in that similar actors associate and cooperate with each other (McPherson et al., 2001). Because likeability is not contingent on zero-sum dependence,

>   *H3:   A link that closes a directed triad is more likely when actors have similar likeability.*

Number of Ties (Popularity). Popularity or centrality within networks is a function of the number of ties that actor has to other actors within the network (Freeman, 1979). An actor with high centrality is a focal point within communication networks and is strategically positioned for active participation in the communication of information (Freeman, 1979: 219). Central actors are also highly visible within the network, their central position signals their ability to access resources from the network and therefore they are desired targets for alliances (Gulati, 1999). Additionally, according to preferential-attachment theory (Barabasi et al., 1999) actors with a greater number of ties have an "accumulative advantage" where, as the number of ties increases, the probability of tie formation also increases (Powell et al., 1996). Because centrality is not a dependent zero sum game,

>   *H4:   A link that closes a directed triad is more likely when actors have similar number of ties.*

DATA AND METHODS

Sample, Data Construction, and Unit of Analysis

I test these hypotheses within the global gold mining industry on a unique longitudinal panel dataset of the stakeholder interactions of a population of 26 mines located in 20 largely emerging countries operated by 19 firms listed on the Toronto Stock

Exchanges (TSX). Due to the highly political nature of this industry, mining firms face significant adverse interventions orchestrated by a diverse set of relatively powerful and dedicated stakeholders including, NGOs, governments, multilateral agencies, legal practitioners, environmentalists, development specialists and members of the community in which the mine is situated, as well as actors located in different countries. The highly political nature of this industry is ideal to test the interactions among stakeholders at the triad-level as the higher numbers of stakeholders and the greater frequency of interactions creates a "denser" network with more open and closed triads than may occur among actors in a less politicized industry.

The stakeholder interactions within this dataset comprise media-reported instances in which an actor acts or expresses sentiment towards another actor that connotes cooperation or conflict. I draw upon extensive research in international relations examining the escalation of interstate conflict and cooperation to identify relevant verbs and verb phrases and code them on a scale of conflict and cooperation to create the modified degree of conflict-cooperation scale relevant to actions and interactions among firms and stakeholders in the business context. This database is created through the hand-coding of over 22,229 news articles (i.e., an average of almost 1,000 articles per mine, ranging from roughly 300 to 2,700 articles per mine) within the FACTIVA database referencing the mine name and the firm name. The news articles are coded according to a detailed coding protocol adapted from international conflict studies (Bond et al., 2003; King et al., 2003b). My stakeholder events dataset comprises 51,754 stakeholder events linking 4,623 unique stakeholders. The number of stakeholder events per mine ranges from 97 to over 6,600; the number of stakeholders per mine ranges from 19 to just over

1,000; the number of unique ties ranges from 20 to over 800; and the number of years of the life of the mine range from 2 to 16 years. Based on these characteristics, this novel dataset of stakeholder events provides a comprehensive view of the dynamic events within firm-stakeholder networks and facilitates valid and objective quantitative analysis. My event data is sensitive to the (1) direction, (2) polarity (sign), and (3) relative "strength" of the events among actors in the networks. Table 2.1 provides the summary statistics of the stakeholder dataset.

My analysis is the triad level of the network, that is, for each set of three actors who are, or can be, connected. This level of analysis is more accurate and informative than the global network measures of balance and network closure as the global measures aggregate over the nature and differences of the ties precluding the ability to explore how these micro-level ties affect relations among actors (Kalish & Robins, 2006). I use the dataset of directed dyadic stakeholder relations to create a dataset of directed triadic stakeholder relations. My unit of analysis is the directed triad-mine; i.e., for each of the 26 mines in the sample, every existing triple of actors is differentiated by the directed dyads within them and therefore, i→j, j→k, k→i ≠ i→j, j→k, k←i, i.e., the case of a triad where i chooses j, j chooses k, and k chooses i, is different from a triad where i chooses j, j chooses k, and i chooses k. Using directed ties to create the triads, I obtain eight possible configurations of triad. Within my stakeholder events dataset not all ties are reciprocated, i.e., i→j, but there is no corresponding tie from j to i. Therefore, not all of the 8 possible directed triad configurations exist for each triple of actors. Figure 3.4 presents the 8 possible directed triad configurations.

From the dataset of stakeholder relations, for each 3-year rolling subperiod of

each mine, I first identify a list of all existing actors and cross-merge the initial set of

existing dyads with the list of existing actors to obtain a set of 3 unique actors, *i, j,* and *k*

(i.e., observations where an actor occurred twice in a triple, such as i, j, i, or i, j, j are

excluded). Once all possible unique triples of actors are identified, I then determine

whether each actor in the triple is in reality (i.e., according to the existing dyads recorded

in the stakeholder dataset) connected to the two other actors in the triple to determine the

set of existing triads. I identify three different triads based on the existing ties between

actors: (1) existing *closed triads*, where all three actors are connected to each other, i.e.,

triads with three dyads, (2) existing *open triads*, where one of the actors in the triple is

connected to both other actors who are themselves not connected, i.e., triads with two

dyads, and (3) existing non-triads, where only two out of the three actors in the triple are

connected by a single dyad, i.e., triads with only 1 dyad. Because my level of analysis is

at the triad level (where 3 actors are completely or partially connected), I drop the non-

triads in which triples of actors have only 1 dyad between two actors.

The stakeholder dataset of interactions between actors is a dataset of directed ties

between actors and therefore the directed tie i→j (where actor i acts or expresses some

sentiment connoting conflict and cooperation towards actor j) may be very different from

the directed tie j→i (where actor j actors or expresses some sentiment connoting

cooperation or conflict towards actor i). Because interactions among actors shape

network outcomes, and because interactions among actors are themselves shaped by actor

attributes, I maintain the use of the directed data in the creation of the triads. Therefore,

once the existing open and closed triads are identified, I follow the actor-based stochastic

models within the literature (Snijders et al., 2010) et al, 2010) and those of scholars

studying structural balance (Cartwright et al., 1956) and next separate the triads based on their directed ties, thereby forming directed triads.

The importance of directed ties in triads is well-documented within the network literature. Cartwright and Harary (1956), who generalized Heider's theory of cognitive balance to a theory of social systems which can be used to explore balance (and relations among triads) in other contexts "such as communication networks, power systems, sociometric structures, systems of orientations, or perhaps neural networks," argue that the "assumption of symmetry" in the theory of structural balance is limited (i.e., liking is not always reciprocated). They (re)-define balance in terms of "s-digraphs" (i.e., signed directed graphs) to include "in one conceptual scheme both symmetric and unsymmetric relationships." They also state that in a triad, when p→o is positive and o→p is negative (or two actors have different signs) then the graph containing them is not balanced, implying that the relations among actors changes based on whether their ties are signed and reciprocated or not.

Within graphs it is "extremely rare for the liking of i for j to have exactly the same value as the liking of j for i" (Davis, 1970:849). Therefore, an important concept within triadic structures is that the ties in directed graphs may be directed from the lesser-liker to the greater-liker and thus have a "pecking structure" (Harary, Norman, & Cartwright, 1965) and can be considered to be hierarchical. Undirected triadic structures assume no hierarchy. Hierarchical graphs have different types of triads than graphs with no hierarchy. Therefore, different types of triads, based on their directed signs may be the result of different characteristics among the actors forming the triad. In addition, because the triadic evolutionary mechanisms of balance and transitivity are based on directed ties,

a more complete analysis of triadic structures includes the different types of triads identified through balance theory. Although I do not assume a pecking order or hierarchy from the directed ties in my stakeholder dataset (although a pecking order is possible because of the political nature of the industry), the fact that different triads may result from different actor characteristics and therefore may have important implications for firms seeking to understand and manage triadic configurations of actors in their networks, makes empirical analysis of directed triadic relations an important contribution to the literature.

The literature on stochastic actor-based models also gives support for the use of directed ties. An assumption of stochastic actor-based models of dynamic networks (Snijders, 2006; Snijders et al., 2003; Snijders et al., 2010) is that "actors control their outgoing ties" meaning that "changes in ties are made by the actors who send the tie, on the basis of their and others' attributes, their position in the network and their perceptions about the rest of the network" (Snijders et al., 2010:46).

While the importance of the use of directed ties in the literature has been widely stated, due to data limitations, few studies manage to employ directed ties. In his study of the relationship between homophily and transitivity among actors in personal networks, Louch (2000:47) uses symmetric relations but states "While a more complete analysis would deal with all triad types, data limitations resulting from the attempt to generalize transitivity to a wider variety of real-world situations necessitates starting with the symmetric case first."

Scholars have used various types of directed data within the literatures on social networks. Doreian and Mrvar (1996) in testing the "basic tenet of balance theory"—that

there is a "tendency towards balance with signed relations"—use signed directed graphs in their simulation. However, as they explore the tendency towards balance, they limit their sample to only the transitive triads excluding the cyclic triads (shown in Figure 3.3 above). I similarly use signed directed triads but do not limit my triads to only the transitive triads but use all eight configurations of possible directed triads with both transitive and cyclic ordering.

In their triad-level analysis examining the persistence of ties among actors in communities, Martin and Yeung (2006) use ties with both symmetric and asymmetric components, where each dyad has three possible structures: directed outgoing i→j, directed incoming i←j or reciprocal, i←→j. They also consider asymmetric relations as being hierarchical, i.e., if i chooses j, j chooses k, i chooses k because k is more attractive than i or j and everyone knows it" (Martin et al., 2006:359).

Other structures of triads have been explored in the literature. Modeling social structure in small groups, Davis and Leinhardt (1972) focus on the types of pair relations among actors in their creation of triads. They assume three types of pair relations: (1) mutual positive, where i chooses j and j chooses i; (2) mutual non-positive, where i does not choose j and j does not choose i; and, (3) asymmetric, where i chooses j but j does not choose i or the converse, j chooses i but i does not choose j. They identify 13 possible triads among groups of actors: 10 triads based on the three possible combinations of pair relations and three additional triad groups based on the possible "directions" for triads with two or more asymmetric relations.

Exploring individual psychological differences on network structures, Kalish and Robins (2006), create a triad structure based on tie strength: S=strong ties (S), weak ties

(W), and no ties (N). They explore relations between an actor (ego) and two alters. While the relations between ego and the alters are limited to strong or weak ties, relations between the two alters can be strong, weak or no tie. Using this triad structure they identify nine different configurations of triads, three of which have three different types of structural holes: WNW, SNS, WNS.

Scholarship on triad structure has therefore explored options for the creation of datasets of triads with the use of directed data with the most (detailed) configurations of possible triads as giving a more complete picture of interactions among triples of actors in networks. Therefore, I create a dataset of directed triads comprising up to 8 different configurations of triads. My longitudinal panel dataset of triads is unbalanced because not all triads are observed at every time period. To create a balanced panel to run my piecewise exponential hazard rate model, I interpolate by keeping the most recent value. For example, for a triad structure that occurs at subperiods 4, 5, 8, 9 and 12, I fill subperiods 6 and 7 with the values in subperiod 5, and fill the values of subperiods 10 and 11 with the values of subperiod 9.

The stakeholder dataset I use to create the triads is also sensitive to the strength of the ties between actors based on the degree of cooperation or conflict between them. The degree of conflict and cooperation ranges from -1 to +1 and the value 0 connotes a neutral tie. No tie is depicted as missing (i.e., "."). Therefore, each of the three dyads within each triad is not only signed but is also weighted based on the average directed degree of conflict and cooperation. In this analysis however, I do not distinguish between cooperative and conflictual ties. Although the directed dataset is more complete and informative, work is underway to create a dataset with undirected triads which I will test

as a robustness check. Further, in their study of reciprocity in the global sphere using WEISS data, Rajmaira & Ward (1990) exclude neutral events between actors. In the creation of the triads, I do not distinguish ties based on cooperative, conflictual and neutral events that occur among actors. I do however, control for the sign (i.e., cooperation or conflict) and strength of these ties.

Dependent Variables

Closed Triad. My dependent variable is a binary variable exploring whether a triad of actors is closed (i.e., each actor is tied to the two other actors in the triad) or open (i.e., one of the actors in the triad is connected to both other actors who are not connected to each other). I code the closed triads as 1 and the open triads as 0. My final dataset comprises a total of 1,540,262 closed and open triad observations with 1,348,196 open triads (a frequency of 87.53%) and 192,066 closed triads (a frequency of 12.47%).

My measure of closed triads corresponds with other similar measures of triadic closure in extant literature. Louch (2000) explores the relationship between homophily and transitivity in a respondent's personal network. In this work, the triad comprises relations between a focal actor (the respondent) and two other actors (alters) identified by the focal actor as important in their network (i.e., someone with whom the respondent discusses important matters). The dependent variable in this paper is "transitivity," which "is measured by whether or not each pair of alters has any tie" (Louch, 2000:53). While I explore all directed triads, Louch (2000) explores only symmetric strong ties which are strong predictors of transitivity. In their work on pretransitive triads, Doreian & Krackhardt (2001) explore triadic closure among actors in a simulation. For every trio of actors i, j and k, they explore whether the "pre-transitive" directed ties i→j and j→k

result in the formation of the tie between i→k and whether the tie that is formed (that closes the triad) results in balanced or imbalanced triads. Using a unique dataset of emails among students and faculty at a US university, Kossinets and Watts (2009) model network evolution (the formation and dissolution of ties) and explore how homophily emerges overtime through individual decisions to form or dissolve ties. Their dependent variable, cyclic or triadic closure, is defined as "meeting a friend of a friend" (Kossinets et al., 2009:416) and is premised on transitivity—that, "if two individuals are connected to a mutual third party, they will tend to become connected themselves" (2009:417).

Independent Variables

Difference in Access to Resources. Access to unique information (Pettigrew, 1973) and other resources is a source of power. To measure an actor's ability to access and control unique resources I use a measure of that actor's access to structural holes (Burt, 1992). Structural holes are defined as network positions that bridge non-redundant actors within the network thereby enabling actors occupying these network gaps to gain brokerage advantages via access to and control of diverse and possibly unique information (Burt, 1992). A position that links stakeholders who are themselves already connected will, by contrast, provide information more likely to be redundant (Burt, 1992) and therefore, information of little value. An organization connected to stakeholders who are themselves not connected may include ties to new stakeholders within the host country, politicians from different political parties that are not connected, and NGOs which are not connected. I proxy for access to unique information and therefore access to resources using the structural holes constraint which is a standard measure in network theory used to determine the firm's *lack of access* to structural holes, (i.e., the smaller the

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value, the greater the firm's access to structural holes). I multiply the measure of structural holes by -1 to determine the impact of the firm's *access* to structural holes and thus to diverse information. I use the formula below to compute this measure for each firm in each time period (Burt, 1992: 54).

$$StructuralHoles_{it} = (g_{ij} + \sum_{k=1}^{n} g_{ik}g_{ki}) * -1 \quad k \neq i,j$$

Where,

g_{ij} are direct ties between actors i and j in the network

$g_{ik}g_{ki}$ is the sum of the indirect ties from actor i to other actors k via all intermediate actors j

To obtain the difference in access to resources for actors in each dyad of the triad, I simply compute the access to structural holes for each actor. Using the direction of the tie (from the source or initiating actor to the target actor), I subtract the value of the target actor's access to resources from the value of the source actor's access to resources to obtain the directed value of difference in access to resources for each pair of actors in the triad.

Difference in Status. Access to high status others is a reflection of that actor's status. I use the eigenvector centrality (Bonacich, 1987) as a measure of structural status for each actor in each of the three dyads of the triad. The eigenvector centrality measure is based on the premise that the status of a node in a network is a function of the statuses of the nodes with which it is directly tied. Thus the eigenvector centrality measure captures how important actor j is within the political environment based upon the importance of the other actors k who are connected to actor j. The eigenvector centrality

utilizes both direct and indirect ties to compute the position of a specific node in the network. A well-connected (i.e., high status) actor is one who is connected to other well-connected (i.e., high status) actors, who are themselves well-connected (i.e., high status). High status affords the actor a form of power making those stakeholders of lower status dependent upon it. I compute actor status as:

$$ActorStatus_{jt} = \lambda e_j = \sum_k G_{jk} e_k$$

Where,

G_{jk} is a matrix of events g_{jk} (G_{jk} can be both symmetric or asymmetric)

(Bonacich, 1987)

e_j is the eigenvector centrality of actor j

λ is a constant known as the eigenvalue, it is required to ensure equations have a nonzero solution.

Recent work by Bonacich & Lloyd (2004) explores negative status relations in communication networks using the eigenvector. They put forward that: (1) a positive connection with a high status individual increases one's status, (2) a positive connection to a disvalued individual decreases one's status, (3) a negative relation to a high status individual decreases one's status, and (4) a negative relation to a disvalued individual increases one's status. I use both negative and positive ties to compute the status of the actor and therefore obtain a measure of status that also includes the impact of being negatively tied to actors in the environment.

To obtain the difference in status between actors in each dyad in the triad, I compute the status values for both actors in each dyad. Using the direction of the tie

(from the source or initiating actor to the target actor), I then subtract the value of the

target actor's status from the value of the source actor's status to obtain the directed value

of difference in status for each pair of actors in the triad.

Difference in Likeability. I use the degree of cooperation or conflict as a measure

of that actor's "likeability" among other actors in the network. The degree of cooperation

(or conflict) exhibited by any actor j in its events with other actors k in the network is the

simple mean degree of cooperation or conflict of all actor j's ties with all other actors k in

the network. The actor's degree of cooperation or conflict is determined from the

modified conflict-cooperation scale (for other applications of this scale see: Nartey,

Henisz, Dorobantu, 2012; Henisz, Dorobantu, Nartey, 2012; Dorobantu, Henisz, Nartey,

2012). Actors with high degrees of cooperation are those whose interactions with other

actors are, on average, cooperative. Actors with low degrees of cooperation (i.e., high

degrees of conflict) are those whose interactions with other actors are, on average,

conflictual. Relations with the other actors in the triad are excluded from the computation

of actor likeability.

$$ActorLikeability_{jt} = \sum_{k=1}^{n} (r_{jkt})/ n \qquad (r_{ij} = r_{ji})$$

Where,

r_{jkt} is the degree of cooperation or conflict in the event between actor j and any

other actor k in the network at time t

n is the number of actors k in the network.

To compute the difference in likeability, I compute the likability for the actors in each of

the three dyads in the triad. Using the direction of the tie (from the source or initiating

actor to the target actor), I subtract the value of the target actor's likeability from the value of the source actor's likeability to obtain the directed value of difference in likeability for each pair of actors in the triad.

Difference in ties formed. My measure of ties formed is simply a count of the number of ties each actor in each dyad has with other actors in the network, i.e., the degree centrality (Freeman, 1979) of each actor in the dyad. Both incoming and outgoing ties are used in this computation. Actors who have large numbers of ties with others are more likely to form ties and therefore close the triad. Ties with the other actors in the triad are excluded from the computation of actor popularity.

$$ActorPopularity_{jt} = \sum_{k=1}^{n} g_{jkt} + \sum_{k=1}^{n} g_{kjt}$$

Where,

$ActorCentrality_{jt}$ is the degree centrality of each actor j, who is directly connected to another actor k at time t

g_{jkt} are outgoing ties from actor j to all other actors k in the network at time t

g_{kjt} are incoming ties to actor j from all other actors k in the network at time t

n is the number of actors k in the actor network.

To compute the difference in number of ties for each actor in each of the three dyads in the triad, I use the direction of the tie (from the source or initiating actor to the target actor). I subtract the value of the target actor's number of ties from the value of the source actor's number of ties to obtain the directed value of difference in number of ties for each pair of actors in the triad.

<u>Control variables</u>

Transitive Density. Transitivity is a structural mechanism within balance theory that predicts that if two actors have positive relations with a third, all three actors will always have positive cooperation relations with each other forming a closed and balanced triad $(+,+,+)$. For example, if an individual introduces her two "best friends" to each other, due to the transitive mechanism, these friends will also become "best friends." I create a measure of Transitive Density by simply creating a density measure of the number of existing transitive triples within the network and dividing this number by the total number of possible transitive triples in the network. I use a lagged measure of transitive density, thus at time t_1 I control for the transitive density of the previous period, time t_0.

Network size. Network size is an important variable impacting triadic closure as the size of the network can increase or reduce the time it takes to form ties (Louch, 2000; Martin et al., 2006). I control for the number of possible actors that are available to form triads by computing the size of the network. My network size variable is therefore simply a count of actors within the network at each subperiod.

Tie Strength of Dyads. The strength of the tie between any two actors in a triad is an important indicator of the probability of triad closure (Louch, 2000). Freilich (1964) argues that the frequency of interaction among actors in a "natural triad" of two high status actors and one low status actor increases familiarity among these actors and may change the relationship among these actors. I control for the strength of each dyad in the triad by simply computing the number of ties between each of the actors in the triad. Therefore, Tie Strength of Dyad1 is the number of ties between actors i and j; Tie

Strength of Dyad2 is the number of ties between actors j and k; and, Tie Strength of

Dyad3 is the number of ties between actors i and k. For the nonexisting tie between the

two actors who are not connected in the open triad, the value of tie strength is 0.

Difference in Sign. The Difference in sign is a binary variable coded 1 if the

directed ties between actor i and j are opposite in sign, i.e., actor i cooperates with actor j,

but actor j is in conflict with actor i. The variable is coded 0 if the ties between actor i and

j are not different. I compute the difference in sign for each of the three dyads in the triad.

These variables are named Difference in Sign Dyad1 (for actors i-j), Difference in Sign

Dyad2 (for actors j-k), and Difference in Sign Dyad3 (for actors i-k). For the non-existing

tie between the two actors who are not connected in the open triad, the value of

difference in sign is 0.

Reciprocity. Reciprocity is a binary variable coded 1 if reciprocal ties exist

between actor i and j and 0 otherwise. I make no distinction between the type of

reciprocation, that is, reciprocal ties of both opposite (+, -) and similar sign (+,+ or -,-)

are all coded 1. Reciprocity is computed for each of the three dyads in the triad and are

named Reciprocity of Dyad1 (reciprocity between actors i and j), Reciprocity of Dyad2

(reciprocity between actors j and k), and Reciprocity of Dyad3 (reciprocity between

actors i and k). Reciprocity increases contact among actors (Martin et al., 2006) and

therefore is likely to positively impact the likelihood of triad closure. For the non-existing

tie between the two actors who are not connected in the open triad, the value of

reciprocity is 0.

Common Others. An important indicator of whether a triad will close is the

number of common others the actors in a triad are connected to. Unconnected actors

connected to greater numbers of third party others are more likely to meet and close the

triad. Martin and Yeung (2006) in their study examining persistence of ties in

communities of actors find "there seems to be a fundamental non-independence of ties:

ties are more likely between people already implicitly connected via third parties who are

in contact" (Martin et al., 2006:359). Kossinets and Watts (2009) examine the effect of

similarity on new tie formation when individuals shared a mutual acquaintance and find

that similarity impacts new tie formation *even when* these actors are introduced by a

mutual acquaintance. Hu, Kaza and Chen (2009) examine facilitators of link formation in

a network of felons and find that demographic homophily (age, race, gender) is not

significant on link formation among felons in a narcotic network, but rather mutual

acquaintance and shared vehicle association are facilitators of link formation. My

measure of common others is simply a count of other actors that are connected to *both*

actors in the dyad (i.e., a count of the number of other open triads in which both actors in

the dyad are embedded). Common Others is computed for each of the three dyads in the

triad and are named Common Others of Dyad1 (a count of the number of other open

triads in which both actors i and j are embedded), Common Others of Dyad2 (a count of

the number of other open triads in which both actors j and k are embedded), and

Common Others of Dyad3 (a count of the number of other open triads in which both

actors i and k are embedded).

I include variables controlling for country, firm, mine and network factors in the

empirical analyses. At the country-level, I include a measure of "Voice" within the host

country—essentially, a measure of the freedom of the media and freedom of speech

within each country. I obtain this perception-based measure from the World Bank

Institute's World Governance Indicators (WGI)(Kaufmann et al., 2010). This measure is obtained from statistical compilation of surveys from a wide variety of civil society actors, including NGOs, think tanks, international organizations and industry experts, within different countries.

At the level of the firm, I control for the firm's percentage ownership of the mine. This percentage is a measure of how much ownership the focal firm has at stake relative to other owners of the mine. As my sample is limited to small firms, many with only 1, 2 or 3 mines, the loss of a mine has a significant adverse impact on the value of the firm. The percentage of ownership may also impact how the government will perceive the mine; for example joint ventures may decrease the level of government interference.

At the mine level, I control for the development stage of the mine in terms of whether the mine is in exploration, feasibility, construction, production or the mining process has been suspended. Because exploration and feasibility are relatively early stages prior to the significant outlays of resources by firms to develop the mine, I code the binary Mine Status (Construction and Production) variable which is coded 1 if the mine is at the construction or production stage, and 0 otherwise. Also, because the suspension of a mine is a significant event with performance implications, and because the suspension of the mine can occur at any stage of the mine development and mining process, I code the Mine Status Suspension variable which is a binary variable coded 1 if the mine has been suspended within that year or not.

I also control for the price of gold. This variable is particularly important as the price of gold has risen sharply over the past few years passing $500 per ounce for the first time in December 2005, $1,000 per ounce in March 2008, and toping $1,900 an ounce in

August 2011. As gold is used as a hedge in times of financial crisis, the sharply rising price of gold heightens tensions over who has the right to appropriate this value and may thus significantly impact relations between firms and stakeholders.

As a robustness measure, I also include a measure of the value of the mine[15] in proportion to the host country gross domestic product. This measure is important as firms operating larger more valuable mines are more likely to face greater tensions and opposition from stakeholders. However, because the value of the mine can only be computed once the firm is listed on one of the Toronto Stock Exchanges, much of the media-reported stakeholder event precedes the periods in which the mine is valued. Therefore, the periods in which the mine valuation occurs, for this study, present a biased sample of relations between firms and stakeholders.

Due to the nature of the mining industry and the political salience of gold mining in particular, the global gold mining industry plausibly has networks of relations that are more diverse and more dense than networks of stakeholder relations for firms in other industries. I therefore control for the density of interactions in this industry by including a measure of the potential number of ties that could be formed by actors in the networks. I first compute the total possible number of directed ties that could be formed given the number of actors (both firms and stakeholders) in the network:

$$TotalPossibleTies_{gt} = x_{gt} * (x_{gt} - 1)$$

Where,

x_{gt} is the number of actors in the network at time t

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[15] For the valuation model see Henisz, Dorobantu, Nartey, 2011

I then obtain a count of the ties not formed by subtracting a count of the existing directed

tie relations in each network at time *t* from the total number of possible ties that could be

formed at time *t* based on the number of actors in the network. Although my stakeholder

dataset includes multiple ties to the same actor, for this computation, I do not count the

number of directed ties between actors but rather, if 1 or more directed tie exists between

two actors, i.e., an actor *k* with multiple ties to another actor *j* is counted only as 1 tie

from *k* to *j*. If actor *j* reciprocates with one or more ties to actor *k*, that relation is also

counted as 1 tie.

I next create a proportion of these ties, by dividing the number of ties not formed

by the total number of possible ties.

$$PotentialTies_{gt} = \frac{\sum TiesNotFormed_{gt}}{\sum TotalPossibleTies_{gt}}$$

Where,

Ties Not Formed$_{gt}$ is the total number of possible new ties that can be formed

among actors in a network *g* at time *t*

TotalPossibleTies$_{gt}$ is the total number of directed ties that could exist in a

network of actors *g* at time *t*

Importantly, I then lag this variable to obtain a measure of the potential ties in the

previous time period.

To control for the media-based data, I control for stakeholder events reported by

major news outlets as this will have an impact on how widely the news is reported. The

media source of the event (i.e., the name of the newspaper or media outlet) is coded in the

stakeholder events database. I then use the media categories reported by FACTIVA to

determine whether the reported media source is a major news outlet or not. For each network (i.e., by subperiod), I create a measure of the proportion of stakeholder events reported by major news outlets from the total number of reported stakeholder events.

I also control for two additional cultural distance and media-related factors that may impact relations between firms and stakeholders. The first is a control for whether the country in which the mine is located speaks English as one of its official languages. This is important as media reports from English speaking countries may more fully reflect the relations between firms and stakeholders and therefore the media reports may be more accurate in their depictions of stakeholder relations. Further, a host country environment that officially governs in the English language may be an easier host country environment for Canadian mining executives to strategically relate with stakeholders. My measure of English Language is a binary variable coded 1 for English as the Official Language and 0 otherwise. I obtain this data from the CIA's World Fact Book website.[16] The second distance-based control is the measure of the distance between Toronto, Canada, where the firm is listed on the TSX, and the capital city of that host country. I obtain the measures of distance from the Indo.com website.[17]

Finally, I also include indicator variables to control for the various types of directed triads.

Models

Because I seek to explore the likelihood that a triad will be closed based on the characteristics of the three actors in the triad, I use a hazard rate model. I use a piecewise-

[16] https://www.cia.gov/library/publications/the-world-factbook/
[17] http://www.indo.com/distance/index.html

exponential hazard rate model where the constant rate and any other variables of interest are allowed to vary within pre-defined time-segments (c.f. Blossfeld, Hans-Peter, & Rohwer, 1995). This allows me to test whether certain variables become more or less important to closing the triad as the potential triad stays open longer. More importantly, the model also allows the impact of time (i.e., the age of the open triad, which in my sample is determined by subperiod) to be non-parametric as opposed to constant in the exponential model. I use the model,

$$r(t, x) = exp\,(\beta p\, Xp) \qquad \tau p - 1 \le t \le \tau p$$

where p denotes a time interval or piece that goes from τ_p-1 to τ_p

I define my time intervals (time pieces) by subperiod and the variable whose effects may also vary between time pieces as each directed triad for each mine. I run the piecewise exponential models with 1, 3 and 5 subperiod-timepieces. All models are run with Stata 11 using the 'stpiece' routine developed by Sorensen (1999).

RESULTS AND DISCUSSION

Tables 3.1 and 3.2 present the descriptive statistics and correlations for the variables in the analyses. Table 3.3 presents the full piecewise exponential hazard model where the constant and directed-triad-mine indicator variables are allowed to vary between single subperiod-timepieces, i.e., with every subperiod. Table 3.4 presents the same full model but the constant and directed-triad-mine indicator variables are allowed to vary between every 3 subperiod-timepieces, i.e., between every 3 subperiods. And Table 3.5 presents the same full model but the constant and directed-triad-mine indicator variables are allowed to vary between every 5 subperiod-timepieces, i.e., between every 5 subperiods. Within each table, Model 1 presents the results of the main independent

variables (access to resources difference, status difference, likeability difference and popularity difference) in addition to the main control variables (network size, different signs in directed ties of dyad 1 and dyad 2, tie strengths for dyads 1 and 2, whether dyad 1 and / or 2 contains reciprocal ties, degree of cooperation between actors in the dyads 1 and 2, the number of common other actors for dyads 1, 2 and 3, the transitive density and the number of possible ties of the network in the previous time period, country voice, distance to Toronto, whether English is an official language in that country, the price of gold, ownership of the mine, and the status of the mine (construction and production, and whether the mine is suspended in that time period).

Model 2 in each table adds the triad-type fixed effects to Model 1. Model 3 builds upon Model 2 and includes all interaction variables. These variables are: the interaction between likeability and voice, and interactions between the difference in sign, reciprocity, tie strength and degree of cooperation of dyads 1 and 2. Model 4 in each table includes the squared transformation variables: likeability and voice squared, and the possible ties in the previous network period squared. Finally, Model 5 includes the log of the ratio of the mine value (NPV) to GDP variable.

Results across the three sets of time-varying models are generally robust once the triad fixed effects variables are included. Due to the bias in the sample containing the mine value variable (although the main effects are robust within that sample), I discuss the results presented in Table 3.3 (the piecewise exponential model that varies with each single time period), Model 4 (the full model excluding the mine value variable).

I begin with a discussion of the control variables. Network size significantly but negatively impacts the likelihood of triadic closure. That is, the smaller the size of the

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network the more likely that a link will be formed closing the directed triad. This outcome is expected as smaller networks have fewer options for tie formation than larger networks. I next examine the impact of the variables controlling for tie quality—difference in sign, tie strength, reciprocity and cooperation—on the likelihood of a tie forming to close a directed triad. The difference in sign and degree of cooperation for both dyads 1 and 2 in the triad all negatively and significantly impact the likelihood of a tie forming to close the triad. This implies that dyads which have ties that are different in sign, and dyads that have ties of greater cooperation are less likely to form a tie to close the triad. On the other hand, dyads with reciprocal ties and those with greater frequency of interaction between the actors (i.e., greater tie strength) are more likely to form a tie to close the triad. The number of common others that the actors in each of the three dyads is tied to significantly and positively impacts the likelihood of a link forming that closes a directed triad. This finding strongly supports extant research that has also found a strong relationship between ties to mutual others and the likelihood of a tie forming that will close a triad closure (Gimeno et al., 2001; Kossinets et al., 2009; Louch, 2000; Martin et al., 2006).

The transitive density of actors within the sociopolitical environment in the previous period positively and significantly impacts the likelihood that in the next subperiod a tie formed will close an open directed triad. This is an expected result as transitivity is an underlying mechanism of tie formation that closes cooperative triads (Doreian et al., 2001; Holland et al., 1970). The impact of the number of possible ties in the previous network period, while significant and positive in all previous models, loses its significance with the introduction of the squared transformation of this variable.

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However, the squared transformation of the number of possible ties in the previous network period significantly and positively impacts the likelihood of a tie forming to close an open triad in the next time period. This implies a curvilinear relationship between the number of possible ties in the previous network and the formation of a tie to close a triad in the current time period.

My measure of country voice, which is a measure of the degree of freedom of speech within the country in which the mine is located, also significantly and positively impacts the likelihood that a link will form closing a directed triad. This may be because countries in which political, social, and economic actors have freedom of speech are more likely to express sentiment and take actions in support of or against other actors in the sociopolitical environment thus increasing the frequency of tie formation and thus the likelihood that ties will form that will close open directed triads among these actors. Additionally, greater voice among actors may facilitate easy identification of other actors with whom an organization may want to strategically form a tie thus increasing the likelihood that a tie formed will close an existing open directed triad.

The distance of the host country capital from Toronto, and whether English is an official language of that host country are country-level factors that both positively and significantly impact the likelihood of a tie forming to close the triad. The price of gold negatively and significantly impacts the likelihood of a tie forming to close the triad. The firm's percentage of ownership of the mine positively and significantly impacts the likelihood that a tie will form to close the triad, and both the construction-production and suspended stages of mine development positively and significantly increase the likelihood that a tie will form to close the triad.

Moving onto the interaction variables, likeability of the actors in the dyads within the triad and the level of freedom of speech within a country environment together significantly and positively impact the closure of the triad which is an expected outcome as both likeability and voice individually significantly increase the likelihood of a tie forming to close the triad. However the negative and significant impact of the squared transformations of this interaction variable implies a curvilinear relationship. Exploring the joint impact of the nature of the two existing dyads in an open triad on the likelihood of a tie forming to close the triad, I find that the joint effect of the difference in sign in the first and second dyad, and the joint effect of the cooperation in the first and second dyads positively and significantly (weakly for cooperation) impact the likelihood of a tie forming to close the triad. The joint effect of reciprocity in both dyads, and the tie strength of both dyads significantly but negatively impact the likelihood of a tie forming to close the triad.

While all control variables significantly impact the likelihood of a tie forming to close the triad, an interesting and important extension of this work is to explore the nature of the ties that close what types of triads. For example, while at both the construction-production and suspension stages of the mine the likelihood of a tie forming to close the triad is significant and positive, more insight as to the nature of ties (particularly with regard to whether these ties are cooperative or conflictual) would increase our understanding on the contingent factors of triadic closure, i.e., what types of ties close what types of triads under what conditions.

Continuing with a discussion of the independent variables of theoretical interest—difference in access to resources, different status, different likeability and different

number of ties among actors in the directed triads. I find that a link that closes a directed triad is more likely to form when actors have *different* access to resources (support for H1) and *different* status (support for H2a) and similar number of ties (support for H4a). I find that likeability has no impact on the likelihood that a link that closes a directed triad will be formed (H3 is not supported). The economic significance of these variables is significant. An increase of 1 standard deviation in the difference in access to resources between the actors in a dyad (i.e., a change of 0.26%) will result in a 4.6% increase in the likelihood of a tie forming that closes a directed triad. An increase of 1 standard deviation in the difference in status between the actors in a dyad (i.e., a change of 0.14%) will result in a 4.5% increase in the likelihood of a tie forming that closes a directed triad. And, a decrease of 1 standard deviation in the difference in popularity or number of ties between the actors in a dyad (i.e., a change of 0.016%) will result in a 2.3% increase in the likelihood of a tie forming that closes a directed triad.

The finding that a link that closes a directed triad is more likely when actors in a triad have different access to resources and different status is important to our understandings of the contingencies that support or prevent the homophily mechanism from driving structural outcomes. Actors with different access to resources gain the benefits of leverage and control (Burt, 1992) by forming ties to diverse actors with whom they have a dependent relationship. The power of the actor with greater access to resources lies in her control of these resources and the dependence of the other actor. The less-endowed actor, on the other hand, driven by their resource dependence, will seek to form ties with actors who have access to greater resources and may thus seek to curry favor of these more endowed actors. Although extant literature on homophily suggests

that actors of similar resources are likely to form ties, important insight is gained from exploring conditions under which actors with greater access to resources would choose to lose that resource dominant position by forming ties with other actors of similar resources, as well as the converse, when actors with greater access to resources choose to protect their dominant position by forming ties to other less-endowed actors.

The finding that actors of high status are more likely to form a tie that closes a triad with other actors of different (low) status also augments our understanding of the contingent nature of tie formation. Status, as a function of hierarchy, is inherently based on differences. High status actors are more cognizant of their high status when in the presence of lower status actors due to the benefits of their high status, including deference (Turk et al., 1962), preferential exchange terms (Thye, 2000; Thye et al., 2006), and preferential access to resources.

An important insight from the extant status literature is the idea of a cost to high status actors who associate with lower status actors. In his study of investment bank syndicates, Podolny (1994) finds associations with low status firms results in the loss of status, and that status constrains firms to associate with firms of similar status (low status firms associate with low status others, and high status firms associate with high status others). Further work is required to determine when high status actors face a cost to associating with lower status actors, and when high status actors gain from associating with lower status actors, and importantly, what these costs are. For example, by associating with lower status actors, higher status actors face reputation costs (Podolny, 1994). However, anecdotal evidence suggests that by associating with lower status actors, higher status actors may also enhance their reputation, i.e., philanthropy and donations to

the poor or 'lower status' actors in society affords the firm reputation benefits and possibly social capital.

I find no support that likeability, whether different or similar between actors in a triad, has an impact on the likelihood that a link closes a directed triad. This finding is intuitively interesting as likeability is strongly associated with homophily in extant literature, i.e., similar actors associate and *cooperate* with each other (McPherson et al., 2001), and therefore the expectation is that actors who are not only similar but have similar likeability are *even more* likely to associate and therefore the formation of a link that closes an open triad should be even more likely. A possible explanation for this result is that likeability differs by a wide range and the behavior of actors who have similarly high likeability may be very different from the behavior of actors who have similarly low likeability. Actors with low likeability may eschew each other (i.e., two unliked actors are less likely to associate and cooperate while two highly liked actors may associate and cooperate). Alternatively, similar actors with high likeability within the political sphere may perceive each other as competitors (i.e., these actors use their likeability instrumentally to obtain resources) and therefore do not associate or cooperate, whereas actors with similarly low likeability within the political arena may band together to form a coalition. Closer investigation of this result is required with a focus on categorizing the likeability of actors as similarly high, similarly low or different.

Lastly, the finding that a link that closes a directed triad is more likely when actors in triads have similar number of ties to other actors (i.e., actors of similar popularity), is expected and supports the theoretical concepts and empirical findings of a large body of extant literature on the sociological importance of homophily. I argue that

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because dependence is not inherent to likeability i.e., being likeable is not a zero-sum outcome and therefore there is no inherent 'cost' to associating with similar others, the mechanism of homophily is freely applied.

Implications and extensions

In this work, I explore how homophily of the structural characteristics among all three actors in an open directed triad impact the likelihood of a tie forming that will close that triad. My findings imply that an organization seeking to manage interactions with other actors in a sociopolitical network should be cognizant of the structural homophily of the actors to whom it is tied and their third party actors, who may or may not be tied to the firm, as these characteristics collectively shape their interactions. An important complement to this work is to explore how homophily of the structural characteristics of only the unconnected actors in the triad impact the likelihood that a tie will form between them thus closing the triad.

While this and other studies (Kossinets et al., 2009; Louch, 2000) explore triadic closure as a dependent variable, more work needs to be done to understand what other factors impact triadic closure including other network characteristics of homophily such as structural equivalence (Fombrun, 1982) and role equivalence. Further, while I have explored how homophily among all stakeholders within a specific sociopolitical environment (the global gold mining industry) impact the likelihood of closure of triads among these actors, because different types of actors exist within different environments, an important extension is to test the relationship between homophily and triadic closure in different contexts. For example, how will the relationship between homophily and triadic closure change among a network of only economic actors (firms), or different

types of political and/or social actors (e.g. interactions among nation states), or the actors in an different industry context. Therefore, future research in this area could determine whether specific types of homophily are more important to closing ties among different types of actors and in different contexts.

I explore whether the triad is closed or not, but an important extension of this work could explore not only whether the triad is closed but importantly *how* the triad is closed (i.e., is the newly closed triad balanced and therefore stable or imbalanced and therefore unstable). Additionally, although my triad data is directed and signed, I only employ the direction of the ties in this work, controlling for the cooperation of the existing dyads. Including measures of whether the triads are cooperative or conflictual (i.e., a measure of balance based on the degree of cooperation or conflict of the triad) may change the relationship between homophily among the actors in an open triad and the likelihood that a tie will form closing the triad. Further, although social balance processes may be natural, they are not necessarily good (Antal, Krapivsky, & Redner, 2006). Therefore an important extension of this work is to empirically determine under what conditions triadic closure is beneficial and disadvantageous within the sociopolitical arena. Triadic closure, as with all network mechanisms, is not without cost, therefore, an interesting extension may be to explore the type and range of costs of closing the triad for different types of homophily among actors in the triad.

Conclusion

In this dissertation, I use the tools of network theory to specify strategic choice variables of stakeholder networks that foreign firms can alter to manage and thus improve the nature of their relations with individual stakeholders. This dissertation thus answers the call of Kobrin (1979: 77) for "better definitions of the [political risk] phenomena, a conceptual structure relating politics to the firm and a great deal of information about the impact of the political environment" to move the literature forward. Scholarship using network applications in the context of international business is limited despite the substantial advances in social network theory and analytical tools. Early work by Moran (1973) explored multinational firms' strategic use of transnational network alliances to effectively mitigate political risk by creating a coalition of diverse external political, financial and economic stakeholders to influence the extent of adverse government interventions. Speaking to the impact of network research in political contexts, Knoke (1993: 23) asserts that "by combining reputational, positional and decision-making measures, researchers delineate the networks of communication ties and resource exchanges, which shape collective actions that attempt to influence the outcomes of political controversies."

Further, within the realms of political science and policymaking, network methods applied to research on political interactions has "refocused the substantive issues…, raised provocative theoretical questions, and addressed important empirical relationships" (Knoke, 1993: 24). Despite these gains however, there is room for further "creative theoretical and methodological efforts" (Knoke, 1993: 42). Recent work by Kahler (2009) applies network theory to international politics through the primary views

of networks as both structures and collectives of strategic actors. Addressing the important contributions of network applications to international politics, Kahler (2009: 32) states:

> Although network analysis will continue to justify itself through its ability to explain significant features of contemporary international politics, its theoretical contribution should not be overlooked. Networks offer a means to investigate the relations between agents and structure in an empirically convincing manner. Networks force attention to dimensions of power that conventional views of international politics neglect. Networked governance is an alternative to hierarchies and markets with its own roster of strengths and weaknesses.

In this dissertation, I seek to jointly address the calls of Kobrin and Knoke by defining an integrated networks-as-structures and networks-as-actors approach similar to that of Kahler (2009), for multinational firms to strategically improve relations with stakeholders. In addition to applying concepts and tools from network theory, I apply insights from the entrepreneurship, social psychology, and civic or political participation literatures. Broadly, in this dissertation, I contribute to the political risk and international business literatures by applying network tools to analyze stakeholder influence strategies.

The theories and preliminary findings of the network-based sociopolitical strategy I outline in this dissertation have significant implications for scholarship, practice and policy. Particularly important to this work is the understanding that the firm's ability to improve relations through increasing cooperative relations and ties while reducing conflictual relations and ties may impact its ability to operate and, for small firms particularly, its ability to survive. First, the current connections of the firm to

stakeholders have ramifications for the evolution of the firm's network over time. Extant literature has established that a firm's connections to financial and economic actors influences the type and degree of political uncertainty and intervention it faces (Henisz, 2000; Moran, 1973). My preliminary findings contribute to this area of research by establishing not only the importance of the firm's connections with *social* actors to the mitigation of political uncertainty, but more importantly, that the characteristics of the social, political and economic actors to whom the firm is tied impacts its subsequent ties and relations with stakeholders in the broader network. Thus, firms can better navigate uncertain political environments by managing the strategic "choice" of *who* to connect with in the host country environment.

While extant literature looks at the firm's direct relations, I in addition explore how these direct relations are perceived by others and the implications for the firm's subsequent relations with these actors. Traditional multinational firm practice in host countries highlights the formation of connections to "important" stakeholders. However, these findings suggest that connecting with "important" stakeholders affords both strategic benefits and liabilities. Further, these findings raise questions of "who" is an important stakeholder and what determines importance. While present practice largely considers outward signs of "importance," these findings suggest the need for firms to seek relations to actors with "local legitimacy," i.e., a high status actor may lack local legitimacy whereas a well-liked stakeholder may have local legitimacy.

In this dissertation I explore the idea that firm relations with stakeholders are contingent upon the interdependencies and relationships among stakeholders themselves, a concept that has significant implications for firm nonmarket strategy. By understanding

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"who defers to whom" (Watkins, 2001) the firm improves its ability to leverage relations among stakeholders and improves its chances of survival within the host country. While extant theoretical literature has sought to understand the importance of interrelationships and influence networks (Balkundi et al., 2006; Krackhardt et al., 1993; Salancik, 1986; Watkins, 2001), few empirical examples within the international business and nonmarket literatures explore the dynamics of firm and stakeholder relations. Extant studies rather focus predominantly on the firm's dyadic relations with governments and financial and economic actors. This work highlights the implications of stakeholder interrelations and interdependencies on the firm's relations with stakeholders. In addition, the findings of this research also contribute to the literature on stakeholder theory and management. Within this literature, the development and utility of a comprehensive stakeholder theory is stymied the question of how to identify key stakeholders (Donaldson et al., 1995; Greenwood, 2007; Mitchell et al., 1997). Presently, key stakeholders are subjectively determined by managers.

The findings of my two empirical chapters are important for firms seeking to navigate hostile nonmarket environments. In chapter 2, the first empirical paper, I explore how firms seeking to enter new markets can mitigate both their egocentric uncertainty and the altercentric uncertainty the stakeholders in the environment face through strategic positions to obtain information and reputation benefits. Because tie formation is costly, I explore which type of strategy (and uncertainty) firms should expend their limited resources on. I find that although strategies to mitigate egocentric uncertainty through building networks rich in structural holes and networks which span the core and periphery of the stakeholder network are significant and important to engendering

cooperation, reducing conflict and forming ties with stakeholders, this the strategy to obtain information benefits loses its significance when compared with the strategy to obtain reputation benefits through mitigating stakeholder altercentric uncertainty.

In chapter 3, the second empirical paper, I explore how homophily or dissimilarity in the structural characteristics of dyads of actors impacts the endogenous network process of a tie forming to close a triad. I explore homophily of four characteristics of the actors in the dyads that form a triad: access to resources, status, likeability and popularity. While the literature on homophily argues that stakeholders of similar characteristics will form ties, using insights from the literatures on dependence theory I argue that for the characteristics of stakeholders that are inherently based on dependence, rather greater dissimilarity will form the tie that will close the triad. I find support for this argument: specifically, actors with different access to resources and different status will positively impact the formation of a tie that will close the triad, while actors with similar ability to form ties will positively impact the formation of a tie that will close the triad. I find no impact of similar or dissimilar actors in terms of likeability on the likelihood of triad closure.

The findings from this study suggest that for the firm, the key stakeholder may not be a question of only who the stakeholder is and how managers perceive the stakeholder, but also a question of the stakeholder's position and influence within the broader host country network, how this stakeholder is perceived by others within the network, and importantly how homophily among actors in triads impacts the structure of the network and the relations among actors. Using network tools and concepts, I proffer

an objective alternative to the present subjective managerial salience approach to stakeholder identification.

Of course these findings also raise further questions for firm strategy, avenues of research which form part of my broader research agenda. Firstly, although the stakeholder relations data used for this study provides a rich empirical context in which to conduct this analysis, an important means to augment these findings and to better explore the underlying mechanisms is to conduct comparative qualitative studies. Preparations for these qualitative analyses are underway.

Second, while my findings have implications for firm performance by highlighting how firms can obtain reputation and information benefits through their strategic positioning in stakeholder networks, and outlining the possible costs of asymmetry in ties that could increase conflict with stakeholders; exploring how firms can mitigate both their own egocentric uncertainty through strategic network positions and stakeholder altercentric uncertainty through strategic associations with stakeholders; and finally, examine how firms can shape endogenous network outcomes by understanding how characteristics of actors in an open triad influence the formation of a tie that will close the triad, and important avenue of research is to determine the costs and impacts of these findings in terms of financial and operating performance outcomes. Work is ongoing in this area.

Third, in contrast to present practice and the present focus of extant literature on a largely reactionary approach to managing the political environment, the insights from my findings suggest a strategic proactive approach to the development of the firm's network of stakeholders can impact the degree of conflict and cooperation and strategic tie

formation between firms and stakeholders. Therefore, an important avenue of future research is to consider the contrasting impacts of a proactive versus reactive approach by the firm. That is, to explore the impact of adverse interventions by both governments and social actors on firms who have applied a proactive approach similar to the sociopolitical approach outlined in this research, compared with similar interventions on firms who have largely applied the reactionary traditional approach.

Another important extension of this dissertation research is to explore the country contexts in which a sociopolitical nonmarket strategy would be applicable. Arguably, not all aspects of the network-based influence strategy I outline are applicable in all host country environments. Further research on which aspects of the network-based influence strategy are applicable in which country or environment context is important. Similarly, an important area of research is to understand which firms can, or are more likely to, engage in these practices. Conventional wisdom and insights from extant literature propose that large firms are most likely to be able to effectively navigate politically risky environments due to their size, political clout and slack resources. However, examples from my novel database suggest otherwise. For example, facing significant political uncertainty during the six year civil war in the Democratic Republic of Congo (DRC), large firms such as AngloGold abandoned their investments. In contrast, smaller firms such as Tenke Corporation perceived the political uncertainty as an opportunity to gain first-mover and long-term political advantages by strategically building political relationships with warring factions, and remained during the war. Even as the war drew to an end, large firms were reluctant to enter into the mineral-rich but politically risky DRC; as voiced by an American investment lawyer: "I don't believe that the largest

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American companies are going to rush into the Congo, … I believe some of the smaller, enterprising companies in the U.S. and Canada will go in and wheel and deal. If that goes well, they'll bring in the larger companies."[18] An exciting avenue of research is to explore this phenomenon.

Lastly, while this dissertation considers the impact and implications of the firm's relations with stakeholders upon the firm, an important avenue of research is to determine the impact and implications of these strategies on stakeholders. Although I limit the scope of this research to a strategic or instrumental approach to stakeholder engagement,[19] the findings of this research implies a strategic benefit for both firms and stakeholders through collaborative engagement. The joint production activities of firms and stakeholders can help stakeholders produce services and products that will meet the specific needs of their communities, act as a catalyst for local development, and may generate novel outcomes such as the fostering of community-led social entrepreneurship initiatives (Esman & Uphoff, 1984: 77). Further, communication and collaboration between firms and stakeholders, particularly when started early in the firm's operations, may improve the firm's ability to mitigate the inevitable environmental damage that is caused by the extraction process by using local knowledge of the environment gathered from the firm's interactions with local stakeholders. The insights of this dissertation may also enable firms to practically and consistently engage in sustainable business practices centered on balancing the social, economic and environmental impacts of business

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[18] Gerald Padmore, a lawyer with Cox, Buchanan, Padmore &Shakarchy, a Denver firm specializing in international resources investment, in Denver Post, May 1997.
[19] Other scholars have also questioned whether stakeholder theory alone is useful to explicate the important but complex moral and normative issues of business ethics (Orts, E. & Strudler, A. 2009. Putting a Stake in Stakeholder Theory. Journal of Business Ethics, 88: 605 – 615).

(Elkington, 1998) and creating value—to society and themselves (Elkington & Hartigan, 2008). These and other potential social impacts of a collaborative sociopolitical firm strategy are also important avenues for future research.

**FIGURE 1.1: NETWORK POSITION CONVEYING VOLUMINOUS
INFORMATION**
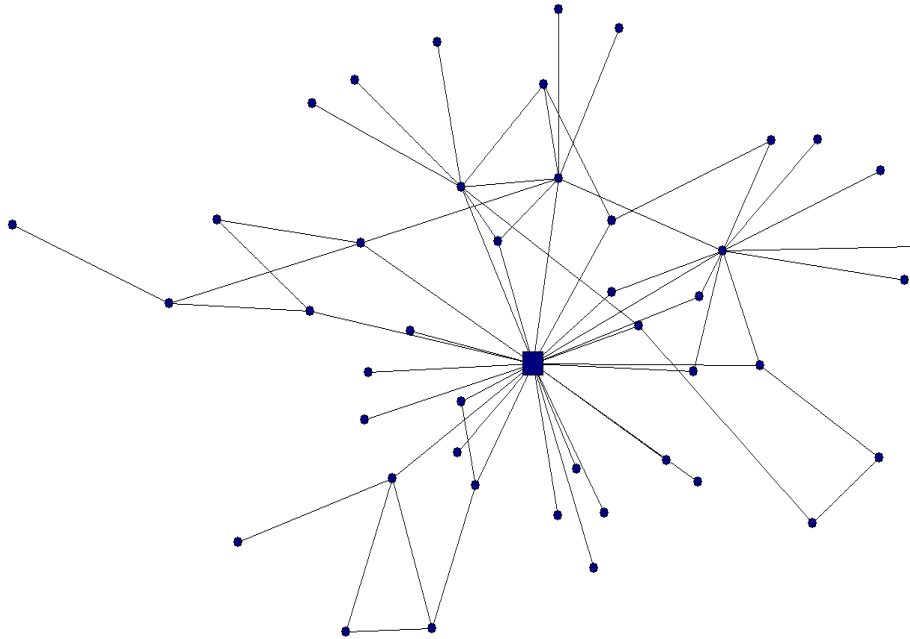
The SQUARE shaped node is the most central as it is connected to the most number of

partners. The information gathered through forming ties with many others (i.e., a large

ego network) provides the firm with information on how to manage its existing

stakeholders and how to strategically target and form ties with external stakeholders.

FIGURE 1.2: NETWORK POSITION CONVEYING DIVERSE INFORMATION
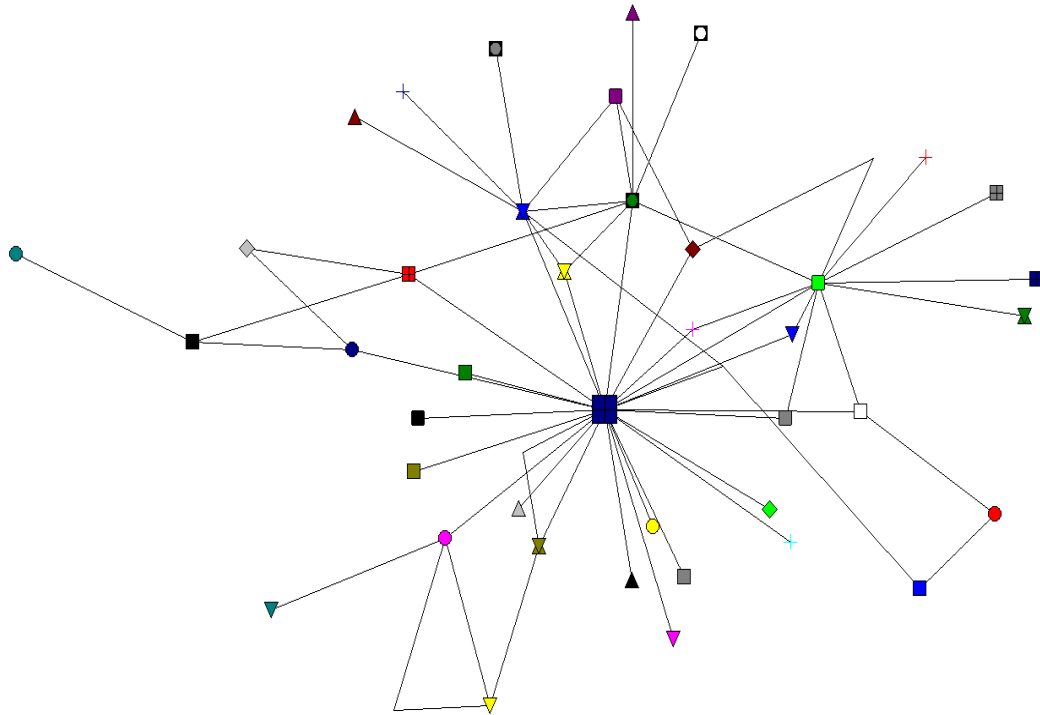
The SQUARE shaped node is connected to diverse stakeholders with different attributes (depicted by the shapes, sizes, and colors of nodes). By forming ties with stakeholders of different characteristics firms have access to unique information which they can use to manage existing stakeholders in their networks and strategically form ties with external stakeholders.

FIGURE 1.3: NETWORK POSITIONS CONVEYING RICH INFORMATION
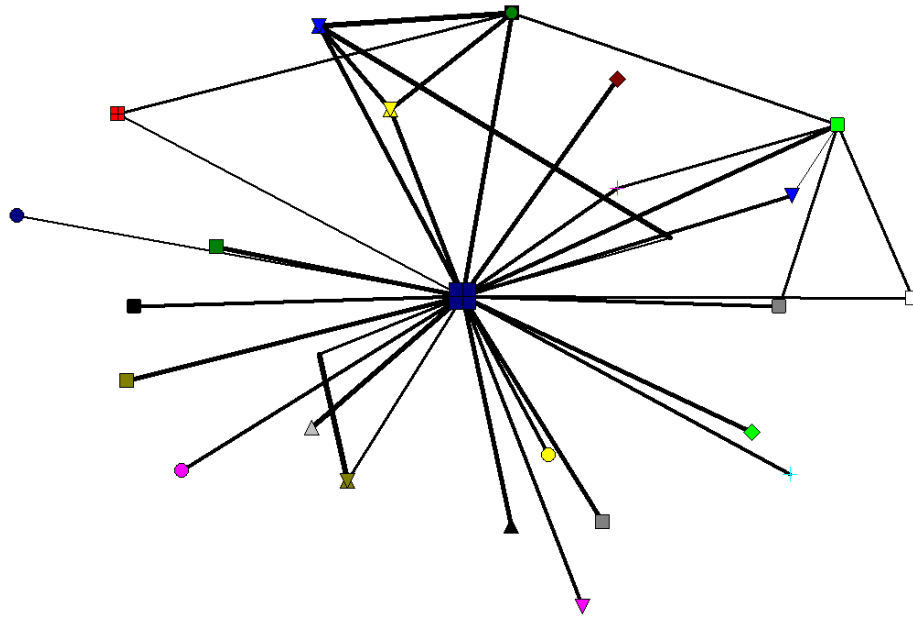
The SQUARE shaped note has many ties of different "richness" (richness is depicted by the strength or thickness of the tie). Using richer information, the firm can manage relations with existing stakeholders and strategically form ties with new stakeholders.

FIGURE 1.4: TRANSITIVE (FRIENDSHIP) MECHANISM

$$x$$

$+ (t+1)$ $+ (t)$

P $+ (t)$ O
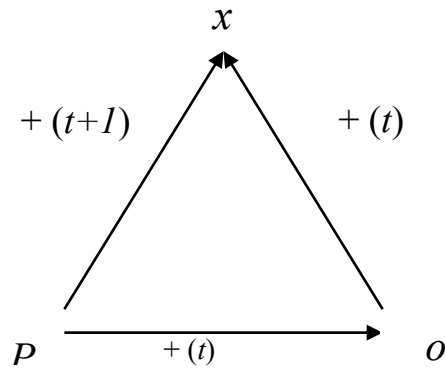
Transitive (Friendship) Mechanism: Cooperative relations between firms and stakeholders are contingent on structural relations. Cooperative $p{\rightarrow}o$ and $o{\rightarrow}x$ relations at time t will create or improve relations between $p{\rightarrow}x$ at time $t+1$

FIGURE 1.5: INFLUENCE MECHANISM
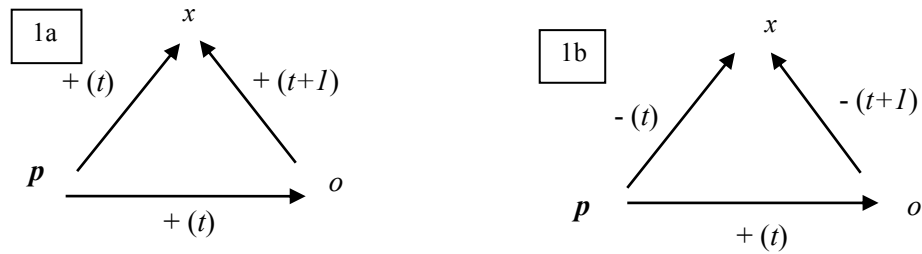
Influence Mechanism: The more influential stakeholder will influence the weaker more deferent stakeholder to have similar cooperative or conflictual relations with the firm.

(1a) Assuming *p* has greater influence over *o* and *cooperative* relations with *x* at time *t*, *p* can positively influence *o*'s relations with *x* at time *t+1*.

(1b) Assuming *p* has greater influence over *o* and *conflictual* relations with *x* at time *t*, *p* can negatively influence *o*'s relations with *x* at time *t+1*.

Thus the influence mechanism can result in an increase in cooperation or conflict.

APPENDIX 2.1: CODING PROTOCOL FOR EVENT DATA

I.   COMPANYID. Unique firm identifier.

II.   COMPANYNAME. Enter the parent company name. This field can only contain one of the 38 publicly traded parent companies that make up our sample.

III.   MINE. Enter the mine name. This field can only contain one of the __ mines owned by one of the 38 publicly traded parent companies that make up our sample.

IV.   RDAY. Locate the day of the report in the byline or other header text.

V.   RMONTH. Locate the month of the report in the byline or other header text.

VI.   RYEAR. Locate the year of the report.

VII.   EDAY. Identify the day of the event using the byline or the other header text in conjunction with the context of the article (e.g., three years ago…)

VIII. EMONTH. Identify the month of the event using the byline or the other header text in conjunction with the context of the article (e.g., three months ago…)

IX.   EYEAR. Identify the year of the event using the byline or the other header text in conjunction with the context of the article (e.g., three years ago…)

X.   NEWSSOURCETYPE. Note the type of news source. Common examples include print media, TV transcript, company press release, stakeholder press release, …

XI.   NEWSSOURCE NAME. Note the specific name of the news source (e.g., New York Times, Market Wire).

XII.   ONEWSSOURCETYPE. For rebroadcast or retransmitted reports, note the original type of news source. Common examples include print media, TV transcript, company press release, stakeholder press release, …

XIII. ONEWSSOURCENAME. For rebroadcast or retransmitted reports, note the original name of the news source (e.g., New York Times, Market Wire, ...).

XIV. SENTENCE. Provide the full text of the sentence that includes the event

XV.   INDIRECTREPORTERTITLE. In cases where the news source lists a third party individual as the source for the news, identify this entity. "Jim Jones, CEO of Greenpeace today announced that XYZ corporation spilled toxic materials into the river." The INDIRECT REPORTERTITLE field should equal CEO.

XVI. INDIRECTREPORTER. In cases where the news source lists a third party individual as the source for the news, identify this entity. For example, in the sentence "Jim Jones of Greenpeace today announced that XYZ corporation spilled toxic materials into the river." The INDIRECT REPORTER field should equal Jim Jones.

XVII. INDIRECTORGANIZATION. In cases where the news source lists a third party organization as the source for the news, identify this entity. For example, in the sentence "Jim Jones of Greenpeace today announced that XYZ corporation spilled toxic materials into the river." The INDIRECT REPORTER field should equal Greenpeace.

XVIII. VERB. Locate the event verb

     a. Identify all verbs within the sentence.

     b. Determine which verb appears in the main clause; this verb will convey the main event or activity of the sentence. Note that implied and/or secondary verbs may exist within a single sentence but should not be substituted for or combined with the main verb event coding.

     c. Record the literal value of the verb or verb phrase

XIX. VERBINFINITIVE. Record the infinitive of the verb or verb phrase that conveys the main event or activity of the sentence. For example, in the case of "Goldfields Corporation is pleased to announce the release of the report", the VERBINFINITIVE is "announce" as this action best conveys the main event or activity of the sentence.

XX.   SOURCEPHRASE. Locate the source (i.e., initiating) actor

       a.   Locate the subject of the main clause of the sentence to be coded. This is, almost always, the source (i.e., initiating) actor
          i.   The source (i.e., initiating) actor is the "who" of the sentence; that is, the person, place or thing that takes the action within a sentence
         ii.   The initiating actor in the main clause will, generally, appear at the beginning of the sentence.
       b.   Record the entire noun phrase occurring in the subject position as the literal, "source value."
       c.   Note that passive voice sentences are constructed without source actors; therefore it is possible that no source exists in the report being coded.
       d.   If a single sentence references two subjects, it should be entered into two rows.

XXI.   SOURCETYPE. Identify the type of the source if applicable. Examples include "report of", "comment by", "speech of", "statement of"

XXII.   SOURCETITLE. Identify the title of the source if applicable. Examples include CEO, VP, or Senator. Provide literal text. May be blank.

XXIII. SOURCEORG. Identify the organization of the source if applicable. Examples include XYZ Corporation, Romanian government or Greenpeace. Provide literal text. May be blank.

XXIV. TARGETPHRASE. Locate the target (i.e., recipient) actor
       a.   Locate the object of the main clause of the report to be coded. The object, if present, is the target (i.e., recipient) actor of the event. The target may be an indirect or direct object. It may be a person, place or thing.
       b.   Record the entire noun phrase occurring in the direct of indirect object position as the literal, "target value."
       c.   Note that many sentences are constructed without targets; therefore, it is possible that no target exists in the sentence being coded.
       d.   If a single sentence references two objects, it should be entered into two rows.

XXV.   TARGETTYPE. Identify the type of the target if applicable. Examples include "report of", "comment by", "speech of", "statement of"

XXVI. TARGETTITLE. Identify the title of the target if applicable. Examples include CEO, VP of Commercial Affairs, or Senator. Provide literal text. May be blank.

XXVII. TARGETORG. Identify the organization of the target if applicable. Examples include XYZ Corporation, Romanian government or Greenpeace. Provide literal text. May be blank.

XXVIII.   ISSUE CONTEXT (Additional information regarding the context to which the event data pertains where helpful. Examples include environment, corruption, wages or property acquisition)

APPENDIX 2.2: EXAMPLES OF CODING

Sentence Text	Source (i.e., subject)	Verb(s)	Target(s) (i.e., object(s))	Conflict-Cooperation Category	Conflict-Cooperation Scale
ASG Chairman Stephen Everett also praised RAMSI and local police and thanked the Solomons government for its positive support	ASG Chairman Stephen Everett	Praise; Thank	Local Police; Solomons Government	[express support verbally]	13
On September 14th 2007, President Nursultan Nazarbayev of Kazakhstan ceremonially kicked off the process of extracting gold and copper ore at the Varvarinskoye deposit. He was quoted as saying that this mine is one of many enterprises in the region that will "build up the power of Kazakhstan's economy	President Nazarbayev	Ceremonially kicked off	Varvarinskoye deposit [owned by European Minerals Corporation]	[show support through action]	14
[George] Salamis [President of Rusoro, Russian firm] shied away from commenting directly on the importance of Rusoro's Russian component but instead said: "We wouldn't be anywhere in Venezuela if it weren't for the great connections we've built with the Venezuelan government at all levels.	Salamis - President of Rusoro	build connections	Venezuelan government	[build positive events with]	13

APPENDIX 2.2: EXAMPLES OF CODING (cont'd)

Sentence Text	Source (i.e., subject)	Verb(s)	Target(s) (i.e., object(s))	Conflict-Cooperation Category	Conflict-Cooperation Scale
Kabila's government is fighting for its survival as rebels backed by neighboring Rwanda and Uganda have pushed their way westward toward the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila with arms and troops.	Kabila's government	fight for survival	rebels	[opposed in active military conflict]	1
Kabila's government is fighting for its survival as rebels backed by neighboring Rwanda and Uganda have pushed their way westward toward the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila with arms and troops.	Rwanda government; Uganda government	Back	Rebels	[support in active military conflict]	20
Kabila's government is fighting for its survival as rebels backed by neighboring Rwanda and Uganda have pushed their way westward toward the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila with arms and troops.	Zimbabwe government; Angola government	Support with arms	Kabila	[support in active military conflict]	20

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TABLE 2.1: SUMMARY STATISTICS OF STAKHOLDER DATASET

Company ID	Firm Name	Mine Name	Country	No. of Articles	No. of Stakeholder Events	No. of stakeholders	No. of Unique Ties	Min year	Max year
5111000	Luna Gold Corporation	Aurizona/Piaba	Brazil	569	197	19	13	2006	2008
205	Nevsun Resources Ltd.	Bisha	Eritrea	1131	2387	177	94	2003	2008
220	Olympus Pacific Minerals Inc.	Bong Mieu	Vietnam	476	111	74	46	1997	2008
136	Gold Reserve Inc.	Brisas	Venezuela	1525	6650	457	205	1993	2008
105	European Goldfields Ltd.	Certej	Romania	700	413	62	45	2000	2004
89	Dundee Precious Metals Inc.	Chelopech	Bulgaria	936	3342	338	166	2003	2008
9471000	Infinito Gold Ltd./Vannessa	Crucitas	Costa Rica	480	616	90	47	2001	2008
219	OceanaGold Corporation	Didipio	Philippines	534	1783	120	72	2006	2008
190	Minefinders Corporation	Dolores	Mexico	1125	164	61	48	1996	2008
225	Orvana Minerals Corp.	Don Marino	Bolivia	1718	492	82	61	1994	2008
223	Orezone Resources Inc.	Essakane	Burkina Faso	583	230	34	31	2004	2008
35	Australian Solomons Gold Ltd.	Gold Ridge	Solomon Islands	300	896	100	54	2004	2008
89	Dundee Precious Metals Inc.	Krumovgrad	Bulgaria	587	2630	230	129	2003	2008
9471000	Infinito Gold Ltd./Vannessa	Las Cristinas	Venezuela	653	7620	756	285	1995	2005
219	OceanaGold Corporation	Macraeas	New Zealand	554	97	46	36	2004	2008
203	Mundoro Mining Inc.	Maoling	China	629	342	69	54	2004	2008
105	European Goldfields Ltd.	Olympias	Greece	700	6633	232	123	2003	2008
921000	AXMIN Inc.	Passendro	Central African Republic	400	277	20	13	2003	2008

TABLE 2.1: SUMMARY STATISTICS OF STAKHOLDER DATASET (cont'd)

Company ID	Firm Name	Mine Name	Country	No. of Articles	No. of Stakeholder Events	No. of stakeholders	No. of Unique Ties	Min year	Max year
220	Olympus Pacific Minerals	Phuoc Son	Vietnam	763	132	48	33	1997	2008
123	Gabriel Resources Ltd.	Rosia Montana	Romania	1593	4543			1997	2010
219	OceanaGold Corporation	Reefton	New Zealand	457	153	36	31	2004	2008
105	European Goldfields Ltd.	Skouries	Greece	650	6394	178	102	2003	2008
63	Centamin Egypt Ltd.	Sukari	Egypt	1400	508	25	20	1997	2008
39	Banro Corporation	Twangiza	DR Congo	2744	4255	1007	435	1995	2008
291000	Alhambra Resources Ltd.	Uzboy	Kazakhstan	499	362	51	29	2001	2008
106	European Minerals	Varvarinskoye	Kazakhstan	523	527	57	40	1996	2008
	Total		**19**	**22229**	**51754**	**4369**	**2212**		

APPENDIX 2.3: DEGREE OF COOPERATION SCALE

Level of Conflict or Cooperation	Category Details
I	Violent attack w/ actual or potential/intended deaths or serious injury
II	Threaten to violently attack w/ actual or potential/intended deaths or serious injury
III	Restrain, imprison, hold against will, blockade, arrest, expel, capture, sequester
IV	Financially undermine deploy financial resources against (including sale of financial position at or below market price)
V	Threaten to financially undermine threaten/offer financial resources against(including sale of financial position at or below market price)
VI	Oppose, veto, impose, force, break, halt, reject, flee, default on obligation, rally in opposition, overturn, lose, national political decision in opposition (e.g., Supreme Court, Parliament, President…)
VII	Investigate, demand, alert, restrict, repeal of administrative, local or regional supportive policy
VIII	Deny, complain, criticize, denounce, negative comment, reject, accuse
IX	Call for action, request assistance against, request information on
X	Neutral statement of fact
XI	Yield, comply, solicit, request assistance with, vote for, am encouraged by
XII	Mediate, agree, travel to meet, engage, offer, positive comment
XIII	Host, praise, empathize, apologize, forgive, assure, thanked
XIV	Agreement or receipt/provision of information
XV	Rally in support, ratify, win election, policy decision in support (e.g., Supreme Court, Parliament, President…)
XVI	Offer financial support/defense/protection (including acquisition of a financial stake at market price or above)
XVII	Provide financial support/defense/protection (including acquisition of a financial stake at market price or above)
XVIII	Relax/ease major financial or security penalty/sanction/constraint
XIX	Offer armed support/defense/protection
XX	Provide armed support/defense/protection

APPENDIX 2.4: STAKEHOLDER NETWORK FOR BANRO RESOURCE CORPORATION'S TWANGIZA MINE IN THE DEMOCRATIC REPUBLIC OF CONGO, 2001
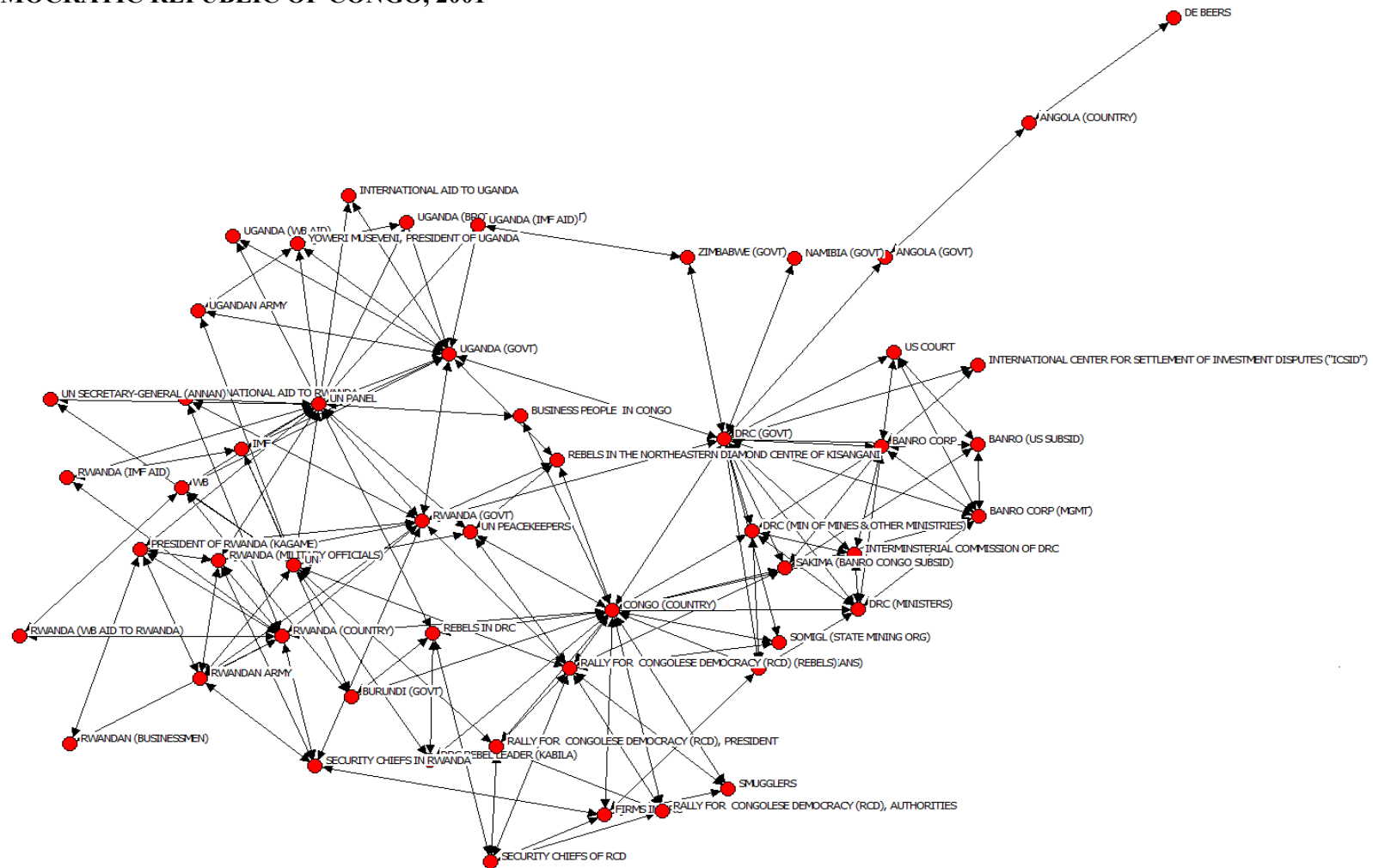
APPENDIX 2.5: ENGAGEMENT CODING PROTOCOL

a. Announcement
   i. Corporate
   ii. Stakeholder
   iii. Joint
b. Meeting
   i. Company-Stakeholder
   ii. Stakeholder-Stakeholder
   iii. Company-Company
c. Data Gathering
   i. Survey or poll
   ii. Database
   iii. Consultative Meeting
d. Payment
   i. Cash
   ii. In kind donation
e. Activity (i.e., an action or the cessation of an action)
   i. Company
   ii. Stakeholder
   iii. Company-Stakeholder
   iv. Stakeholder-Stakeholder
   v. Multi-stakeholder
f. Claims and Requests
   i. Damages
      1. Monetary
      2. Physical
   ii. Violation
      1. Criminal
      2. Contractual
      3. Process
      4. Ethical
   iii. Exclusion
   iv. Denial
   v. Request
      1. Information
      2. Compensation
      3. Activity (i.e., to do something or stop doing something)
g. Monitoring and Evaluation
   i. Company
   ii. Stakeholder
   iii. Company-Stakeholder
   iv. Stakeholder-Stakeholder
   v. Multi-stakeholder
   vi. National government

TABLE 2.2: VARIBLE DESCRIPTIVE STATISTICS

	Number of observations	Mean	Std. Dev.	Min	Max
Conflict-Cooperation	3683	1.630	3.162	-9	10
Cooperation	3048	3.370	1.846	0	10
Conflict	1649	-2.746	1.792	-9	0
All new ties	16535	0.623	5.686	0	311
New positive ties	16535	0.474	4.138	0	133
New negative ties	16535	0.156	2.811	0	251
Firm structural holes	19387	0.927	0.120	0	1
Firm periphery core	21987	0.006	0.008	0	0.065
Stakeholder status	7192	0.024	0.052	0	0.75
Stakeholder cooperation-conflict	7192	0.104	0.333	-0.9	1
Joint activity	21987	0.533	0.342	0	1
Ownership	21987	93.875	10.816	40	100
Voice	20281	-0.347	1.014	-2.136	1.678
English official language	21987	0.074	0.262	0	1
Gold price	21987	0.433	0.175	0.273	0.973
Possible ties	19874	0.905	0.116	0	0.989
Distance to Toronto	21987	4727.386	1943.349	2024	8779
Media major outlets	21987	0.185	0.145	0	0.602
Mine Status Construction & Production	21987	0.077	0.267	0	1
Mine status (suspension)	21987	0.027	0.163	0	1
NVP / GDP (log)	6937	0.241	0.032	0.100	0.292
Year	21987	2002.963	4.112	1993	2009
Mine ID	21987	14.407	7.325	1	25

TABLE 2.3: CORRELATIONS

		1	2	3	4	5	6	7	8	9	10	11
1	Conflict-Cooperation	1										
2	Cooperation	0.443	1									
3	Conflict	0.336	-0.260	1								
4	All new ties	-0.059	-0.066	-0.055	1							
5	New positive ties	-0.004	-0.074	-0.037	0.926	1						
6	New negative ties	-0.116	-0.039	-0.049	0.836	0.569	1					
7	Firm structural holes	0.027	0.002	-0.040	0.065	0.068	0.042	1				
8	Firm periphery core	-0.017	-0.097	0.065	-0.036	-0.041	-0.022	0.040	1			
9	Stakeholder status	-0.041	-0.017	-0.128	-0.050	-0.040	-0.052	-0.103	-0.056	1		
10	Stakeholder cooperation-conflict	0.560	0.128	0.303	-0.024	0.024	-0.080	0.008	-0.059	-0.066	1	
11	Joint activity	-0.068	0.090	-0.095	0.089	0.065	0.097	0.149	0.248	-0.036	-0.161	1
12	Ownership	-0.107	-0.038	-0.027	0.019	0.012	0.023	-0.159	0.351	-0.057	-0.197	0.209
13	Voice	0.143	0.026	0.090	0.106	0.127	0.051	0.331	0.174	-0.226	0.216	0.003
14	English official language	-0.091	0.179	-0.220	0.006	-0.037	0.065	0.098	-0.205	-0.107	-0.166	0.352
15	Gold price	-0.114	0.068	-0.185	-0.085	-0.092	-0.060	0.154	0.145	-0.105	-0.159	0.137
16	Possible ties	-0.024	-0.014	0.017	-0.188	-0.191	-0.145	0.019	0.145	-0.251	0.010	-0.201
17	Distance to Toronto	-0.066	0.110	-0.177	0.069	0.047	0.080	0.351	-0.161	-0.045	-0.111	0.543
18	Media major outlets	-0.069	0.110	-0.071	-0.018	-0.037	0.016	-0.348	-0.122	-0.109	-0.109	0.258
19	Mine Status Construction & Production	-0.181	-0.022	-0.129	0.013	-0.007	0.031	0.242	0.424	-0.020	-0.260	0.673
20	Mine status (suspension)	-0.078	-0.060	0.033	-0.061	-0.058	-0.051	-0.030	-0.050	0.071	-0.088	-0.328
21	NVP / GDP (log)	-0.061	-0.020	0.000	-0.078	-0.079	-0.071	0.004	0.241	-0.270	-0.056	0.318
22	Year	-0.139	0.044	-0.199	-0.120	-0.135	-0.079	0.201	0.019	-0.162	-0.145	0.124
23	Mine ID	-0.022	-0.007	-0.065	0.053	0.081	0.004	0.279	-0.277	-0.027	0.012	-0.139

		12	13	14	15	16	17	18	19	20	21	22
12	Ownership	1										
13	Voice	0.141	1									
14	English official language	-0.075	-0.269	1								
15	Gold price	0.007	-0.051	0.321	1							
16	Possible ties	0.187	0.198	-0.021	0.216	1						
17	Distance to Toronto	-0.290	-0.177	0.736	0.299	-0.167	1					
18	Media major outlets	-0.147	-0.322	0.274	0.100	0.168	0.424	1				
19	Mine Status Construction & Production	0.180	0.052	0.134	0.316	0.042	0.351	0.022	1			
20	Mine status (suspension)	-0.043	-0.197	-0.114	0.095	0.012	-0.289	-0.294	-0.194	1		
21	NVP / GDP (log)	0.413	0.131	0.049	0.272	0.647	-0.009	0.225	0.341	-0.097	1	
22	Year	-0.100	-0.056	0.401	0.816	0.382	0.387	0.155	0.310	0.124	0.457	1
23	Mine ID	0.088	0.149	-0.122	0.153	0.068	0.120	0.012	-0.094	0.187	0.004	0.162

TABLE 2.4: DEGREE OF CONFLICT-COOPERATION

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm structural holes (H1)	0.88*		0.26	1.10**		0.24
	(0.378)		(0.270)	(0.399)		(0.294)
Firm periphery core (H2)	-7.72**		0.86	-8.57**		1.13
	(2.946)		(2.080)	(3.280)		(2.430)
		1.54**	1.47**		1.63**	1.64**
Stakeholder status (H3)		(0.525)	(0.511)		(0.539)	(0.524)
Stakeholder cooperation-conflict (H4)		8.61***	8.76***		8.51***	8.66***
		(0.126)	(0.135)		(0.130)	(0.138)
Joint activity (H5)		0.02	0.09		0.09	0.10
		(0.102)	(0.101)		(0.123)	(0.123)
Ownership	-0.02+	0.00	-0.00	5.65+	3.29	3.37
	(0.009)	(0.004)	(0.005)	(2.911)	(2.224)	(2.128)
Voice	0.43***	0.07	0.08	1.25***	0.98***	1.03***
	(0.099)	(0.049)	(0.051)	(0.357)	(0.254)	(0.259)
English official language	-0.40	0.08	0.05	-1,011.26+	-593.56	-609.33
	(0.359)	(0.181)	(0.182)	(519.967)	(397.307)	(380.077)
Gold price	-0.22	-0.21+	-0.16	0.49	0.14	0.23
	(0.188)	(0.116)	(0.134)	(0.365)	(0.248)	(0.268)
Possible ties (T-1)	-1.01**	-0.22	-0.07	-0.85*	-0.13	-0.10
	(0.388)	(0.308)	(0.301)	(0.424)	(0.337)	(0.329)
Distance to Toronto	0.00*	-0.00	-0.00	0.24+	0.14	0.14
	(0.000)	(0.000)	(0.000)	(0.123)	(0.094)	(0.090)
Media major outlets						
Mine Status Construction & Production						
Mine status (suspension)						
NPV / GDP (log)						
Year	No	No	No	Yes	Yes	Yes
Mine ID	No	No	No	Yes	Yes	Yes
Constant	2.90**	0.37	0.41	-1,649.72+	-968.30	-994.22
	(1.122)	(0.560)	(0.635)	(851.568)	(650.664)	(622.452)
Observations	2,990	3,510	2,990	2,990	3,510	2,990
Number of mine-stakeholder groups	971	1,101	971	971	1,101	971

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.4: DEGREE OF CONFLICT-COOPERATION (cont'd)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
Firm structural holes (H1)	1.03*		0.23	1.05**		0.19	0.98*		0.19
	(0.402)		(0.297)	(0.405)		(0.298)	(0.408)		(0.300)
Firm periphery core (H2)	-8.45*		1.14	-8.96**		0.76	-8.81**		0.77
	(3.279)		(2.431)	(3.340)		(2.475)	(3.340)		(2.476)
Stakeholder status (H3)		1.63**	1.63**		1.62**	1.62**		1.61**	1.62**
		(0.540)	(0.526)		(0.539)	(0.524)		(0.540)	(0.526)
Stakeholder cooperation-conflict (H4)		8.51***	8.66***		8.51***	8.66***		8.51***	8.66***
		(0.130)	(0.138)		(0.130)	(0.138)		(0.130)	(0.138)
Joint activity (H5)		0.09	0.10		0.07	0.09		0.07	0.09
		(0.123)	(0.123)		(0.124)	(0.124)		(0.124)	(0.124)
Ownership	5.57+	3.29	3.37	5.47+	2.91	2.99	5.40+	2.91	2.99
	(2.910)	(2.225)	(2.128)	(2.959)	(2.256)	(2.160)	(2.958)	(2.256)	(2.161)
Voice	1.33***	0.98***	1.04***	1.27***	1.03***	1.06***	1.35***	1.03***	1.06***
	(0.362)	(0.256)	(0.263)	(0.360)	(0.257)	(0.262)	(0.365)	(0.259)	(0.265)
English official language	-997.24+	-593.25	-608.66	-979.17+	-527.01	-540.64	-966.82+	-526.90	-540.35
	(519.756)	(397.357)	(380.102)	(528.500)	(402.950)	(385.901)	(528.284)	(403.012)	(385.926)
Gold price	0.53	0.14	0.23	0.54	0.21	0.29	0.58	0.21	0.29
	(0.366)	(0.249)	(0.269)	(0.368)	(0.251)	(0.270)	(0.369)	(0.251)	(0.271)
Possible ties (T-1)	-0.69	-0.13	-0.09	-0.85*	-0.16	-0.11	-0.69	-0.16	-0.10
	(0.440)	(0.349)	(0.339)	(0.424)	(0.337)	(0.328)	(0.440)	(0.349)	(0.338)
Distance to Toronto	0.24+	0.14	0.14	0.23+	0.12	0.13	0.23+	0.12	0.13
	(0.123)	(0.094)	(0.090)	(0.125)	(0.095)	(0.091)	(0.125)	(0.095)	(0.091)
Media major outlets	-0.51	-0.01	-0.03				-0.50	-0.00	-0.02
	(0.361)	(0.263)	(0.265)				(0.361)	(0.263)	(0.265)
Mine Status Construction & Production				0.08	0.10	0.08	0.07	0.10	0.08
				(0.107)	(0.077)	(0.078)	(0.107)	(0.077)	(0.078)
Mine status Suspension				0.17	0.26	0.26	0.16	0.26	0.26
				(0.230)	(0.172)	(0.168)	(0.230)	(0.172)	(0.168)
NPV / GDP (log)									
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mine ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1,626+	-967.78	-993.10	-1,597+	-859.00	-881.54	-1,576+	-858.82	-881.04
	(851.23)	(650.75)	(622.50)	(865.51)	(659.90)	(631.9)	(865.16)	(659.99)	(632.01)
Observations	2,990	3,510	2,990	2,990	3,510	2,990	2,990	3,510	2,990
Number of mine-stakeholder groups	971	1,101	971	971	1,101	971	971	1,101	971

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.4: DEGREE OF CONFLICT-COOPERATION (cont'd)

	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21
Firm structural holes (H1)	0.59		0.11	0.72		0.16
	(0.572)		(0.507)	(0.599)		(0.522)
Firm periphery core (H2)	-1.15		2.00	-1.69		0.78
	(3.147)		(2.624)	(3.436)		(2.886)
Stakeholder status (H3)		3.44**	2.60*		3.60**	2.76*
		(1.256)	(1.219)		(1.256)	(1.219)
Stakeholder cooperation-conflict (H4)		8.09***	8.31***		8.09***	8.31***
		(0.183)	(0.198)		(0.183)	(0.198)
Joint activity (H5)		0.21	0.23		0.21	0.23
		(0.197)	(0.214)		(0.216)	(0.227)
Ownership	-0.60	-0.36	-0.32	-0.67	-0.41	-0.40
	(1.286)	(1.142)	(1.065)	(1.293)	(1.145)	(1.068)
Voice	0.94	0.55	0.68	0.92	0.56	0.76
	(0.796)	(0.686)	(0.666)	(0.822)	(0.688)	(0.683)
English official language	-31.65	-18.54	-16.51	-34.98	-21.21	-20.38
	(65.152)	(57.883)	(53.933)	(65.508)	(57.993)	(54.092)
Gold price	0.29	0.17	0.18	0.17	-0.00	0.05
	(0.341)	(0.276)	(0.283)	(0.352)	(0.287)	(0.291)
Possible ties	-1.29	3.12*	3.01*	-1.89	2.63+	2.48+
	(1.616)	(1.277)	(1.391)	(1.669)	(1.434)	(1.453)
Distance to Toronto	0.06	0.03	0.03	0.06	0.04	0.04
	(0.120)	(0.106)	(0.099)	(0.121)	(0.107)	(0.100)
Media major outlets				0.12	-0.09	-0.45
				(1.004)	(0.629)	(0.846)
Mine Status Construction & Production				0.03	0.08	0.06
				(0.123)	(0.101)	(0.106)
Mine status (suspension)				-0.48+	-0.53*	-0.55*
				(0.287)	(0.251)	(0.236)
NPV / GDP (log)	6.19*	-2.81	-2.22	5.49+	-3.59	-3.66
	(3.018)	(2.426)	(2.496)	(3.230)	(2.464)	(2.675)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Mine ID	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-285.61	-175.62	-157.28	-317.74	-201.76	-195.35
	(623.052)	(553.424)	(515.754)	(626.552)	(554.554)	(517.370)
Observations	1,637	1,941	1,637	1,637	1,941	1,637
Number of mine-stakeholder groups	705	819	705	705	819	705

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.5: DEGREE OF COOPERATION

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm structural holes (H1)	0.82**		0.52*	0.85**		0.41
	(0.279)		(0.252)	(0.295)		(0.269)
Firm periphery core (H2)	-4.74*		1.28	-3.66		3.95+
	(2.341)		(2.080)	(2.562)		(2.323)
Stakeholder status (H3)		1.30**	1.35**		1.35**	1.36**
		(0.471)	(0.462)		-0.482	(0.476)
Stakeholder cooperation-conflict (H4)		4.18***	4.38***		4.25***	4.43***
		(0.150)	(0.159)		-0.151	(0.161)
Joint activity (H5)		0.30**	0.32***		0.27*	0.35**
		(0.096)	(0.095)		-0.108	(0.109)
Ownership	-0.00	-0.00	0.00	1.29	0.18	0.06
	(0.007)	(0.005)	(0.006)	(2.074)	-1.914	(1.859)
Voice	0.17*	0.09	0.03	0.77**	0.90***	0.62**
	(0.074)	(0.059)	(0.060)	(0.265)	(0.235)	(0.240)
English official language	1.04***	0.95***	0.99***	-232.41	-37.27	-13.41
	(0.275)	(0.224)	(0.221)	(370.454)	(341.927)	(331.976)
Gold price	-0.15	0.07	-0.11	0.10	0.17	-0.04
	(0.142)	(0.112)	(0.126)	(0.274)	(0.228)	(0.245)
Possible ties	-1.12***	-0.16	-0.10	-0.88**	-0.07	0.08
	(0.279)	(0.275)	(0.271)	(0.311)	(0.301)	(0.298)
Distance to Toronto	-0.00*	-0.00***	-0.00***	0.05	0.01	0.00
	(0.000)	(0.000)	(0.000)	(0.088)	(0.081)	(0.079)
Media major outlets						
Mine Status Construction & Production						
Mine status (suspension)						
NPV / GDP (log)						
Year	No	No	No	Yes	Yes	Yes
Mine ID	No	No	No	Yes	Yes	Yes
Constant	4.14***	3.31***	2.13**	-375.62	-56.25	-18.80
	(0.853)	(0.650)	(0.711)	(606.704)	(559.964)	(543.673)
Observations	2,553	2,892	2,553	2,553	2,892	2,553
Number of mine-stakeholder groups	838	925	838	838	925	838

Standard errors in parentheses

 *** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.5: DEGREE OF COOPERATION (cont'd)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
Firm structural holes (H1)	0.88**		0.49+	0.65*		0.23	0.68*		0.31
	(0.298)		(0.273)	(0.295)		(0.269)	(0.298)		(0.272)
Firm periphery core (H2)	-3.72		3.80	-5.42*		2.10	-5.52*		1.89
	(2.564)		(2.323)	(2.581)		(2.346)	(2.583)		(2.346)
Stakeholder status (H3)		1.41**	1.45**		1.33**	1.33**		1.40**	1.44**
		(0.484)	(0.479)		(0.480)	(0.471)		(0.481)	(0.474)
Stakeholder cooperation-conflict (H4)		4.26***	4.44***		4.24***	4.42***		4.25***	4.43***
		(0.151)	(0.161)		(0.151)	(0.160)		(0.151)	(0.160)
Joint activity (H5)		0.26*	0.35**		0.20+	0.28**		0.19+	0.27*
		(0.108)	(0.109)		(0.108)	(0.108)		(0.108)	(0.108)
Ownership	1.33	0.23	0.12	0.83	-0.29	-0.42	0.86	-0.24	-0.36
	(2.075)	(1.914)	(1.858)	(2.083)	(1.925)	(1.866)	(2.084)	(1.924)	(1.865)
Voice	0.74**	0.86***	0.54*	0.90***	1.05***	0.77**	0.86**	1.01***	0.68**
	(0.269)	(0.236)	(0.243)	(0.266)	(0.236)	(0.241)	(0.269)	(0.237)	(0.244)
English official language	-238.19	-46.00	-23.76	-149.30	46.23	70.74	-155.22	36.83	60.80
	(370.541)	(341.905)	(331.917)	(372.147)	(343.809)	(333.318)	(372.181)	(343.740)	(333.165)
Gold price	0.09	0.16	-0.07	0.31	0.33	0.17	0.30	0.32	0.14
	(0.274)	(0.228)	(0.246)	(0.275)	(0.229)	(0.246)	(0.275)	(0.229)	(0.246)
Possible ties (T-1)	-0.95**	-0.17	-0.04	-0.87**	-0.15	0.04	-0.95**	-0.27	-0.11
	(0.322)	(0.309)	(0.305)	(0.309)	(0.299)	(0.295)	(0.319)	(0.307)	(0.302)
Distance to Toronto	0.06	0.01	0.01	0.03	-0.01	-0.02	0.04	-0.01	-0.01
	(0.088)	(0.081)	(0.079)	(0.088)	(0.081)	(0.079)	(0.088)	(0.081)	(0.079)
Media major outlets	0.22	0.35	0.47+				0.28	0.40+	0.53*
	(0.272)	(0.240)	(0.245)				(0.270)	(0.239)	(0.243)
Mine Status Construction & Production				0.35***	0.30***	0.33***	0.35***	0.31***	0.33***
				(0.080)	(0.071)	(0.072)	(0.080)	(0.071)	(0.072)
Mine status (suspension)				0.67***	0.59***	0.66***	0.68***	0.60***	0.68***
				(0.188)	(0.172)	(0.168)	(0.188)	(0.172)	(0.168)
NPV / GDP (log)									
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mine ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-385.27	-70.75	-36.16	-238.70	81.34	119.95	-248.64	65.73	103.24
	(606.850)	(559.930)	(543.580)	(609.457)	(563.037)	(545.855)	(609.516)	(562.927)	(545.608)
Observations	2,553	2,892	2,553	2,553	2,892	2,553	2,553	2,892	2,553
Number of mine-stakeholder groups	838	925	838	838	925	838	838	925	838

Standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.5: DEGREE OF COOPERATION (cont'd)

	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21
Firm structural holes (H1)	-0.22 (0.449)		-0.11 (0.459)	0.06 (0.470)		-0.09 (0.471)
Firm periphery core (H2)	-0.03 (2.691)		3.32 (2.549)	-0.46 (2.938)		1.90 (2.810)
Stakeholder status (H3)		3.05** (1.168)	2.66* (1.147)		3.10** (1.169)	2.67* (1.147)
Stakeholder cooperation-conflict (H4)		4.26*** (0.215)	4.55*** (0.237)		4.28*** (0.215)	4.55*** (0.236)
Joint activity (H5)		0.38* (0.173)	0.54** (0.195)		0.31 (0.190)	0.38+ (0.207)
Ownership	1.27 (0.982)	1.20 (0.954)	1.37 (0.926)	1.08 (0.988)	1.02 (0.957)	1.20 (0.931)
Voice	-0.06 (0.631)	0.03 (0.599)	-0.35 (0.599)	-0.39 (0.656)	0.12 (0.603)	-0.44 (0.620)
English official language	63.10 (49.748)	59.76 (48.339)	67.93 (46.902)	53.39 (50.044)	50.91 (48.459)	58.95 (47.140)
Gold price	-0.15 (0.276)	0.01 (0.248)	-0.21 (0.260)	-0.05 (0.285)	0.05 (0.257)	-0.08 (0.270)
Possible ties	-0.57 (1.276)	3.09** (1.149)	3.93** (1.264)	-0.95 (1.311)	2.68* (1.258)	3.46** (1.315)
Distance to Toronto	-0.12 (0.092)	-0.11 (0.089)	-0.13 (0.086)	-0.10 (0.092)	-0.09 (0.089)	-0.11 (0.087)
Media major outlets				1.81* (0.827)	0.14 (0.586)	1.14 (0.796)
Mine Status Construction & Production				0.14 (0.102)	0.18* (0.092)	0.17+ (0.099)
Mine status (suspension)				0.19 (0.244)	0.15 (0.237)	0.22 (0.231)
NPV / GDP (log)	-0.27 (2.471)	-5.84** (2.166)	-5.03* (2.337)	0.18 (2.623)	-6.39** (2.194)	-5.25* (2.488)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Mine ID	Yes	Yes	Yes	Yes	Yes	Yes
Constant	618.57 (475.751)	579.16 (462.178)	660.45 (448.519)	526.18 (478.733)	492.54 (463.409)	573.52 (450.953)
Observations	1,419	1,607	1,419	1,419	1,607	1,419
Number of mine-stakeholder groups	608	682	608	608	682	608

Standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.6: DEGREE OF CONFLICT

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm structural holes (H1)	-0.34	-0.20	-0.23	-0.18	-0.20	1.43*	0.53
	(0.399)	(0.428)	(0.434)	(0.438)	(0.443)	(0.640)	(0.718)
Firm periphery core (H2)	-1.16	-9.26**	-9.21**	-8.75*	-8.69*	-10.58***	-13.10***
	(2.982)	(3.533)	(3.532)	(3.598)	(3.598)	(3.126)	(3.241)
Stakeholder status (H3)	0.07	0.17	0.19	0.15	0.17	2.56+	3.21*
	(0.754)	(0.756)	(0.757)	(0.757)	(0.758)	(1.435)	(1.463)
Stakeholder cooperation-conflict (H4)	2.64***	2.65***	2.65***	2.68***	2.67***	1.38***	1.32***
	(0.258)	(0.259)	(0.259)	(0.260)	(0.260)	(0.327)	(0.323)
Joint activity (H5)	-0.41*	-0.63**	-0.61**	-0.60*	-0.58*	0.29	0.13
	(0.180)	(0.232)	(0.236)	(0.236)	(0.240)	(0.307)	(0.315)
Ownership	-0.01	6.45	6.38	5.38	5.30	-1.32	-1.15
	(0.011)	(7.781)	(8.043)	(8.148)	(8.394)	(2.630)	(2.654)
Voice	0.20	1.01*	1.02**	0.96*	0.98*	-3.45**	-2.89*
	(0.122)	(0.394)	(0.395)	(0.397)	(0.398)	(1.128)	(1.136)
English official language	-0.74+	-1,209.70	-1,197.18	-1,018.21	-1,004.24	-64.36	-54.54
				(1,003.022)	(1,007.938)		
	(0.411)	(973.596)	(978.733)			(133.346)	(134.610)
Gold price	-0.20	0.33	0.36	0.37	0.40	1.18**	1.01*
	(0.212)	(0.440)	(0.445)	(0.445)	(0.449)	(0.397)	(0.437)
Possible ties	-0.34	-1.28+	-1.17	-1.19+	-1.08	3.75*	3.21
	(0.636)	(0.714)	(0.751)	(0.719)	(0.756)	(1.890)	(2.025)
Distance to Toronto	0.00	0.29	0.29	0.24	0.24	0.12	0.10
	(0.000)	(0.220)	(0.220)	(0.226)	(0.226)	(0.245)	(0.247)
Media major outlets			-0.20		-0.19		-2.07
			(0.435)		(0.436)		(1.303)
Mine Status Construction & Production				-0.03	-0.03		0.34*
				(0.124)	(0.125)		(0.151)
Mine status (suspension)				0.16	0.15		-0.14
				(0.207)	(0.207)		(0.236)
NPV / GDP (log)						0.84	-2.46
						(3.206)	(3.499)
Year	No	Yes	Yes	Yes	Yes	Yes	Yes
Mine ID	No	Yes	Yes	Yes	Yes	Yes	Yes
	-0.01	-1,986.28	-1,965.77	-1,673.02	-1,650.14	-606.48	-517.50
		(1,549.740)	(1,552.775)	(1,593.429)	(1,596.373)	(1,274.410)	(1,286.575)
Constant	(1.379)						
Observations	1,238	1,238	1,238	1,238	1,238	633	633
Number of mine-stakeholder groups	400	400	400	400	400	274	274

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.7: NEW TIE FORMATION—ALL TIES

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm structural holes (H1)	3.76**		0.85	3.77**		1.58
	(1.197)		(1.830)	(1.185)		(1.632)
Firm periphery core (H2)	-8.11		-0.88	-8.91		-4.51
	(9.511)		(10.507)	(9.827)		(10.427)
Stakeholder status (H3)		-1.29	8.12		0.50	15.96
		(2.987)	(12.916)		(3.823)	(16.861)
Stakeholder cooperation-conflict (H4)		3.54**	3.99*		3.58**	4.08**
		(1.342)	(1.570)		(1.337)	(1.556)
Joint activity (H5)		-0.82	-0.85		-1.20	-1.42
		(0.942)	(1.050)		(1.086)	(1.211)
Voice	-2.46**	5.02	6.02	-2.52**	4.55	5.40
	(0.827)	(3.756)	(3.728)	(0.877)	(4.128)	(4.122)
Gold price	0.64	-11.38***	-11.48***	0.71	-10.99***	-11.07***
	(0.769)	(1.176)	(1.233)	(0.788)	(1.193)	(1.138)
Possible ties	2.79**	-62.81***	-62.81***	2.43*	-64.87***	-66.17***
	(0.899)	(8.604)	(8.959)	(1.042)	(8.358)	(8.522)
Media major outlets				0.86	4.00+	6.16*
				(1.001)	(2.413)	(2.851)
Mine Status Construction & Production						
Mine status (suspension)						
NPV / GDP (log)						
Observations	6,056	3,275	2,709	6,056	3,275	2,709
Number of mine-stakeholder groups	912	922	786	912	922	786

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.7: NEW TIE FORMATION—ALL TIES (cont'd)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Firm structural holes (H1)	3.49**		2.94	3.46**		2.86
	(1.159)		(2.626)	(1.139)		(2.224)
Firm periphery core (H2)	-15.13		24.78*	-15.65		19.49*
	(10.241)		(10.735)	(10.397)		(9.795)
Stakeholder status (H3)		-1.30	8.62		0.22	14.93
		(3.085)	(13.473)		(3.902)	(16.196)
Stakeholder cooperation-conflict (H4)		3.31**	3.78**		3.37**	3.94**
		(1.284)	(1.457)		(1.265)	(1.431)
Joint activity (H5)		-0.51	-0.15		-0.84	-0.66
		(0.954)	(1.026)		(1.099)	(1.194)
Voice	-2.36**	4.47	5.27	-2.41**	4.14	4.88
	(0.749)	(3.827)	(3.713)	(0.783)	(4.090)	(4.014)
Gold price	0.24	-10.79***	-11.20***	0.31	-10.51***	-10.91***
	(0.782)	(1.131)	(1.136)	(0.790)	(1.176)	(1.105)
Possible ties	2.69**	-60.18***	-60.21***	2.36*	-61.98***	-62.88***
	(0.892)	(8.396)	(8.586)	(1.039)	(8.216)	(8.366)
Media major outlets				0.77	3.15	4.88+
				(0.977)	(2.387)	(2.777)
Mine Status Construction & Production	0.73+	-1.94***	-2.59***	0.72+	-1.82***	-2.32***
	(0.426)	(0.426)	(0.646)	(0.420)	(0.441)	(0.613)
Mine status (suspension)	-3.88***	-17.21***	-15.82***	-3.89***	-16.42***	-16.61***
	(0.790)	(0.587)	(0.594)	(0.794)	(0.596)	(0.598)
NPV / GDP (log)						
Observations	6,056	3,275	2,709	6,056	3,275	2,709
Number of mine-stakeholder groups	912	922	786	912	922	786

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.7: NEW TIE FORMATION—ALL TIES (cont'd)

	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Firm structural holes (H1)	-0.35		-1.69	-3.25		-0.49
	(1.447)		(2.012)	(2.273)		(2.043)
Firm periphery core (H2)	8.00		-48.34**	12.91		-89.37***
	(10.926)		(15.209)	(10.858)		(25.552)
Stakeholder status (H3)		43.29*	34.26		65.31+	33.98*
		(21.439)	(20.960)		(35.056)	(15.954)
Stakeholder cooperation-conflict (H4)		2.75	3.96*		1.48	4.60*
		(1.917)	(2.004)		(2.207)	(2.153)
Joint activity (H5)		4.87+	5.34*		4.52*	5.01*
		(2.595)	(2.228)		(2.251)	(2.136)
Voice	-0.42	12.26+	9.08	1.82	16.19+	-3.14
	(2.435)	(6.537)	(8.699)	(2.443)	(9.363)	(10.293)
Gold price	-1.72	-9.85***	-9.13***	-2.18+	-10.10***	-7.86**
	(1.128)	(1.732)	(2.418)	(1.211)	(1.749)	(2.652)
Possible ties	-2.11	-30.72*	-16.72	5.02	-31.37**	-14.24
	(4.033)	(12.343)	(13.479)	(4.769)	(11.174)	(19.418)
Media major outlets				-6.86*	-2.71	19.57**
				(2.840)	(7.895)	(6.959)
Mine Status Construction & Production				-0.19	-1.89	1.87*
				(0.413)	(1.480)	(0.776)
Mine status (suspension)				-2.17+	-16.45***	-16.97***
				(1.126)	(0.629)	(1.135)
NPV / GDP (log)	10.41	- 154.47***	- 190.42***	6.20	- 138.42***	- 241.26***
	(6.748)	(22.344)	(25.517)	(6.711)	(26.384)	(43.355)
Observations	2,002	1,322	1,111	2,002	1,322	1,111
Number of mine-stakeholder groups	505	457	389	505	457	389

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.8: NEW TIE FORMATION—POSITIVE TIES

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm structural holes (H1)	3.81*		0.93	3.78*		1.87
	(1.587)		(1.820)	(1.589)		(1.691)
Firm periphery core (H2)	-6.92		5.90	-7.28		1.50
	(8.627)		(12.282)	(8.695)		(11.662)
Stakeholder status (H3)		1.73	21.72*		3.88	29.62**
		(5.920)	(10.057)		(6.720)	(11.279)
Stakeholder cooperation-conflict (H4)		7.81***	8.67***		7.61***	8.17***
		(1.630)	(1.812)		(1.561)	(1.675)
Joint activity (H5)		-0.31	-0.31		-0.56	-0.76
		(0.952)	(1.152)		(1.102)	(1.308)
Voice	-1.68*	7.67*	8.71*	-1.71*	7.20+	7.85+
	(0.679)	(3.831)	(3.922)	(0.702)	(4.156)	(4.224)
Gold price	0.35	-11.57***	-12.44***	0.39	-11.16***	-11.85***
	(0.682)	(1.441)	(1.571)	(0.689)	(1.507)	(1.492)
Possible ties	2.96**	-61.39***	-64.35***	2.80**	-62.81***	-67.77***
	(0.922)	(9.828)	(10.639)	(1.050)	(9.299)	(9.855)
Media major outlets				0.36	3.46	6.16+
				(0.955)	(2.765)	(3.187)
Mine Status Construction & Production						
Mine status (suspension)						
NPV / GDP (log)						
Observations	5,011	2,571	2,222	5,011	2,571	2,222
Number of mine-stakeholder groups	757	726	643	757	726	643

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.8: NEW TIE FORMATION—POSITIVE TIES (cont'd)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Firm structural holes (H1)	3.68*		3.18	3.64*		3.27
	(1.556)		(2.787)	(1.562)		(2.325)
Firm periphery core (H2)	-11.06		37.94**	-11.40		31.52**
	(8.522)		(14.134)	(8.601)		(12.015)
Stakeholder status (H3)		1.15	19.75*		2.92	26.15*
		(5.795)	(10.049)		(6.744)	(11.520)
Stakeholder cooperation-conflict (H4)		7.43***	8.29***		7.28***	8.00***
		(1.635)	(1.798)		(1.582)	(1.686)
Joint activity (H5)		-0.01	0.44		-0.23	0.06
		(0.960)	(1.079)		(1.114)	(1.239)
Voice	-1.65*	7.01+	7.73*	-1.68*	6.70	7.23+
	(0.668)	(3.921)	(3.925)	(0.688)	(4.155)	(4.103)
Gold price	0.27	-11.00***	-12.15***	0.31	-10.73***	-11.78***
	(0.763)	(1.378)	(1.385)	(0.768)	(1.475)	(1.367)
Possible ties	2.89**	-58.20***	-60.69***	2.73**	-59.44***	-63.26***
	(0.920)	(9.423)	(10.018)	(1.052)	(8.989)	(9.508)
Media major outlets				0.37	2.55	4.78
				(0.963)	(2.805)	(3.060)
Mine Status Construction & Production	0.35	-2.10***	-2.98***	0.35	-1.98***	-2.71***
	(0.310)	(0.423)	(0.728)	(0.310)	(0.443)	(0.678)
Mine status (suspension)	-17.09***	-16.11***	-15.96***	-17.09***	-15.92***	-16.53***
	(0.371)	(0.882)	(0.907)	(0.374)	(0.919)	(0.946)
NPV / GDP (log)						
Observations	5,011	2,571	2,222	5,011	2,571	2,222
Number of mine-stakeholder groups	757	726	643	757	726	643

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.8: NEW TIE FORMATION—POSITIVE TIES (cont'd)

	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Firm structural holes (H1)	0.32		0.13	-2.27		0.61
	(1.533)		(2.313)	(2.153)		(2.279)
Firm periphery core (H2)	4.65		-48.80*	12.83		-88.14**
	(10.681)		(20.933)	(10.999)		(29.980)
Stakeholder status (H3)		50.53*	33.74		60.09+	35.67*
		(23.274)	(22.683)		(33.515)	(17.653)
Stakeholder cooperation-conflict (H4)		8.02+	12.98**		7.51	13.15**
		(4.297)	(4.439)		(4.809)	(4.597)
Joint activity (H5)		5.53*	6.81***		5.69**	6.43**
		(2.186)	(1.803)		(2.031)	(1.969)
Voice	0.66	12.90+	10.57	2.82	18.15+	-0.60
	(2.515)	(7.231)	(9.698)	(2.543)	(9.514)	(10.919)
Gold price	-1.41	-9.46***	-9.74***	-1.91	-9.66***	-8.57**
	(1.183)	(1.949)	(2.506)	(1.250)	(1.947)	(2.742)
Possible ties	-2.82	-15.64	-0.05	3.52	-13.36	1.89
	(4.146)	(14.291)	(14.670)	(4.430)	(12.063)	(21.005)
Media major outlets				-6.27*	-7.66	14.25+
				(2.720)	(6.878)	(8.445)
Mine Status Construction & Production				-0.40	-1.02	2.41**
				(0.414)	(1.257)	(0.902)
Mine status (suspension)				-15.99***	-18.97***	-20.40***
				(0.873)	(1.166)	(1.169)
NPV / GDP (log)	11.05	-155.73***	-200.34***	7.98	-142.18***	-248.40***
	(6.934)	(24.168)	(28.132)	(6.853)	(27.334)	(46.107)
Observations	1,689	1,052	941	1,689	1,052	941
Number of mine-stakeholder groups	425	361	324	425	361	324

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.9: NEW TIE FORMATION—NEGATIVE TIES

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm structural holes (H1)	4.11*		-0.27	4.37*		0.04
	(1.969)		(2.580)	(1.969)		(2.638)
Firm periphery core (H2)	-13.06		-4.07	-14.59		-5.55
	(17.851)		(12.205)	(18.795)		(12.373)
Stakeholder status (H3)		-17.21	-15.24		-14.70	-9.95
		(11.473)	(11.606)		(11.582)	(11.096)
Stakeholder cooperation-conflict (H4)		-1.22	-1.58		-0.90	-1.04
		(1.905)	(2.011)		(1.996)	(2.141)
Joint activity (H5)		-2.24+	-2.67*		-2.66+	-3.54*
		(1.205)	(1.233)		(1.477)	(1.563)
Voice	-4.06**	-2.82	-1.07	-4.15**	-2.61	-0.68
	(1.287)	(2.581)	(2.403)	(1.348)	(2.630)	(2.528)
Gold price	1.80	-14.24***	-13.65***	1.81	-13.92***	-13.57***
	(1.744)	(1.583)	(1.822)	(1.724)	(1.487)	(1.779)
Possible ties	1.47	-72.52***	-68.80***	0.74	-73.63***	-71.39***
	(1.511)	(14.509)	(14.565)	(1.644)	(14.259)	(14.241)
Media major outlets				2.05	3.76	6.70+
				(1.773)	(3.615)	(3.654)
Mine Status Construction & Production						
Mine status (suspension)						
Observations	2,093	1,345	1,021	2,093	1,345	1,021
Number of mine-stakeholder groups	307	355	279	307	355	279

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 2.9: NEW TIE FORMATION (NEGATIVE TIES) (cont'd)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Firm structural holes (H1)	2.72+		0.36	2.89+		0.38
	(1.510)		(3.012)	(1.516)		(2.903)
Firm periphery core (H2)	-18.93		7.86	-19.46		5.32
	(14.545)		(13.404)	(14.717)		(14.248)
Stakeholder status (H3)		-12.87	-11.21		-11.15	-7.43
		(10.284)	(11.468)		(10.563)	(9.697)
Stakeholder cooperation-conflict (H4)		-1.14	-1.55		-0.86	-1.00
		(1.894)	(2.062)		(2.038)	(2.229)
Joint activity (H5)		-1.95	-2.11+		-2.30	-2.92+
		(1.208)	(1.259)		(1.496)	(1.609)
Voice	-3.92***	-2.87	-1.46	-3.96***	-2.73	-1.11
	(1.116)	(2.573)	(2.407)	(1.143)	(2.621)	(2.518)
Gold price	-0.14	-13.46***	-12.81***	-0.10	-13.26***	-12.90***
	(1.606)	(1.561)	(1.783)	(1.610)	(1.579)	(1.817)
Possible ties	0.42	-71.00***	-66.77***	-0.12	-72.00***	-69.28***
	(1.399)	(14.597)	(14.392)	(1.648)	(14.411)	(14.284)
Media major outlets				1.42	2.94	5.73
				(1.537)	(3.734)	(3.729)
Mine Status Construction & Production	1.46*	-1.05	-1.27	1.44*	-0.95	-1.05
	(0.714)	(0.794)	(0.967)	(0.704)	(0.830)	(1.072)
Mine status (suspension)	-3.05**	-14.07***	-14.92***	-3.03**	-13.87***	-13.64***
	(0.980)	(0.524)	(0.519)	(0.997)	(0.433)	(0.526)
Observations	2,093	1,345	1,021	2,093	1,345	1,021
Number of mine-stakeholder groups	307	355	279	307	355	279

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

FIGURE 3.1: OPEN AND CLOSED TRIADS

Open Triad (undirected)   Closed Triad
(undirected)
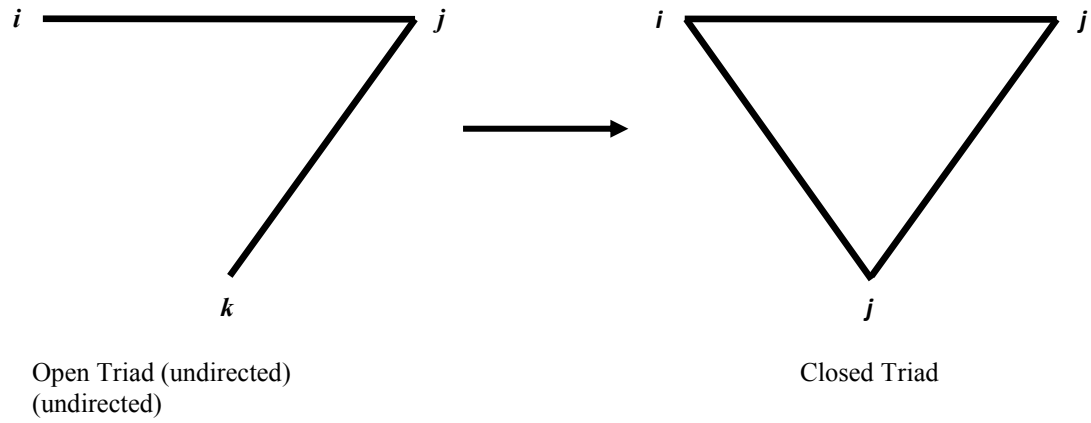
FIGURE 3.2: BALANCED AND IMBALANCED TRIADS

Four Balanced Triadic Configurations

Four Imbalanced Triadic Configurations

Positive relations   Negative relations
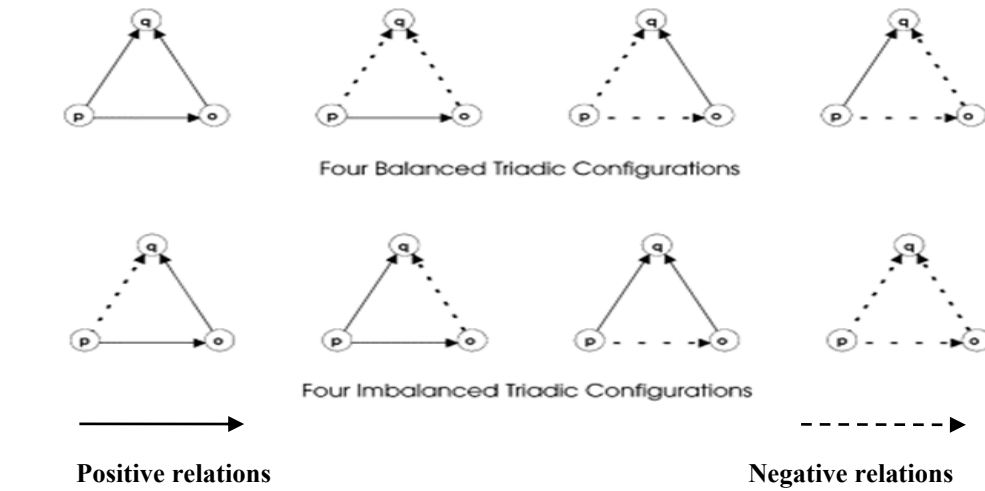
$p \rightarrow o$	$p \rightarrow q$	$o \rightarrow q$	*Triadic Configuration*	*Corresponding Axiom*
+	+	+	Balanced	*the friend of my friend is my friend*
+	-	-	Balanced	*the enemy of my friend is my enemy*
-	+	-	Balanced	*the friend of my enemy is my enemy*
-	-	+	Balanced	*the enemy of my enemy is my friend*
+	-	+	Imbalanced	
+	+	-	Imbalanced	
-	+	+	Imbalanced	
-	-	-	Imbalanced	

Source: Doreian, 2002:96

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FIGURE 3.3: TRANSITIVE AND THREE-CYCLE TRIADS

(a) Transitive triad   (b) three-cycle triad
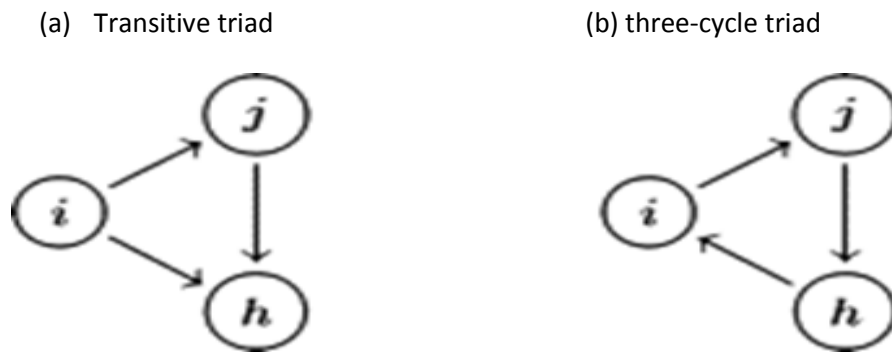
Source: Snidjers, 2010

FIGURE 3.4: THE EIGHT DIFFERENT TYPES OF DIRECTED TRIADS FOR A TRIPLE OF ACTORS I, J, K

$$i \rightarrow j, \quad j \rightarrow k, \quad k \rightarrow i$$

$$i \rightarrow j, \quad j \rightarrow k, \quad k \leftarrow i$$

$$i \rightarrow j, \quad j \leftarrow k, \quad k \rightarrow i$$

$$i \leftarrow j, \quad j \rightarrow k, \quad k \rightarrow i$$

$$i \rightarrow j, \quad j \leftarrow k, \quad k \leftarrow i$$

$$i \leftarrow j, \quad j \rightarrow k, \quad k \leftarrow i$$

$$i \leftarrow j, \quad j \leftarrow k, \quad k \rightarrow i$$

$$i \leftarrow j, \quad j \leftarrow k, \quad k \leftarrow i$$

TABLE 3.1: VARIABLE DESCRIPTIVE STATISTICS

	Number of observations	Mean	Std. Dev.	Min	Max
DV Closed Triads	1540262	0.125	0.330	0	1
Access to Resource Difference	1539577	-0.018	0.258	-1	1
Status Difference	1539577	-0.011	0.136	-0.588	0.5
Likability Difference	1540262	-0.007	0.229	-1.129	1.209
Popularity Difference	1540262	-11.725	160.933	-323	323
Network Size	1540262	104.438	47.075	3	216
Sign Difference Dyad 1	1540262	0.342	0.474	0	1
Sign Difference Dyad 2	1540262	0.355	0.478	0	1
Tie Strength Dyad 1	1540262	4.430	4.901	1	34
Tie Strength Dyad 2	1540262	3.622	4.461	1	34
Reciprocity Dyad 1	1540262	0.613	0.487	0	1
Reciprocity Dyad 2	1540262	0.444	0.497	0	1
Cooperation Dyad 1	1540262	0.050	0.353	-0.9	1
Cooperation Dyad 2	1540262	0.055	0.359	-0.9	1
Common Others Dyad 1	1540262	7.640	29.770	0	328
Common Others Dyad 2	1540262	6.421	25.532	0	308
Common Others Dyad 3	1540262	5.885	23.536	0	280
Transitive Density T-1	1203722	0.000	0.000	0	0.042
Possible Ties T-1	1203722	0.888	0.081	-0.333	0.972
Voice	1521686	-0.345	0.969	-2.136	1.678
Distance Toronto	1540262	4208.924	1935.706	2024	8779
English Official Language	1540262	0.059	0.236	0	1
Gold Price	1540262	446.695	181.468	272.67	972.9
Ownership	1540262	94.588	8.730	40	100
Mine Status Construction & Production	1540262	0.085	0.279	0	1
Mine Status Suspension	1540262	0.008	0.089	0	1
Likeability*Voice	1521686	-0.004	0.279	-1.921	2.208
Sign Difference Dyad 1*Dyad 2	1540262	0.135	0.342	0	1
Reciprocity Dyad 1 *Dyad 2	1540262	0.276	0.447	0	1
Tie Strength Dyad 1 * Dyad 2	1540262	15.992	33.837	1	782
Cooperation Dyad 1 *Dyad 2	1540262	0.018	0.144	-0.9	1
Likeability Voice Squared	1521686	0.078	0.233	0	4.874
Possible Ties (T-1) Squared	1203722	0.794	0.125	0	0.944
Log NPV/GDP	498,033	-18.651	1.260	-23.032	-14.774
Triad Type	1540262	0.252	0.901	0	6

TABLE 3.2: CORRELATIONS

		1	2	3	4	5	6	7	8	9
1	DV Closed Triads	1								
2	Access to Resource Difference	0.0099	1							
3	Status Difference	0.0113	0.5375	1						
4	Likability Difference	0.0071	0.0501	-0.022	1					
5	Popularity Difference	0.0123	0.663	0.8067	-0.032	1				
6	Network Size	-0.037	-0.03	-0.02	0.0113	-0.044	1			
7	Sign Difference Dyad 1	0.0045	-0.052	-0.072	-0.074	-0.068	0.0211	1		
8	Sign Difference Dyad 2	0.0038	0.0118	0	0.0022	-3E-04	0.0221	0.0583	1	
9	Tie Strength Dyad 1	0.202	0.038	0.0435	0.0211	0.0349	0.0516	-0.026	0.0018	1
10	Tie Strength Dyad 2	0.238	-0.075	-0.043	-0.009	-0.059	0.0362	0.0053	-0.034	-0.002
11	Reciprocity Dyad 1	0.1262	0.0818	0.0988	0.0444	0.082	-0.034	-0.082	-5E-04	0.4965
12	Reciprocity Dyad 2	0.1625	-0.033	-0.015	-0.002	-0.019	-0.041	0.0001	-0.082	-0.001
13	Cooperation Dyad 1	-0.057	0.0249	0.0284	0.0673	0.0248	-0.052	-0.368	-0.072	-0.056
14	Cooperation Dyad 2	-0.057	0.0025	-0.002	-0.019	0.0016	-0.036	-0.069	-0.502	-0.001
15	Common Others Dyad 1	0.6793	0.0149	0.0184	0.0084	0.0147	0.0673	-0.033	-0.003	0.3941
16	Common Others Dyad 2	0.6653	-0.097	-0.045	0.0054	-0.078	0.0662	0.0037	-0.038	0.1498
17	Common Others Dyad 3	0.6622	0.1124	0.0668	0.0053	0.0932	0.066	-0.009	-0.008	0.1616
18	Transitive Density T-1	0.0315	0.005	-0.008	-0.007	0.0121	-0.306	-0.038	-0.044	-0.026
19	Possible Ties T-1	-0.124	-0.019	-0.015	0.014	-0.034	0.6584	0.0209	0.0199	-0.02
20	Voice	-0.019	0.01	0.0052	-0.025	0.0039	-0.22	-0.047	-0.04	0.0475
21	Distance Toronto	-0.08	-0.014	-0.045	0.0052	-0.033	-0.142	0.0638	0.0533	-0.113
22	English Official Language	-0.002	0.0054	0.0005	-0.015	0.0106	-0.291	-0.022	-0.03	0.0003
23	Gold Price	-0.036	-0.005	-0.048	-0.02	-0.046	-0.194	-0.011	-0.016	-0.02
24	Ownership	0.0329	0.0066	0.0276	0.0518	0.0278	0.1197	-0.02	-0.019	0.0049
25	Mine Status Construction & Production	-0.035	0.0009	-0.004	-0.003	0.0027	-0.191	0.0131	0.0062	0.05
26	Mine Status Suspension	0.0172	0.0102	0.0122	-0.002	0.0088	-0.116	-0.002	0.0019	-0.003
27	Likeability*Voice	0.0029	-0.007	-0.02	-0.515	-0.026	-0.014	0.008	-0.009	0.0061
28	Sign Difference Dyad 1*Dyad 2	-0.005	-0.019	-0.042	-0.037	-0.035	0.0037	0.5488	0.5332	-0.02
29	Reciprocity Dyad 1 *Dyad 2	0.1997	0.0113	0.0248	0.0206	0.0164	-0.051	-0.041	-0.058	0.2348
30	Tie Strength Dyad 1 * Dyad 2	0.3276	-0.029	-0.017	0.0069	-0.032	0.0413	-0.017	-0.023	0.5154
31	Cooperation Dyad 1 *Dyad 2	-0.015	0.0116	-0.003	0.0231	0.006	-0.076	-0.062	-0.057	-0.042
32	Likeability Voice Squared	-0.067	0.0046	-0.008	0.0355	-0.014	0.0617	0.0798	0.0286	-0.157
33	Possible Ties (T-1) Squared	-0.126	-0.021	-0.02	0.0157	-0.038	0.6919	0.0241	0.0238	-0.026
34	Triad Type	0.7398	-0.019	-0.009	0.0049	-0.01	-0.019	0.0003	-0.011	0.1695

TABLE 3.2: CORRELATIONS (cont'd)

		10	11	12	13	14	15	16	17	18
10	Tie Strength Dyad 2	1								
11	Reciprocity Dyad 1	-0.001	1							
12	Reciprocity Dyad 2	0.5654	0.015	1						
13	Cooperation Dyad 1	-0.005	-0.046	-0.005	1					
14	Cooperation Dyad 2	-0.058	-0.007	-0.049	0.1175	1				
15	Common Others Dyad 1	0.1794	0.1899	0.1306	-0.05	-0.041	1			
16	Common Others Dyad 2	0.4443	0.0972	0.2325	-0.043	-0.048	0.5405	1		
17	Common Others Dyad 3	0.2038	0.1142	0.1492	-0.039	-0.041	0.5653	0.5857	1	
18	Transitive Density T-1	-0.019	0.0002	0.0037	0.0532	0.0531	-0.008	-0.007	-0.007	1
19	Possible Ties T-1	-0.03	-0.071	-0.081	-0.021	-0.02	-0.045	-0.045	-0.045	-0.437
20	Voice	0.0354	0.0163	0.0122	0.1436	0.1284	-0.011	-0.014	-0.015	0.0013
21	Distance Toronto	-0.098	-0.084	-0.078	-0.056	-0.059	-0.132	-0.129	-0.134	0.0477
22	English Official Language	0.0034	-0.008	-0.002	0.0356	0.0402	-0.036	-0.035	-0.037	0.1935
23	Gold Price	-0.016	-0.026	-0.018	0.0862	0.0854	-0.062	-0.063	-0.064	0.0522
24	Ownership	0.006	-7E-04	-0.002	-0.044	-0.041	0.0061	0.0083	0.0083	0.0216
25	Mine Status Construction & Production	0.0392	0.0008	0.0006	0.0156	0.0093	-0.036	-0.037	-0.039	0.032
26	Mine Status Suspension	-8E-04	0.0192	0.0192	-0.011	-0.011	-0.001	-0.001	0.0037	0
27	Likeability*Voice	0.0092	0.0117	0.002	0.0002	0.0167	0.002	0.0018	0.0033	0.0018
28	Sign Difference Dyad 1*Dyad 2	-0.021	-0.055	-0.051	-0.214	-0.28	-0.028	-0.029	-0.017	-0.032
29	Reciprocity Dyad 1 *Dyad 2	0.382	0.4907	0.6918	-0.021	-0.033	0.23	0.2507	0.199	0.0062
30	Tie Strength Dyad 1 * Dyad 2	0.5768	0.2595	0.3302	-0.032	-0.036	0.4773	0.4981	0.3597	-0.015
31	Cooperation Dyad 1 *Dyad 2	-0.036	-0.034	-0.031	0.0673	0.0635	-0.028	-0.028	-0.018	0.0347
32	Likeability Voice Squared	-0.046	-0.165	-0.033	-0.2	-0.071	-0.07	-0.064	-0.065	-0.035
33	Possible Ties (T-1) Squared	-0.036	-0.077	-0.087	-0.024	-0.023	-0.049	-0.049	-0.05	-0.413
34	Triad Type	0.2501	0.1163	0.2196	-0.045	-0.048	0.5495	0.5967	0.5327	0.0159

TABLE 3.2: CORRELATIONS (cont'd)

		19	20	21	22	23	24	25	26	27
19	Possible Ties T-1	1								
20	Voice	-0.089	1							
21	Distance Toronto	0.1593	-0.497	1						
22	English Official Language	-0.209	-0.108	0.425	1					
23	Gold Price	-0.057	0.2527	0.2066	0.2534	1				
24	Ownership	0.0016	-0.165	-0.087	0.0915	-0.191	1			
25	Mine Status Construction & Production	-0.077	0.1494	0.1372	0.0754	0.2212	0.1215	1		
26	Mine Status Suspension	-0.12	-0.013	-0.069	-0.019	0.1908	0.0031	-0.018	1	
27	Likeability*Voice	-0.02	0.0101	-0.02	0.025	-0.002	-0.001	-6E-04	0.0029	1
28	Sign Difference Dyad1*Dyad2	0.0188	-0.043	0.0827	-0.018	-0.002	-0.035	0.0077	-0.007	-0.002
29	Reciprocity Dyad 1 *Dyad 2	-0.098	0.0097	-0.085	0.0011	-0.017	-0.004	-0.002	0.0229	0.0045
30	Tie Strength Dyad 1 * Dyad 2	-0.035	0.0335	-0.098	0.008	-0.018	0.0057	0.0539	-0.004	0.005
31	Cooperation Dyad 1 *Dyad 2	-0.005	-0.01	0.0796	0.0299	0.0221	-0.007	-0.001	-0.011	-0.01
32	Likeability Voice Squared	0.1479	-0.352	0.3432	0.0479	-0.068	0.1561	-0.037	-0.021	-0.026
33	Possible Ties (T-1) Squared	0.9869	-0.098	0.1727	-0.238	-0.065	0.017	-0.093	-0.131	-0.022
34	Triad Type	-0.087	-0.01	-0.077	-0.009	-0.032	0.0227	-0.03	0.0162	0.0022

		28	29	30	31	32	33	34
28	Sign Difference Dyad1*Dyad2	1						
29	Reciprocity Dyad 1 *Dyad 2	-0.056	1					
30	Tie Strength Dyad 1 * Dyad 2	-0.027	0.4453	1				
31	Cooperation Dyad 1 *Dyad 2	0.0558	-0.028	-0.034	1			
32	Likeability Voice Squared	0.0486	-0.097	-0.096	0.0216	1		
33	Possible Ties (T-1) Squared	0.0227	-0.107	-0.043	-0.005	0.1623	1	
34	Triad Type	-0.014	0.2508	0.3285	-0.018	-0.054	-0.089	1

TABLE 3.3: RESULTS TRIADIC CLOSURE (1 Subperiod-Timepiece)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Access to Resource Difference	0.06	0.16***	0.21***	0.21***	0.42***
	(0.037)	(0.040)	(0.041)	(0.041)	(0.064)
Status Difference	0.08	0.45***	0.50***	0.52***	0.61***
	(0.083)	(0.101)	(0.102)	(0.102)	(0.125)
Likability Difference	-0.03	-0.03	0.01	0.02	0.05
	(0.031)	(0.035)	(0.040)	(0.041)	(0.061)
Popularity Difference	1.97*	-1.34	-3.85***	-4.06***	-6.44***
	(0.874)	(1.000)	(1.014)	(1.015)	(1.501)
Network Size	-0.01***	-0.01***	-0.01***	-0.01***	-0.03***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Sign Difference Dyad 1	0.02	-0.06***	-0.10***	-0.09***	-0.04
	(0.013)	(0.013)	(0.017)	(0.017)	(0.027)
Sign Difference Dyad 2	0.06***	-0.06***	-0.10***	-0.10***	-0.09**
	(0.014)	(0.014)	(0.017)	(0.017)	(0.028)
Tie Strength Dyad 1	-0.02***	-0.01***	0.01***	0.01***	0.02***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Tie Strength Dyad 2	-0.02***	-0.01***	0.01***	0.01***	0.02***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Reciprocity Dyad 1	0.25***	0.05**	0.20***	0.17***	0.09*
	(0.016)	(0.017)	(0.025)	(0.025)	(0.038)
Reciprocity Dyad 2	0.20***	-0.06***	0.13***	0.12***	0.07
	(0.016)	(0.017)	(0.028)	(0.028)	(0.043)
Cooperation Dyad 1	-0.23***	-0.18***	-0.19***	-0.22***	-0.35***
	(0.020)	(0.020)	(0.020)	(0.021)	(0.034)
Cooperation Dyad 2	-0.14***	-0.16***	-0.17***	-0.17***	-0.24***
	(0.020)	(0.021)	(0.021)	(0.021)	(0.035)
Common Others Dyad 1	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 2	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 3	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Transitive Density T-1	231.35***	148.26***	154.90***	96.51***	-660.83***
	(9.095)	(9.171)	(9.151)	(24.634)	(51.770)
Possible Ties T-1	5.13***	3.58***	3.76***	0.60	116.91***
	(0.191)	(0.200)	(0.201)	(1.230)	(9.229)
Voice	0.41***	0.58***	0.58***	0.56***	0.67***
	(0.010)	(0.012)	(0.012)	(0.013)	(0.029)
Distance Toronto	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
English Official Language	1.18***	1.54***	1.50***	1.50***	-1.67***
	(0.036)	(0.040)	(0.041)	(0.044)	(0.103)
Gold Price	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	0.03***	0.03***	0.03***	0.04***	0.03***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Mine Status Construction & Production	0.72***	0.94***	0.90***	0.90***	-0.11*
	(0.028)	(0.031)	(0.031)	(0.032)	(0.052)

TABLE 3.3: RESULTS TRIADIC CLOSURE (1 Subperiod-Timepiece) (cont'd)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Mine Status Suspension	-0.76***	0.90***	0.95***	0.95***	-0.22
	(0.174)	(0.176)	(0.176)	(0.176)	(0.188)
Likeability*Voice			0.10**	0.11**	0.10
			(0.034)	(0.038)	(0.103)
Sign Difference Dyad 1*Dyad 2			0.08**	0.08**	0.03
			(0.026)	(0.026)	(0.040)
Reciprocity Dyad 1 *Dyad 2			-0.30***	-0.29***	-0.38***
			(0.031)	(0.031)	(0.047)
Tie Strength Dyad 1 * Dyad 2			-0.00***	-0.00***	-0.00***
			(0.000)	(0.000)	(0.000)
Cooperation Dyad 1 *Dyad 2			0.10+	0.10+	-0.78***
			(0.051)	(0.052)	(0.082)
Likeability Voice Squared				-0.57***	-3.50***
				(0.056)	(0.284)
Possible Ties (T-1) Squared				2.01**	-69.33***
				(0.741)	(5.435)
Log NPV/GDP					0.24***
					(0.011)
Triad Type	NO	YES	YES	YES	YES
Observations	2,488,628	2,488,628	2,488,628	2,488,628	966,146

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 3.4: RESULTS TRIADIC CLOSURE (3 Subperiod-Timepieces)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Access to Resource Difference	0.06	0.16***	0.21***	0.21***	0.40***
	(0.037)	(0.040)	(0.041)	(0.041)	(0.064)
Status Difference	0.07	0.47***	0.52***	0.55***	0.58***
	(0.083)	(0.102)	(0.102)	(0.102)	(0.125)
Likability Difference	-0.03	-0.02	0.02	0.02	0.07
	(0.031)	(0.035)	(0.040)	(0.041)	(0.061)
Popularity Difference	2.03*	-1.54	-4.04***	-4.25***	-5.99***
	(0.877)	(0.999)	(1.012)	(1.013)	(1.483)
Network Size	-0.01***	-0.01***	-0.01***	-0.01***	-0.03***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Sign Difference Dyad 1	0.03+	-0.06***	-0.09***	-0.09***	-0.03
	(0.013)	(0.013)	(0.017)	(0.017)	(0.027)
Sign Difference Dyad 2	0.07***	-0.06***	-0.10***	-0.10***	-0.07*
	(0.014)	(0.014)	(0.017)	(0.017)	(0.027)
Tie Strength Dyad 1	-0.02***	-0.01***	0.01***	0.01***	0.02***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Tie Strength Dyad 2	-0.02***	-0.01***	0.01***	0.01***	0.02***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Reciprocity Dyad 1	0.25***	0.05**	0.19***	0.17***	0.09*
	(0.016)	(0.017)	(0.025)	(0.025)	(0.038)
Reciprocity Dyad 2	0.21***	-0.06***	0.13***	0.12***	0.06
	(0.016)	(0.017)	(0.028)	(0.028)	(0.043)
Cooperation Dyad 1	-0.22***	-0.18***	-0.19***	-0.22***	-0.31***
	(0.020)	(0.020)	(0.020)	(0.021)	(0.034)
Cooperation Dyad 2	-0.14***	-0.16***	-0.17***	-0.17***	-0.20***
	(0.020)	(0.021)	(0.021)	(0.021)	(0.035)
Common Others Dyad 1	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 2	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 3	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Transitive Density T-1	218.17***	136.75***	143.64***	83.49***	-458.77***
	(9.103)	(9.239)	(9.208)	(21.512)	(47.080)
Possible Ties T-1	4.65***	3.17***	3.36***	0.09	82.87***
	(0.188)	(0.196)	(0.197)	(1.062)	(8.279)
Voice	0.43***	0.60***	0.61***	0.59***	0.80***
	(0.010)	(0.012)	(0.012)	(0.013)	(0.028)
Distance Toronto	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
English Official Language	1.08***	1.42***	1.38***	1.37***	-1.59***
	(0.036)	(0.039)	(0.040)	(0.043)	(0.099)
Gold Price	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

TABLE 3.4: RESULTS TRIADIC CLOSURE (3 Subperiod-Timepieces) (cont'd)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Ownership	0.03***	0.03***	0.03***	0.04***	0.02***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Mine Status Construction & Production	0.68***	0.96***	0.93***	0.93***	-0.04
	(0.027)	(0.030)	(0.030)	(0.031)	(0.051)
Mine Status Suspension	-0.85***	0.72***	0.77***	0.76***	-0.46*
	(0.174)	(0.175)	(0.175)	(0.175)	(0.188)
Likeability*Voice			0.11**	0.12**	0.11
			(0.034)	(0.038)	(0.103)
Sign Difference Dyad 1*Dyad 2			0.08**	0.08**	0.02
			(0.026)	(0.026)	(0.040)
Reciprocity Dyad 1 *Dyad 2			-0.29***	-0.28***	-0.36***
			(0.031)	(0.031)	(0.047)
Tie Strength Dyad 1 * Dyad 2			-0.00***	-0.00***	-0.00***
			(0.000)	(0.000)	(0.000)
Cooperation Dyad 1 *Dyad 2			0.11*	0.11*	-0.67***
			(0.051)	(0.051)	(0.084)
Likeability Voice Squared				-0.54***	-3.20***
				(0.056)	(0.282)
Possible Ties (T-1) Squared				2.07**	-49.83***
				(0.645)	(4.906)
Log NPV/GDP					0.30***
					(0.011)
Triad Type	NO	YES	YES	YES	YES
Observations	1,461,836	1,461,836	1,461,836	1,461,836	483,249

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

TABLE 3.5: RESULTS TRIADIC CLOSURE (5 Subperiod-Timepieces)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Access to Resource Difference	0.07+	0.16***	0.21***	0.21***	0.35***
	(0.037)	(0.040)	(0.041)	(0.041)	(0.064)
Status Difference	0.05	0.45***	0.50***	0.52***	0.56***
	(0.083)	(0.101)	(0.101)	(0.101)	(0.131)
Likability Difference	-0.03	-0.03	0.02	0.02	0.07
	(0.031)	(0.035)	(0.039)	(0.041)	(0.061)
Popularity Difference	2.28**	-1.15	-3.70***	-3.90***	-5.81***
	(0.879)	(0.997)	(1.010)	(1.011)	(1.493)
Network Size	-0.01***	-0.01***	-0.01***	-0.01***	-0.02***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Sign Difference Dyad 1	0.05***	-0.03*	-0.07***	-0.06***	-0.04+
	(0.013)	(0.013)	(0.017)	(0.017)	(0.027)
Sign Difference Dyad 2	0.10***	-0.03*	-0.07***	-0.07***	-0.06*
	(0.014)	(0.014)	(0.017)	(0.017)	(0.027)
Tie Strength Dyad 1	-0.02***	-0.00**	0.01***	0.01***	0.02***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Tie Strength Dyad 2	-0.02***	-0.00	0.01***	0.01***	0.01***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Reciprocity Dyad 1	0.24***	0.04**	0.19***	0.16***	0.09*
	(0.016)	(0.017)	(0.025)	(0.025)	(0.038)
Reciprocity Dyad 2	0.20***	-0.07***	0.11***	0.11***	0.06
	(0.016)	(0.017)	(0.028)	(0.028)	(0.043)
Cooperation Dyad 1	-0.23***	-0.16***	-0.17***	-0.20***	-0.22***
	(0.020)	(0.020)	(0.020)	(0.021)	(0.034)
Cooperation Dyad 2	-0.14***	-0.14***	-0.14***	-0.15***	-0.16***
	(0.020)	(0.021)	(0.021)	(0.021)	(0.035)
Common Others Dyad 1	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 2	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Others Dyad 3	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Transitive Density T-1	197.69***	137.09***	143.97***	101.30***	-218.34***
	(9.034)	(9.149)	(9.107)	(25.414)	(44.878)
Possible Ties T-1	3.79***	2.99***	3.16***	0.82	78.88***
	(0.185)	(0.199)	(0.199)	(1.275)	(8.116)
Voice	0.41***	0.57***	0.58***	0.56***	0.68***
	(0.010)	(0.012)	(0.012)	(0.012)	(0.027)
Distance Toronto	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
English Official Language	1.08***	1.36***	1.32***	1.30***	-1.17***
	(0.035)	(0.039)	(0.039)	(0.042)	(0.102)
Gold Price	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

TABLE 3.5: RESULTS TRIADIC CLOSURE (5 Subperiod-Timepieces) (cont'd)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
DV CLOSED TRIAD					
Ownership	0.03***	0.04***	0.04***	0.04***	0.05***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Mine Status Construction & Production	0.59***	0.83***	0.79***	0.79***	0.03
	(0.027)	(0.030)	(0.030)	(0.030)	(0.054)
Mine Status Suspension	-0.70***	0.58***	0.64***	0.64***	0.17
	(0.174)	(0.175)	(0.175)	(0.175)	(0.186)
Likeability*Voice			0.11**	0.12**	0.14
			(0.034)	(0.038)	(0.102)
Sign Difference Dyad 1*Dyad 2			0.08**	0.08**	0.02
			(0.026)	(0.026)	(0.040)
Reciprocity Dyad 1 *Dyad 2			-0.28***	-0.27***	-0.37***
			(0.031)	(0.031)	(0.047)
Tie Strength Dyad 1 * Dyad 2			-0.00***	-0.00***	-0.00***
			(0.000)	(0.000)	(0.000)
Cooperation Dyad 1 *Dyad 2			0.09+	0.09+	-0.56***
			(0.051)	(0.052)	(0.086)
Likeability Voice Squared				-0.56***	-2.38***
				(0.057)	(0.277)
Possible Ties (T-1) Squared				1.52*	-47.01***
				(0.765)	(4.807)
Log NPV/GDP					0.24***
					(0.011)
Triad Type	NO	YES	YES	YES	YES
Observations	1,234,228	1,234,228	1,234,228	1,234,228	375,219

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

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