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Contracting Beyond the Market

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Abstract. Despite growing engagements between firms and nonmarket stakeholders—such as local communities and nongovernmental organizations —research has yet to examine the emergence of formal contracts between them. Given that a very large number of such contracts are theoretically possible but only a small number exist, we seek to understand what factors explain the use of contracts to govern some relationships between firms and nonmarket stakeholders but not others. We draw on transaction cost economics to study transactions wherein a nonmarket stakeholder provides a firm access to a valuable resource and to understand when these transactions are governed by formal contracts. We propose that, when a firm makes site-specific investments, a stakeholder's use rights to the resource sought by the firm, the negative externalities generated by its use, and the stakeholder's capacity for collective mobilization increase holdup risk for the firm and therefore the probability of a contract. We collect novel data on the location of indigenous communities and mines in Canada to identify a plausible exhaustive set of indigenous communities "at risk" of signing a contract with a mining firm. We test our hypotheses by relying, respectively, on historically assigned property rights over lands, the mine-community colocation in a watershed and proximity on transportation routes, and archival records of community mobilization events. We find support for our propositions by examining which of the 5,342 dyads formed by 459 indigenous communities and 98 firms signed 259 contracts between 1999 and 2013.

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Recent years have witnessed both increasing levels of tension between firms and some of their nonmarket stakeholders (e.g., local communities, activists, nongovernmental organizations) and unprecedented levels of collaboration between them (Baron 2012, O'Faircheallaigh 2015, Odziemkowska 2020). As managers devote more attention to nonmarket stakeholders, research on nonmarket strategy highlights that a firm's ability to generate and appropriate value is, at least in part, conditioned by the level of political and social consent for its operations, that is, by the support of its nonmarket stakeholders (see Dorobantu et al. 2017b for a review). To secure such support, firms are devoting more resources to social responsibility programs, collaborating with nongovernmental organizations (NGOs), paying more attention to the communities surrounding their operations, and increasingly formalizing some of these relationships through contractual agreements. Despite these trends, academic research has yet to examine when and why firms use contracts to govern their relationships with nonmarket stakeholders.

A contract is defined as "an agreement between two or more parties that is binding on those parties, to the degree that to renege on the agreement will be costly" (Argyres and Liebeskind 1999, p. 51). Contracts between firms and their stakeholders in the market space—employees, suppliers, and consumers—have been the subject of extensive study by scholars working at the intersection of law and economics, including in transaction cost economics (TCE) (Williamson 1985). By contrast, contractual relationships between firms and nonmarket stakeholders, which require the alignment of private *and* public interests (Mahoney et al. 2009,

Kivleniece and Quelin 2012), have received little attention (King 2007). Given that a very large number of contractual agreements with nonmarket actors are theoretically possible but only a small number of such contracts exist, we seek to understand what factors lead firms to sign them.

We employ a TCE framework to advance research on the governance of relations between firms and nonmarket stakeholders. We start with the understanding that a transaction is the unit of activity that contains the "principles of order, conflict, and mutuality" (Commons 1932, p. 4) and that "governance is a means by which to infuse *order* in a relation where potential *conflict* threatens to undo or upset opportunities to realize *mutual* gains" (Williamson 1999, p. 1090; emphases in the original). We focus on transactions between firms and nonmarket stakeholders that involve *access to resources* (Rajan and Zingales 1998, Barney 2018). Specifically, we examine transactions wherein a local community provides a firm access to a valuable resource—for example, a location—in exchange for economic benefits generated by the firm's use of that resource. When firms make large, site-specific investments that cannot be deployed to alternate locations (i.e., transactions with high asset specificity), access to the site is critical and the denial of access results in holdup. Firms making such large, site-specific investments must therefore secure access to the site and manage the risk of holdup by communities disrupting or threatening to disrupt their operations. Within this context, we seek to answer the following: *Under what conditions do firms contract with nonmarket stakeholders?*

A central insight of TCE is that transactions with different attributes that affect their contracting hazards are aligned with governance structures, which differ in their costs and competences, to reduce transaction costs (Williamson 1991). We propose that transactions between firms and local communities vary in the level of holdup risk and therefore have different probabilities that firms use formal contracts to mitigate such holdup. Where holdup risk is low, firms and local communities rely on implicit (relational) governance. Where holdup risk is high, however, firms are likely to seek safeguards against holdup through formal contracting. Thus, we emphasize, as King (2007, p. 892) does, that "the recognition of post-contractual problems influences how firms structure their 'relations' with stakeholders."

We posit that two factors relevant to an access transaction between a firm and a community affect the potential for conflict between them (i.e., the degree to which their interests diverge), the holdup risks for the firm, and thus the use of contracts: a community's use rights over the resource sought by the firm and the negative externalities associated with the use of that resource by the firm. Furthermore, we argue that holdup risk is also high when the community can sanction the firm through collective mobilization (e.g., protests, blockades, petitions). Thus, we relax the TCE assumption of exchange parties as unitary actors equally capable of articulating and defending their interests to consider how variations in the capacity of local communities to overcome the collective action problem (to define and defend their interests) affect holdup risk for the firm and the probability of its seeking a contract with the community.

We focus our empirical examination on transactions between firms and the local communities in the proximity of their operations. The communities' well-defined geographic locations allow us to identify those that are "at risk" of entering into a contract with a firm and to examine how differences between communities influence the probability that firms contract with them. In a number of industries with large site-specific investments (e.g., mining, oil, and gas; real estate; transportation infrastructure), contracts with local communities, known colloquially as community benefits agreements (CBAs),[1] are a widespread industry practice. Nonetheless, because CBAs are costly to negotiate and implement, firms cannot and do not sign contracts with many local communities. Instead, they are selective, weighing the costs of a CBA (i.e., the costs involved in negotiating and enforcing the agreement and the benefits promised to the local community in exchange for its consent) against the benefits of reduced holdup associated with a CBA. In the empirical context of our study—the relations between 124 mines in Canada and *all* indigenous communities within a 500-km radius of those mines—contracts are used to govern the relationships between the firms operating these mines and 4.8% of the communities in their proximity.[2] We use an original, manually collected data set to demonstrate that communities' property rights over the land where the mines are located, their exposure to environmental and social externalities generated by the mine, and their capacity to sanction the mining firm for its use of the land increase the probability that the mining firms use formal contracts (i.e., CBAs) to govern their transactions with these communities.

Our research contributes to research on firm-stakeholder relations and nonmarket strategy. First, stakeholder theory has long argued that the cooperation of different stakeholders is a necessary condition for firm survival (Freeman 1984, Clarkson 1995) and has sought to understand "what kinds of relationships [managers] want and need to create with their stakeholders" (Freeman et al. 2004, p. 364). Building on past work that employs TCE to address this question (Freeman and Evan 1990, King 2007, Ketokivi and Mahoney 2016), we show that even when a firm interacts with

seemingly similar stakeholders (e.g., local communities), the governance of the firm's relationship with one stakeholder (e.g., community A) may differ from the governance of the firm's relationship with another, seemingly similar stakeholder (e.g., community B) because of differences in the potential for conflict and holdup characterizing their exchange relationships. We emphasize that the differences in the potential for conflict and economic holdup are partly due to differences in stakeholders' property rights (see Klein et al. 2012, 2019 for a property rights perspective on firm-stakeholder relations), and we demonstrate that these differences are important considerations in decisions to contract with nonmarket stakeholders. Our study thus highlights that insights from the TCE framework, which assesses efficiency across multiple modes of governance (Williamson 1985), and insights from property rights theory, which emphasize power (Libecap 1989, Rajan and Zingales 1998), can be complementary (see Palmer et al. 1987 for a similar emphasis).

Second, we seek to broaden the conversation on stakeholder governance to include not only market stakeholders (e.g., employees, suppliers, customers) but also nonmarket stakeholders (e.g., local communities, nongovernmental organizations). To date, theorizing on stakeholder governance has focused primarily on market stakeholders (Wang et al. 2009; Klein et al. 2012, 2019; Barney 2018). In contrast to this prior work, we highlight that the effective governance of a firm's transactions with its *nonmarket* stakeholders—in our case, local communities—is equally important. Thus, firms capable of identifying a suitable governance mechanism for their transactions with nonmarket stakeholder are likely to improve their exchange relations and, therefore, their market (Henisz et al. 2014, Dorobantu and Odziemkowska 2017) and nonmarket returns (Odziemkowska and McDonnell 2019).

Third, our study advances research on firm-stakeholder relations by emphasizing the critical role of externalities in transactions between firms and nonmarket stakeholders, thus drawing attention to stakeholders that *are affected* by a firm's operations. Although definitions of stakeholders as those "who can affect, and are affected by, a firm's operations" (Freeman 1984, p. 46) explicitly invoke externalities, most prior research has focused only on stakeholders who can affect the corporation (and the ways in which they exert influence). Recent scholarship has offered a property rights perspective for understanding firm-stakeholder relations (Klein et al. 2012, 2019), but the importance of considering externalities—social costs incurred where property rights cannot be effectively defined (Coase 1960)—has not been sufficiently emphasized. By discussing and measuring negative externalities, we bring attention to the management of a firm's relations with stakeholders "affected by" its operations. To this end, we expand on Coase's (1960) thesis on contracting for externalities to argue and show that, despite positive transaction costs, ex ante contracts for externalities (i.e., contracting prior to observance of externalities) may be favored when high asset specificity makes one party subject to holdup.

Transaction Cost Economics and Firm-Community Contracts

TCE examines the governance of transactions between economic exchange partners. More specifically, TCE scholarship seeks to explain how transactions are governed given that all contracts are incomplete (because of bounded rationality), exchange partners can act opportunistically, and transaction attributes can alter transaction costs. A central tenet of TCE is the discriminating alignment hypothesis, which posits that governance structures (e.g., contracts, alliances, hierarchical organization), which differ in their costs and competences, are aligned with transactions, that differ in their attributes, in an "economizing" way to reduce the hazards that arise from the nature of the transaction (Williamson 1985), of the underlying technology exchanged (Oxley 1997), or of the political environment in which the transaction takes place (Henisz and Williamson 1999). Thus, TCE provides powerful insights into the scope of the firm, showing that firms choose more hierarchical governance structures when the transaction, technology, or political environment renders contracting hazards very high. TCE's explanatory power has been demonstrated in phenomena as varied as foreign market entry (Anderson and Gatignon 1986), technology sharing (Oxley 1997), and, more recently, cross-sector partnerships (King 2007, Rivera-Santos and Rufín 2010, Boddewyn and Doh 2011).

We apply TCE insights to understand the emergence of contractual arrangements between firms and local communities. We follow previous TCE studies and first define the transaction of interest and the hazards that can arise within that transaction. We then discuss the efficacy of alternative governance structures in mitigating these hazards and develop our predictions.

Firm-Community Transactions and Holdup Risk for the Firm

Transactions between firms and local communities are ubiquitous. Similar to other stakeholders (such as suppliers, employees, and customers), local communities engage in exchange relationships with firms (Hill and Jones 1992). Local communities give firms

access to locations that offer firms inputs (such as human capital, infrastructure, and raw materials) and markets for their outputs. In exchange, these communities "expect corporate citizens who enhance and/or do not damage the quality of life" (Hill and Jones 1992, p. 133). Communities hope to reap the benefits of employment for their members, procurement opportunities for local businesses, and local tax revenues and philanthropic donations, while also seeking to minimize negative externalities, such as environmental or social disruptions. The exchange relationship between firms and local communities can thus be characterized as an *access transaction*, where access is defined as "the ability to use, or work with, a critical resource" (Rajan and Zingales 1998, p. 388). Access transactions do not require ownership by the party granting access and do not transfer ownership of the resource to the firm. Access gives the firm the ability and security to invest in other resources the firm does control (e.g., specialized technology), which generate surplus for the firm (Rajan and Zingales 1998).

Access transactions between firms and nonmarket stakeholders are commonplace. For instance, in many extractive industries, firms must engage in access transactions with governments to access land and underground resources for the purpose of extracting them. The government grants firms access for exploration and then for exploitation purposes; in most countries, ownership of the resources themselves is transferred from the government to the firm only upon extraction. Yet, the negotiated exclusive access to the land and the resource underground affords the firm the ability and security to make the site-specific investments (e.g., building a mine, an oilfield, or a pipeline) necessary to extract the resources.

In a similar manner, communities provide firms access to a critical resource—a location—by granting or withholding their consent to the firm's entry and continuing operations. In the absence of community consent, a firm faces risks of delays and disruptions that create significant costs and thus reduce the value created through the firm's investment. Communities can withhold their consent for a firm's access in different ways: they can pursue legal recourse; they can protest or build blockades (Ingram et al. 2010, McAdam and Boudet 2012); they can seek legislative action, such as local ordinances, to prohibit the access sought by the firm (Dokshin 2016). In a recent example, Amazon abandoned its plans to construct a new office in New York City, after protests by community members concerned by negative social externalities (e.g., rent inflation, displacement of existing residents), a costly public subsidies package, and an inability to capture benefits from the 25,000 jobs promised. Examples abound of communities successfully challenging or denying access to valuable locations, including in retail (Ingram et al. 2010), extractives (Vasi et al. 2015, Dokshin 2016,), and energy industries (McAdam and Boudet 2012).

Access transactions between firms and local communities carry risks of ex post holdup when firms make significant site-specific investments. Where "new trading relations are easily arranged" (Williamson 1985, p. 59), as in the case of retail stores, or where specific investments have yet to be made, as in the case of Amazon, uncertainty regarding a community's consent to access is of little consequence from a TCE perspective. Firms can move to communities willing to grant access, as demonstrated by the Amazon example and prior research on retailers like Walmart and Target (Ingram et al. 2010). Conversely, in access transactions where the source of a firm's surplus is a large site-specific investment not deployable to another location, the firm loses bargaining power after the investment is made. Once a firm has committed to a location through large site-specific investments, a local community can use its improved bargaining position (i.e., the threat to withdraw access through protest, blockades, lawsuits, or other means) to extract additional rents from the firm. The costs associated with the withdrawal of community consent for access are consequential once the investment is made. In our empirical context of mining, the estimated costs associated with withdrawal of access (i.e., a firm being prevented from accessing the mine site or continuing the mining operations) are estimated at $20 million *per week* for a world-class mining project with capital expenditures between $3 and $5 billion (Franks et al. 2014). Thus, firm-community transactions for access to sites with specific investments involve considerable holdup risks.

To reduce holdup risk, firms seek governance mechanisms that ensure continued access to a site, without disruptions from local communities aggravated by the firms' access to and use of the site. Because local communities are nonmarket actors that cannot be acquired or merged with, hierarchical integration is implausible. Spot-market transactions, which enable well-defined, one-time exchanges, are insufficient to secure long-term, continuous access to a site. The remaining governance alternatives are contractual agreements and informal partnerships relying on relational governance (Zaheer and Venkatraman 1995, Poppo and Zenger 2002). Although effective in the search for adjustments that align private and public interests (Mahoney et al. 2009, Kivleniece and Quelin 2012), informal relationships do not provide the firm or the local communities guarantees that these interests will continue to be aligned, especially when unforeseen disturbances (e.g., significant changes in the value of the resource, unanticipated negative

externalities generated by the firm) threaten their relationship. In the mining industry, specifically, firms often renege on their promises to local communities when cash flows dry up during busts in commodity prices, whereas commodity price booms can lead to local communities demanding greater rents from firms (Christensen 2019). Moreover, communities can be motivated to disrupt mining operations when they discover the magnitude of negative externalities they did not foresee (e.g., the levels of environmental pollution, water shortages, social violence and inequalities, the influx of outside job seekers) and demand an end to the activities that create these "social costs" or additional compensation for incurring them. Thus, by itself, informal (relational) governance cannot guarantee a firm continuous access to a valuable site, especially when unforeseen disturbances are likely to affect the relationship over time.

Alternatively, firms can use contracts to govern transactions for access to valuable sites. Commensurate with TCE's emphasis on the need to manage holdup risk resulting from asset specificity, CBAs have emerged across the world in industries where firms make large site-specific investments. Wind farms; infrastructure developments (e.g., airports, pipelines); large projects in mining, oil, and gas; and large real estate developments all require large site-specific investments. Practitioners view CBAs as "a tool to earn a broader corporate social license to operate" (Noble and Fidler 2011, p. 19) and thus greater certainty for the projects. Through CBAs, a firm enhances its long-term access to the location of interest and reduces the risk of holdup associated with opportunistic behavior by the community after the site-specific investment is made.

Firm-Community Contracts: Community Benefits Agreements

As with other contracts, transacting parties use CBAs to agree on the terms for their exchange and on the means to resolve future disagreements. In negotiating a CBA, firms and communities come together to define the terms for the development of a specific project, the responsibilities of each party, and the means to resolve disagreements. The resulting CBAs exhibit the characteristics highlighted by Llewellyn's definition of a contract as "a framework highly adjustable, a framework which almost never accurately indicates real working relations, but which affords a rough indication around which such relations vary, an occasional guide in cases of doubt, and a norm of ultimate appeal when the relations cease in fact to work" (Llewellyn 1931, 737; cited in Williamson 1991, p. 272). A reading of Canadian CBAs that have been made public reveals that they prioritize a framework for a good working relationship between parties as a key objective of the contract and include clauses on the type and frequency of communication (see Appendix Panels (A) and (B), for illustrative clauses detailing the objectives and implementation of CBAs). One mining executive whom we interviewed described how such contract objectives are implemented during the course of the contract:

"We have interaction with CBA-communities in a variety of ways at virtually every level of the organization; it's a regular and constant communication . . . It's meetings, workshops, [mine] site visits . . . Our senior management are going out for quarterly engagement, so they're going out to communities every three months to meet in a public setting or with Chief and Council or the leadership of whatever organization."

Should disputes arise between the firm and the community, CBAs also delineate dispute resolution procedures. The Cameco, AREVA, and Pinehouse agreement, for instance, specifies a sequence of steps in case of discord between parties: the parties to the agreement refer the dispute to their respective leadership, followed by nonbinding mediation, and, finally, arbitration (see Clause 7.1 Dispute Resolution, subsections b, d, and e(i) in Panel (C) of the Appendix). Similarly, the Agnico-Eagle Mines Ltd. agreement specifies dispute resolution mechanisms beginning with informal resolution by the agreement's Implementation Committee and ending with arbitration (see Clause 3.15, a to c, in Panel (C) of the Appendix). As such, these agreements conform to neoclassical contract law, which seeks to resolve conflict through arbitration rather than the courts (Williamson 1991). In addition, CBAs specify the benefits provided to the local community—including the preferential hiring of local community members, where possible; training and education opportunities for local community members; local procurement (see Appendix Panel (D) for representative clauses describing such benefits)—and ways in which the firm will mitigate the negative impacts of its activities on the local community (see Appendix Panel (E) for representative clauses discussing mitigation of impacts).

At the same time, CBAs often include clauses that emphasize adaptability (see Clause D18 in Appendix Panel (D) for an example of provisions on the use of unallocated scholarship funds), seeking to strike a balance between the precise commitments guaranteed by formal contracts and the flexibility and adaptability conferred by relational governance. Furthermore, the negotiation and implementation of CBAs likely facilitate the emergence of relational governance to complement the formal contract itself. Frequent and repeated interactions between community members and company representatives involve information sharing and increasing interpersonal familiarity, both of which encourage relational governance to emerge

alongside the formal contract (Poppo and Zenger 2002). In settings where hazards are severe and future possibilities hard to anticipate, relational governance can complement formal contract terms, so that "the combination of formal and informal safeguards may deliver greater exchange performance" (Poppo and Zenger 2002, p. 712). The executive we spoke with described how close relationships built through repeated interactions enabled the planning and design for a project expansion not delineated in the original contract, which had been signed over 15 years prior. During the planning of the project expansion, he describes, "we had [community] people out walking the escrow with our engineers and our community relations folks and trying to find the best spot to cross the escrow, to be least disruptive." Moreover, the expansion project design was adjusted in response to community feedback:

"We did a series of workshops explaining the [expansion] project to communities and, as a matter of fact, we actually changed the project as a result of that engagement last spring. We were going to mine two pipes and leave a fairly large environmental footprint. So we decided we'd eliminate the [A] pipe and go with a much smaller footprint for the project and just mine the [B] pipe." (Pipe names are removed to maintain confidentiality.)

By specifying the terms of the exchange and the means to resolve possible disagreements, and by enabling complementary relational governance that further enables the firm and the local community to seek ways to align their interests over the long term, CBAs offer the firm greater certainty that it will have continued access even in the event of unanticipated disturbances. Nevertheless, CBAs are costly to negotiate and implement (O'Faircheallaigh 2015). Negotiating a CBA takes a long time and requires dedicated resources (e.g., experienced negotiators and managerial time), whereas implementing a CBA requires firms to fulfill their commitment to share the value created with the local community, as agreed in the negotiated agreement.

A firm will therefore use CBAs selectively to govern its transactions with *some but not all* of the communities proximate to its site-specific investment. We focus our research question on this choice of a formal contract to govern some access transactions but not others. In answering this question, we acknowledge that the costs of negotiating and enforcing a contract vary (and we control for them empirically by incorporating community characteristics in our estimation); we focus our theoretical inquiry on the sources of holdup risk in an access transaction between a firm and a local community. We propose that, for access transactions where holdup risks are elevated, managers, who can foresee possible opportunism[3] but not all specific disturbances to write a complete contract, will favor formal governance with adaptive mechanisms (i.e., CBAs) over governance forms without such safeguards. In other words, the comparative cost of formal CBAs falls where a firm-community transaction has greater holdup risk.

We have argued thus far that transactions between firms and local communities that involve access to sites where firms seek to make large site-specific investments represent long-term exchange relationships that may be governed by contractual agreements that seek to reduce the risk of holdup for the firm. We argue below that holdup risk is elevated in transactions where community and firm interests are most likely to diverge and where the community has legal or regulatory recourse to challenge the firm. We also consider the community's capacity to hold up the firm through sanctions (e.g., protests, blockades, petitions) that do not rely on recourse through formal courts but that instead appeal to the court of public opinion (i.e., airing grievances publicly in the hopes of influencing the firm through public pressure).

Community Property Rights and the Risk of Holdup

Contracts are used by transacting parties to assign or modify property rights (Libecap 1989). Their emergence or alteration[4] represents the parties' joint response to new opportunities for mutually beneficial transactions. One important consideration in the negotiation of contracts is *existing* property rights or "the social institutions that define or delimit the range of privileges granted to individuals to specific assets, such as parcels of water or land" (Libecap 1989, p. 1). Often described as *bundles of rights*, property rights include a combination of three privileges: (a) the right to use the asset (*usus*); (b) the right to appropriate returns from the asset (*usus fructus*); and (c) the right to change its form, substance, and location (*abusus*).

TCE research has argued that property rights to assets (Teece 1986) and the security of those rights (Henisz and Williamson 1999, Oxley 1999) affect ex post transaction hazards. We build on this proposition but focus specifically on how a stakeholder's *use rights* to a resource affects hazards in an access transaction with site-specific investments for two reasons. First, full property rights—the bundle of *usus*, *usus fructus*, and *abusus*—are not a necessary condition for one party to offer or deny another party *access* to a resource (Rajan and Zingales 1998).[5] In firm-community access transactions, communities rarely possess full property rights over a location (i.e., they are not owners of the land).[6] They can nevertheless leverage their use rights to restrict others' access to and use of the location. Second, when communities have full property rights, there is

little ambiguity about whether a firm needs to contract with them. A firm seeking to develop a mine on a land site first has to contract with the land owner to gain access to the land (through a leasing agreement) or to purchase it outright. By contrast, when communities have only use rights to the land, it is less clear whether a contract is imperative.

Use rights—*usus*, or the rights to use or enjoy a thing possessed, directly and without altering it—are relevant because they can be a source of conflict while simultaneously affording a community the right to seek sanctions against those that interfere with their rights. When multiple parties have use rights over the same asset (Alchian 1965), one party's use may impinge the benefits derived by another's use of the same asset. Take, for example, the use rights to a public park. One person's enjoyment from using the park is reduced if another who exercises that right litters. The two users' interests are not aligned—one seeks to enjoy a clean park; the other wants to limit effort exerted on trash disposal—and thus are at odds. This creates conflict and an imperative for the two users to find means through which to resolve it. Similar potential for conflict exists in our empirical context, where a mining firm's use of land to develop a mine is likely to impinge on proximate communities' use of that land (e.g., for hunting and fishing).[7] Thus, the potential for conflict increases when firms seek access to resources over which other stakeholders have use rights.

Moreover, use rights give those who possess them legal standing and thus bargaining power over those who impinge on these rights. In the public park example, whereas use rights do not afford park users the right to restrict others' use of the park, they do afford them the right to seek sanctions against those that interfere with their use rights (e.g., to seek fines against those who litter). Thus, stakeholders with use rights over an asset have bargaining power when they can claim that their use rights are impinged by others' use of the asset. They may use their position to seek recourse through the judicial system or through regulatory sanctions.

In transactions for access to sites with site-specific investments, a higher potential for conflict (i.e., divergence of interests) between a firm and stakeholders that have use rights and the greater bargaining power conferred by legal standing to stakeholders that have use rights translate to a higher risk of holdup for the firm. For instance, having observed a firm make a site-specific investment, a stakeholder with use rights over the land where the investment is located can claim, sometimes opportunistically, that its use of that land has been impinged. Although such situations may be the exception, for investments that involve high asset or site specificity, an increase in the probability of such opportunism "makes it more imperative that the parties devise a machinery to 'work things out'" (Williamson 1985, p. 60). In our context, CBAs provide such a machinery: they establish an adjustable framework for long-term cooperation, with legal recourse as a last resort. Thus, where a local community possesses use rights to a location desired by a firm for a site-specific investment (e.g., a mine or a large real estate development), the firm is more likely to seek a formal contract with the community to minimize the risk of holdup that the stakeholder's use rights introduce to the transaction.

Hypothesis 1 (H1). *The probability that a firm signs a contract with a community is higher when the community possesses use rights over the asset or site sought by the firm.*

Externalities and the Risk of Holdup

Coase's highly influential 1960 article "The Problem of Social Cost" drew attention to the problem of externalities, which he defined as "harmful effects on others" and illustrated by the example "of a factory the smoke from which has harmful effects on those occupying neighboring properties" (Coase 1960, p. 1). If transaction costs were zero or negligible, Coase (1960) would expect a firm and an affected stakeholder to negotiate a mutually beneficial agreement in which either the firm would compensate the stakeholder for the harm inflicted or the stakeholder would incentivize the firm to discontinue its activity to avoid inflicting harm. Ostrom (1990) made a similar argument about the management of common-pool resources (e.g., common pastures, irrigation systems, and fisheries), which, given their shared or common property nature, are at risk for depletion because of externalities. Ostrom showed that, under certain conditions, the actors involved in the use of a resource can establish decentralized institutions (i.e., rules and norms) to govern their use, without intervention from a central authority (Ostrom 1990, Ostrom et al. 1994).

Importantly, both Ostrom (1990) and Williamson (1985, 1991) emphasized the importance of adaptation in governance systems. Williamson (1985, p. 79) emphasized that "the impossibility (or costliness) of enumerating all possible contingencies and/or stipulating appropriate adaptations to them in advance" creates a need for successive adaptation, especially in long-term exchange relationships. Negative externalities such as toxic leaks from a mine and social inequities generated by its development are one important contingency that cannot be fully anticipated but that can considerably affect access transactions between firms and local communities. The precise occurrence and magnitude of negative externalities are difficult to anticipate; once they occur,

however, they are a source of conflict between the firm and the local community. The firm has incentives to continue its operations notwithstanding the negative externalities it inflicts on the community, whereas the community prefers the firm to cease these activities. Their interests are therefore misaligned or in conflict with each other.

The costs of such misalignment or conflict are particularly pronounced in transactions that involve access to sites where firms have made significant site-specific investments (e.g., the construction of a mine, a pipeline, or an airport). In these situations, firms have little choice but to continue with their operations; relocating is not an option, and ceasing operations would forgo the future value expected from the site-specific investment. At the same time, a community recognizing the firm's limited options has incentives to behave opportunistically and to demand up to the full future value expected from the site-specific investment as compensation for the externalities. In other words, in transactions with high asset specificity, firms face a considerable risk of holdup in negotiations involving compensation for externalities.

We argue that the combination of these conditions—the high potential for conflict associated with negative externalities and the high risk of holdup in transactions with high asset specificity—are particularly conducive to the negotiation of contracts to govern transactions between firms and local communities. We build our argument on Coase's (1960) proposal for firm-stakeholder negotiations to internalize negative externalities, Demsetz's (1967, p. 350), emphasis that contracts that delineate "property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization," and TCE's assertion that contracts provide adaptive mechanisms for unanticipated disturbances[8] (Williamson 1991). Specifically, we suggest that in transactions involving access to sites with site-specific investments, firms and communities are likely to contract for externalities ex ante (i.e., prior to occurrence of negative externalities) by negotiating and signing a CBA.

CBAs offer governance structures that reduce future costs of renegotiation and compensation associated with negative externalities. They do so by outlining specific commitments (often beyond those required by law) to mitigate and monitor externalities and to address unforeseen externalities. For example, the Raglan Agreement between Inuit communities in northern Quebec and the Société Minière Raglan Du Québec Ltée seeks to mitigate social externalities (which can occur when mine workers visit communities) by specifying that employees of the mine will be transported directly to the mine site, avoiding contact with local communities. Canadian law provides no such limits on the free movement of workers. Moreover, because social ills have complex causes, it is difficult to contract for the firm's liability in social ills or for the courts to assign liability (see Mayer et al. 2004 for challenges to verifiability of negative spillovers). As such, a mining firm can go beyond the law to make ex ante mitigation commitments that the community can verify through the monitoring mechanisms provided for in the CBA (see the Appendix).[9]

By formalizing commitments to mitigate externalities and by providing monitoring mechanisms and a framework for conflict resolution, CBAs considerably reduce the probability that the community seeks legal or regulatory recourse to address negative externalities and therefore lower the risk of disruptions (i.e., holdup) for the firm. Thus, the costs of renegotiations with stakeholders over unanticipated negative externalities are lower within the framework of a formal contract with dispute resolution procedures than in its absence. As a result, where a firm has made site-specific investments and where a community is subject to negative externalities (and thus is in a much stronger position to claim damages in litigation), the firm has incentives to seek a CBA to govern its transaction with the community. Thus, we expect the following:

Hypothesis 2 (H2). *The probability that a firm signs a contract with a community is higher when the community bears a risk of negative externalities.*

Community Mobilization Experience and the Risk of Holdup

We have emphasized thus far that, in access transactions involving site-specific investments, holdup risk is elevated when a community has use rights over a resource that a firm seeks to use and when it is at risk for negative externalities generated by the firm's use of that resource. Under these conditions, a community can hold up the firm after the firm has made the site-specific investment. In the preceding hypotheses, we highlight that a community has leverage because its use rights and exposure to negative externalities give it legal and regulatory recourse. Below, we extend the theoretical framework to argue that even in the absence of formal recourse, communities can leverage their capacity for collective mobilization to hold up a firm.

As we saw in the Amazon example, communities can mobilize using extrainstitutional tactics (e.g., protests or blockades) that do not rely on the threat of formal sanctions but instead block the firm's physical access or threaten its reputation. Communities can likewise mobilize using tactics that rely on existing institutions, such as organizing petitions, providing evidence at regulatory hearings, or seeking local

ordinances to prohibit access (Dokshin 2016). Yet, not all communities have capacity to mobilize. Research on community mobilization has shown that communities vary in their ability to oppose large-scale projects (e.g., the siting of liquefied natural gas terminals) (McAdam and Boudet 2012). This is not surprising given that communities are groups that must overcome the challenge of collective action to articulate and defend the "collective interests." Thus, we submit that studies of transactions with nonmarket stakeholders representing collectives—in our case, communities—must also consider these stakeholders' capacity for collective action or mobilization.

TCE focuses on transaction characteristics that alter the comparative costs of governance options and assumes that exchange partners behave as "unitary" actors that can articulate their interests and act to protect those interests. In transactions involving two market partners (e.g., a buyer and a supplier), these assumptions mirror practice: before a transaction takes place, representatives of the two firms (managers and/or legal counsel) explicate their interests and expectations to the other party; later, if either party believes its expectations are not met, it seeks recourse to correct the perceived breach. However, these assumptions do not hold in transactions with parties representing collectives. For instance, Williamson (1975, p. 45) noted that nonhierarchical, loose associations of individuals (in his discussion, worker "peer groups") must overcome the challenges of collective decision making and free riding. Similarly, nonmarket stakeholders representing collectives (e.g., local communities, social movements) face the pervasive challenge of overcoming the collective action problem. Even members of a local community who recognize that their interests would be negatively affected by a new corporate investment have strong incentives to free ride on other community members' efforts to demand that their concerns be addressed.

Furthermore, for these actors to assert their interests and voice their concerns, they must possess the capacity to articulate and explicate these interests. These tasks, which might be trivial in a market context, are considerably more demanding for nonmarket actors, for two reasons. First, whereas market actors rely on hierarchy to coordinate their internal decision making, social groups rely on other coordination devices (e.g., social networks) to collect information about their members' preferences and to aggregate them into a collective interest. This process requires time and frequent iterations to ensure sufficient support from group members. Second, both the process of defining the collective interest and the action of explicating it to an external party require capabilities (e.g., ability to communicate, listen, understand, and reflect) that cannot be assumed to exist in all nonmarket stakeholders. Practitioners and regulators in the mining industry, for instance, view the provision of resources to communities to convene and discuss their interests and concerns (e.g., a meeting space, a facilitator) as a critical precursor to meaningful community engagements, necessary for communities to articulate their collective interests to the mining firm.

Thus, it is important to recognize that local communities vary in their ability to overcome the pervasive collective action problem, to organize collectively to articulate their interests, and to take action to assert them. A rare comparative study examining local communities at risk of mobilization finds limited support for a range of factors emphasized by research on the emergence of larger social movements (including grievances, civic capacity, and political opportunity) but emphasizes the relevance of previous mobilization experience in explaining recent collective action (McAdam and Boudet 2012).[10] Previous mobilization by a local community reflects its capacity to organize collectively. Communities that mobilized in the past are more likely to do so again because they develop, through collective action experiences, a shared understanding of their communities' goals and interests, relationships, and norms for "monitoring and coordinating mechanisms for subsequent action" (Rowley and Moldoveanu 2003, p. 209).

In the mining industry, local communities with capacity for collective mobilization use various tactics, such as protests or petitions, to oppose mining proposals or projects, withdrawing their consent to access to the site. Stories of community protests leading to the suspension or abandonment of large mining projects abound, spanning the world from the heights of Pasqua Lama, in the Atacama Desert in Chile, to the Niyamgiri mountain, in Orissa, India (Seager 2014) and from the Chilcotin Plateau, in British Columbia (Trumpener 2019), to the Apuseni Mountains, in Romania (Buckley 2017). Knowing this, investors perceive these communities as a risk for a firm developing a project nearby (Dorobantu and Odziemkowska 2017). Thus, firms have strong incentives to understand and address the concerns of communities with demonstrated capacity to mobilize and to reduce the risk of disruptions and delays caused by community mobilization through institutional channels (e.g., injunctions, governmen petitions) or extrainstitutional channels (e.g., protests, blockades). As a result, we hypothesize as follows:

Hypothesis 3 (H3). *The probability that a firm signs a contract with a community is higher when the community has capacity for collective mobilization.*

We also expect that firms will perceive a community with demonstrated capacity to mobilize as even

more threatening if the community also has a "stake"—that is, a claim that its concerns are legitimate and should be addressed by the firm (Freeman 1984). Collective mobilization can be particularly effective if accompanied by credible claims of use rights infringement or negative externalities, because such claims are more likely to garner greater numbers of sympathizers, may mobilize others to join in the action, and are less likely to be dismissed by authorities. In a recent example, the Standing Rock Sioux Tribe mobilized in months-long protests against the Dakota Access Pipeline in North Dakota, with thousands of people joining their effort to prevent the completion of the pipeline. Their claim that their sole water supply would be affected in the event of a pipeline spill garnered the attention of regulators and the public and gave them legal standing to bring court cases against the developer of the pipeline. In sum, collective mobilization poses even higher holdup risk in the presence of use rights or risk of negative externalities.

As such, communities with collective mobilization capacity have the greatest bargaining power in transactions where they also have use rights over the site and/or are subject to negative externalities. Communities that combine mobilization with credible claims of harm pose a higher risk of costly holdup for a firm and consequently stronger incentives for a firm to seek a CBA to govern its transaction with these communities. We hypothesize as follows:

Hypothesis 4 (H4)**.** *The probability that a firm signs a contract with a community is higher when the community has capacity for collective mobilization and has use rights and/or a risk of negative externalities.*

Data and Methods

CBAs are becoming prevalent in a number of industries and countries (Parks and Warren 2009). We focus our empirical inquiry in one country (Canada) to minimize national differences in the enforcement of property rights, regulatory provisions, and the legal underpinnings of CBAs and in one industry (mining) to control for differences in unobservable industry-level norms around stakeholder contracting. We also focus on one type of stakeholder—indigenous communities—to limit potential endogeneity associated with property rights. In general, stakeholders with good foresight or information are more likely to hold property rights to valuable assets (e.g., employees invest in human capital through training). In the empirical context of our study, however, the historical assignment of the property rights of indigenous communities across Canada minimizes potential bias associated with stakeholder foresight and information. Specifically, between 1780 and 1921, the British government, and subsequently the Canadian government, signed treaties with indigenous communities to acquire their lands (Alcantara 2003).[11] Through these "historic treaties," indigenous communities ceded large tracts of land where they lived, traveled, hunted, and fished in exchange for payments and, in some cases, the continuance of hunting and fishing rights (i.e., use rights) over the land (Sosa and Keenan 2001). Because communities' historic locations and nomadic routes determined the land boundaries delineated in historic treaties, and distant ancestors negotiated use rights, we maintain that the boundaries of communities' property rights, which maintain today, were determined in a manner plausibly exogenous to present-day community characteristics (e.g., foresight).

Several other characteristics recommend the mining industry as an appropriate context for testing our hypotheses. First, the geology of mineral formations drives location choice in extractive industries and thus reduces concerns that mining firms select the location of their investments to minimize holdup by indigenous communities. Unlike the siting of infrastructure (e.g., roads and pipelines) and real estate developments, where firms can locate strategically to avoid conflict due to externalities or use rights, mining firms must build their operations in mineral-rich areas to maximize the exploitation of the resources in the ground. Second, in addition to the locations of both mining activities and indigenous communities being predetermined, these locations are also fixed. A mine's location is determined by geological formation and is thus fixed. Furthermore, capital investments in mining operations are site specific and cannot be relocated in response to holdup by the local community. The boundaries of indigenous communities' lands (both reserve lands and hunting and fishing lands) are also fixed, giving communities no flexibility to relocate if they desire to be farther from the impacts of the mining operations. Because of the fixed location of both mines and communities, we can use their geolocations to assess which communities face the greatest risk of negative externalities (environmental and social) from a particular mine.

Sample

We test our hypotheses using data on 124 mines and *all* indigenous communities within 500 km of those mines. We began with a complete list of 187 mines that signed CBAs with Canadian indigenous communities between 1999 and 2013, as reported by Natural Resources Canada (NRCAN), the Canadian government agency responsible for resource development. We limited our data collection to mines owned by publicly traded firms and mines for which we could

confirm the existence of a CBA (and code its date and signatories) by finding the press release or a news report announcing it, bringing the sample to 124 mines. We restricted our analysis to the period 1999–2013 because it corresponds to a stable period in the legal interpretation of indigenous rights in Canada. Following the recognition of indigenous rights in the 1982 Constitution Act, the interpretation of indigenous property rights—including use rights granted in historic treaties—has evolved through several landmark Supreme Court cases up to 1997 (Keay and Metcalf 2011) and then again with the Canadian Supreme Court's *Tsilhqot'in v. British Columbia* decision in 2014. Focusing our inquiry on the period 1999–2013 ensures that the legal interpretation of use rights was consistent throughout our study period.

We identified communities located within 500 km of each mine by mapping the mine's coordinates onto the coordinates of all 637 indigenous communities in Canada, using the *Canadian Aboriginal Lands* map provided in NRCAN's Geogratis database[12] and ArcGIS software. We use a 500-km radius to delineate communities at risk for a CBA because, although 90% of CBAs are with communities within 300 km of a mine, 10% of the CBAs are signed with communities located between 300 km and 500 km of a mine, and we examine the robustness of our results to using smaller distances to identify the communities at risk for getting a CBA. A total of 459 communities, or 72% of all Canadian indigenous communities, are located within 500 km of our sample mines; from this mapping, we calculate the geodesic distances between each mine and community. Mapping communities to the 124 mines resulted in 5,342 mine–community dyads, or an average of 43 indigenous communities within 500 km of each mine. Because 15 of the 124 mines signed CBAs in two different years, we include these mines and the surrounding communities twice in our data. Our final sample therefore includes 5,739 observations representing the dyadic relationships between 124 mines and the indigenous communities within 500 km of these mines during the years in which a CBA was signed by the mine. Of the 5,342 mine-community dyads, 259 (or almost 5%) have signed a CBA.

Dependent and Independent Variables

Dependent Variable: *CBA*. Using the mine-community dyad as the unit of analysis, we seek to understand the factors that influence the probability of signing a CBA between a firm operating a mine and a proximate community. The dependent variable is, therefore, a dyad-level dummy, coded one if a mine-community dyad has signed a CBA and zero otherwise.

Property Rights. Indigenous communities' property rights over lands were allocated through the negotiation and signing of historic treaties. After signing the treaties, indigenous populations were relocated onto reserves, where they received rights to occupy the land (Alcantara 2003), or the equivalent of *usus* and *usus fructus* rights.[13] For simplicity, we refer to this bundle of *usus* and *usus fructus* rights that communities possess over reserve lands as *full property rights*, although we recognize that indigenous communities are not allowed to sell their reserve lands to others. Some historical treaties (e.g., the Robinson-Huron 1850 Treaty) also gave signatory communities hunting and finishing rights (i.e., *use rights*) over large tracts in their ancestral lands, whereas other treaties did not include such rights. More recently, some indigenous communities have obtained full rights to larger tracts associated with their ancestral lands through the negotiation of "modern treaties" with the Canadian government.[14]

To code the property rights that a community has to the land where a mine is located, we used the *Historic Treaties Map*, containing polygons of the geographic boundaries of historic treaties, and the *Canadian Aboriginal Lands* map, which consists of polygons depicting administrative boundaries of reserve and modern treaty lands. Using the coordinates for each mine in our sample, and drawing a 1-km radius around each coordinate (to better represent the footprint of a mine), we identified whether the land on which the mine was located was on historic treaty lands with use rights, on reserve or modern treaty lands (full property rights), or on neither (no property rights). We relied on archival sources, including the original texts of historic treaties, to determine which of 70 historic treaties included rights to hunt and fish on the lands covered by the historic treaty (i.e., use rights). Matching each historic treaty with use rights on which a mine was located to each of the 459 indigenous communities in the sample, we created a dummy variable, *use rights*, which we coded one for communities with use rights over the land where the mine is located and zero otherwise. In addition, we created a control variable that indicates whether the community has *full property rights* to the land where the mine is located. Specifically, this variable is coded as one if the mine is located on communities' reserve or modern treaty lands described above.

Negative Externalities. We identify communities that are likely to be affected by negative environmental and/or social externalities from the mine.[15] Beginning with environmental externalities, we identify communities located in the same watershed basin as the mine as being at risk for higher environmental externalities. Mining's greatest environmental impact

is on water quality and quantity (Franks et al. 2014); drainage within a watershed basin carries pollution that originates at the mine, resulting in negative externalities well beyond the source of the pollution (i.e., the mine). To identify whether a mine and a community are colocated in the same watershed basin, we map each community's land boundaries and each mine's geographic coordinates on the *Watersheds in Canada* map available from ArcGIS. The map, based on the Water Survey of Canada data, includes main drainage and subdrainage areas. The 637 indigenous communities in Canada are located on 135 distinct subdrainage areas, and our 124 mines are located on 49 subdrainage areas. Approximately 13% of our mine-community dyads are colocated in the same subdrainage area. Of those dyads, 20% have CBAs, compared with 4.8% in the full set of dyads. The variable *environmental externalities* is coded one when the mine and community are located in the same watershed subdrainage area, and zero otherwise. Our results remain substantively unchanged when we restrict environmental externalities to those communities that are both in the same watershed basin, and below the elevation of the mine, to account for likely drainage patterns in watersheds (results available from authors).

Mining operations also involve social externalities, such as increased road traffic and accidents, higher alcohol and drug use, and the spread of violence (often between local community members and outsiders seeking employment at the mine) and criminal activities, including sexual violence (Whiteman and Cooper 2016). The communities located on the roads to the mine and/or those most easily accessible by mine workers experience most of these negative social externalities. To reflect this, we identify communities within a 50-km driving distance from the nearest road that connects to the mine site by mapping each community's and mine's geographic coordinates on the Canadian National Road Network (NRN) map.[16] We drew 10-km buffers around the mine coordinates because the NRN does not always contain industrial roads (e.g., the roads to mine sites), and we identified the point on the NRN that is geodesically closest to the mine. The variable *social externalities* is coded one when the community is within a 50-km drive on the NRN from the mine's point on the NRN and zero otherwise. We verified that our measure did not include any fly-in communities (i.e., communities that are only accessible by air or water). Our results are robust to varying driving distances (e.g., 75 km) and to using a continuous measure reflecting the shortest driving distance from the community to the mine.

Community Mobilization. To test our third hypothesis, we rely on media reports of a community's past mobilization (e.g., protests, blockades, petitions, regulatory injunctions). Since the early 1980s, indigenous communities in Canada have engaged in widespread collective mobilization, which has been widely reported in the media (Wilkes et al. 2010). To overcome selection and description bias associated with media reports (Earl et al. 2004), we use the entire Factiva database, which covers over 25,000 media outlets and press wires, and rely only on the hard facts of the event (specifically, who, what, and when) that are accurate in most media reports (Earl et al. 2004). We searched Factiva for reports where the community name appears within 10 words of terms associated with institutional mobilization (e.g., petition, grievance, investigation, injunction, lawsuit, legal action, and court) or extrainstitutional mobilization (e.g., strike, rally, demonstration, protest, and blockade) (Wilkes et al. 2010). We read each article and coded those that referred to a mobilization event to capture the date, the type of mobilization, and the target of the mobilization (e.g., firm, mine, and government).

From these data, we construct two measures of community mobilization. *Institutional mobilization* is a count of the number of times that a community mobilized through institutional channels—the judicial system or the regulatory process—in the preceding 10 years. Similarly, *extrainstitutional mobilization* is a count of the number of times that a community mobilized via extrainstitutional tactics, such as protests or blockades. We restrict our measure of extrainstitutional mobilization experience to communities located within 100 km of the mine, as those communities are likely to use extrainstitutional mobilization to deny a firm physical access to the mine site, whereas communities further away might find extrainstitutional mobilization impractical or too costly. Although holdup via institutional mobilization (lawsuits, petitions, or injunctions) can be executed regardless of whether the mine is close to the community, holdup via extrainstitutional tactics requires physical proximity to the mine site.

Control Variables

We control for a number of additional factors likely to impact contract formation between a firm and a community. At the dyad level, we control for the geodesic distance between the nearest land boundary of the community and the mine, which we expect to drive contracting and to correlate with externalities. We measure *mine-community geodesic distance* in hundreds of kilometers. We also control for *past conflict in dyad*, or the community's past mobilization against the focal mine or firm. We sum the number of times a community mobilized against the firm or the mine, through either institutional or extrainstitutional tactics, within the past 10 years, which we obtain from

the data collected for the mobilization experience variables. We expect that communities that have engaged in open conflict with the firm are likely to be judged as posing higher holdup risk than others. We also control for *extrainstitutional mobilization by distant communities*, which is a count of the number of times that communities more than 100 km from the mine mobilized via extrainstitutional tactics against any entity other than the focal mine.

We also expect that communities learn through their own past experiences with CBAs and through those of other proximate communities. The past CBAs of a community facilitate their use in the future, as the community becomes familiar with the negotiation process and the trade-offs involved in a CBA. We control for the focal *community's past CBAs* by counting the number of CBAs it already signed. A community can also learn about CBAs by observing the benefits obtained through CBAs by proximate communities, or it may be encouraged by negotiators who worked with proximate communities to seek their own CBA. To account for these potential factors, we control for the number of CBAs signed by communities within 300 km of the focal community (*proximate community CBAs*).

We also control for sociodemographic characteristics of the community that may affect the probability of negotiating and signing a CBA. We control for the community's *population* and log its value to adjust for the skewness of the data. We obtain population data from Aboriginal Affairs and Northern Development Canada, the government agency responsible for indigenous affairs in Canada, which has a statutory duty to maintain a record of all registered indigenous persons under the *Indian Act*. We control for the *employment rate* of the community, which we obtain from the 2006 census, because it speaks to the degree to which the community is poised to capture positive externalities from the mine in the form of local employment. Finally, we control for the percentage *indigenous language speakers*, which we obtain from the 2006 census, to proxy for the strength of residents' cultural identity, which may influence the likelihood of mobilization (Rowley and Moldoveanu 2003).

Estimation

To examine the impact of the proposed drivers of CBAs—use rights, negative externalities, and a community's mobilization capacity—on firms' choices of communities with which to sign CBAs, we estimated a discrete choice model (McFadden 1974). Also known as the conditional logit, this model uses variation in attributes across potential alternatives (i.e., communities) within the choice set of the chooser (i.e., firm) to estimate the effects of those attributes (see Elfenbein and Zenger (2013) for an application to supplier choice and Hernandez and Shaver (2019) for an application to acquisition choice). The probability that firm i signs a CBA with community c from a choice set s of alternatives is given by $\Pr(y_i = c) = e^{\beta x_{ic}} / \sum_{c \in s} e^{\beta x_{ic}}$, where x_{ic} is the vector of dyad-level and community-level attributes that the firm observes about each community. Firm-level covariates are not estimated, as they are conditioned out (and therefore controlled for) by the conditional estimator. In our main models, the choice set s includes all communities within 500 km of the mine; our results are robust to choice sets defined by smaller distances (as we discuss below). Because the alternatives across our choice sets are not identical, β indicates whether a community's attributes increase or decrease the likelihood of a CBA but not the magnitude of the effect. Therefore, following Hernandez and Shaver (2019), we use a linear probability model with choice-set fixed effects and robust errors clustered at the mine level to interpret magnitudes.

Acknowledging that McFadden's discrete choice model is implicitly cross-sectional and thus removes potentially meaningful variation in our time-varying community and mine–community covariates, we also estimate a panel logistic regression traditionally employed in alliance research. Specifically, we use the conditional maximum likelihood estimator for fixed-effects panel logit, which avoids the incidental parameters problem of logit estimators with fixed effects (Greene 2012) and allows us to control for mine-level, time-invariant unobservable characteristics. In addition to mine fixed effects, we include year dummies and cluster our standard errors at the mine level.

Table 1 shows descriptive statistics and correlations for the variables in our discrete choice model sample. The bottom rows show the mean and two standard deviations of the variables: in the overall sample and within their respective choice sets (i.e., within a CBA). The correlation matrix shows that CBAs are positively correlated (p = 0.000) with use rights, social and environmental externalities, and communities' institutional and extrainstitutional mobilization.

Results

We report the results of the discrete choice model in models 1–7 in Table 2 and the results for the panel logistic regressions (with heteroscedasticity robust standard errors clustered at the mine level and mine and year fixed effects) in models 8–14. We focus our results discussion on the discrete choice model and assess effect sizes using the linear probability regression results in model 19. Model 1 includes only the control variables and shows that communities farther from the mine have a decreased likelihood of a CBA (p = 0.000), as expected. Conversely, the community's experience with CBAs is associated with an

Table 1. Descriptive Statistics and Correlations (N = 5,739)

		Correlation														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*CBA*	1.000														
2	*Use rights (H1)*	0.179	1.000													
3	*Environmental externalities (H2)*	0.289	0.185	1.000												
4	*Social externalities (H2)*	0.238	0.037	0.172	1.000											
5	*Institutional mobilization (H3)*	0.084	0.133	0.021	0.015	1.000										
6	*Extrainstitutional mobilization (H3)*	0.124	0.033	0.073	0.218	0.048	1.000									
7	*Mine-community geodesic distance*	−0.288	−0.257	−0.466	−0.172	0.010	−0.083	1.000								
8	*Full property rights*	0.149	−0.028	0.096	0.234	−0.014	−0.002	−0.084	1.000							
9	*Past conflict in dyad*	0.086	0.006	0.048	−0.002	0.027	−0.001	−0.030	−0.001	1.000						
10	*Extrainstitutional mob. by distant communities*	−0.021	0.079	0.025	−0.029	0.290	−0.014	0.041	−0.013	0.064	1.000					
11	*Community's past CBAs*	0.142	0.016	0.024	−0.007	0.060	0.017	−0.048	−0.011	0.039	0.017	1.000				
12	*Proximate community CBAs*	0.016	−0.022	0.009	0.016	−0.022	0.006	−0.124	−0.015	0.006	−0.018	0.307	1.000			
13	*Population*	−0.009	−0.224	−0.053	−0.001	0.056	−0.003	0.107	0.006	0.013	0.139	−0.069	−0.160	1.000		
14	*Employment rate*	0.064	0.072	0.017	0.015	−0.019	0.018	−0.046	−0.006	−0.007	−0.035	0.143	0.136	−0.307	1.000	
15	*Indigenous language speakers*	0.088	−0.137	−0.018	−0.030	−0.007	−0.015	0.094	0.006	−0.009	−0.070	0.191	0.048	0.196	−0.183	1.000
		Summary statistics														
Mean		0.045	0.359	0.131	0.006	0.202	0.003	2.945	0.001	0.000	0.236	0.848	3.802	6.781	0.436	0.280
Overall std. dev.		0.208	0.480	0.337	0.079	0.555	0.070	1.266	0.037	0.019	0.660	1.973	3.644	0.883	0.118	0.281
Within choice set std. dev.		0.191	0.333	0.323	0.078	0.530	0.069	1.201	0.036	0.018	0.641	1.791	2.595	0.802	0.102	0.236
Min		0	0	0	0	0	0	0	0	0	0	0	0	3.689	0.111	0.000
Max		1	1	1	1	5	3	5	1	1	6	15	19	9.312	0.833	1.000

Note. std. dev., standard deviation.

Table 2. Estimates of the Probability of CBA

	Discrete choice mode							Panel logistic regression (mine & year fixed effects)						
Independent variables	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Use rights (H1)		1.675*					1.462*		2.086**					1.840**
		(0.694)					(0.706)		(0.716)					(0.667)
Environmental externalities (H2)			0.848**				0.804**			0.813*				0.712*
			(0.277)				(0.299)			(0.339)				(0.349)
Social externalities (H2)				1.845**			1.447**				1.792**			1.530**
				(0.561)			(0.552)				(0.575)			(0.576)
Institutional mobilization (H3)					0.754***		0.558**					0.154*		0.125*
					(0.184)		(0.195)					(0.065)		(0.063)
Extrainstitutional mobilization (H3)						1.369***	1.236**						0.934***	0.790**
						(0.410)	(0.391)						(0.225)	(0.292)
Dyad controls														
Mine-community geodesic distance	−2.523***	−2.321***	−2.313***	−2.389***	−2.560***	−2.475***	−2.113***	−2.563***	−2.417***	−2.341***	−2.427***	−2.572***	−2.538***	−2.126***
	(0.292)	(0.281)	(0.298)	(0.290)	(0.282)	(0.289)	(0.284)	(0.279)	(0.280)	(0.286)	(0.268)	(0.276)	(0.277)	(0.270)
Full property rights	2.578**	3.074**	2.301*	1.912	2.576*	2.582**	1.984+	2.751*	3.578**	2.564*	2.190+	2.904*	2.758*	2.920*
	(0.991)	(0.964)	(0.958)	(1.338)	(1.001)	(1.000)	(1.105)	(1.142)	(1.366)	(1.077)	(1.245)	(1.223)	(1.150)	(1.360)
Past conflict in dyad	18.54***	16.38***	18.35***	18.94***	17.41***	18.26***	17.39***	2.640+	2.727*	2.527+	2.672*	2.634+	2.633+	2.605*
	(1.341)	(1.233)	(1.337)	(1.324)	(1.341)	(1.345)	(1.348)	(1.365)	(1.312)	(1.332)	(1.342)	(1.369)	(1.356)	(1.279)
Community controls														
Extrainstitutional mobilization by distant communities	−0.444*	−0.431*	−0.530**	−0.411*	−0.615**	−0.421*	−0.593**	−0.200	−0.195	−0.234	−0.160	−0.254	−0.189	−0.233
	(0.175)	(0.178)	(0.186)	(0.173)	(0.207)	(0.175)	(0.206)	(0.173)	(0.169)	(0.183)	(0.170)	(0.181)	(0.172)	(0.185)
Community's past CBAs	0.252***	0.237**	0.257***	0.256***	0.228**	0.251***	0.247**	0.393***	0.393***	0.409***	0.394***	0.400***	0.391***	0.411***
	(0.075)	(0.078)	(0.073)	(0.073)	(0.075)	(0.075)	(0.076)	(0.047)	(0.047)	(0.050)	(0.047)	(0.047)	(0.047)	(0.048)
Proximate community CBAs	0.128	0.187*	0.139	0.129	0.131	0.124	0.197*	0.0448	0.0480	0.0434	0.0515	0.0387	0.0453	0.0454
	(0.085)	(0.089)	(0.091)	(0.087)	(0.092)	(0.087)	(0.099)	(0.035)	(0.037)	(0.035)	(0.038)	(0.036)	(0.036)	(0.039)
Population	−0.0238	−0.0534	0.0250	−0.0465	−0.0423	−0.0229	0.0153	−0.0189	−0.0328	0.00563	−0.0479	−0.0334	−0.0336	−0.0521
	(0.175)	(0.180)	(0.172)	(0.178)	(0.179)	(0.176)	(0.185)	(0.164)	(0.171)	(0.157)	(0.166)	(0.163)	(0.164)	(0.168)
Employment rate	1.672	1.743	1.860	1.492	1.655	1.622	1.657	0.209	0.0908	0.332	0.0743	0.0745	0.180	−0.108
	(1.315)	(1.255)	(1.377)	(1.348)	(1.308)	(1.332)	(1.384)	(1.179)	(1.161)	(1.177)	(1.197)	(1.233)	(1.188)	(1.237)
Indigenous language speakers	0.620	0.546	0.558	0.744	0.513	0.641	0.345	0.275	0.0587	0.111	0.432	0.0579	0.282	−0.0836
	(0.729)	(0.713)	(0.770)	(0.741)	(0.719)	(0.725)	(0.762)	(0.747)	(0.712)	(0.732)	(0.753)	(0.795)	(0.751)	(0.769)
N	5,739	5,739	5,739	5,739	5,739	5,739	5,739	70,064	70,064	70,064	70,064	70,064	70,064	70,064
Log likelihood	−271.3	−266.6	−265.2	−265.9	−262.9	−268.1	−247.0	−1,932.9	−1,882.6	−1,907.7	−1,898.0	−1,918.7	−1,924.2	−1,821.8
Pseudo R^2	0.6124	0.6198	0.6211	0.6202	0.6244	0.6171	0.6471	0.5868	0.5976	0.5922	0.5943	0.5899	0.5887	0.6106

Notes. Models 1–7 report results from discrete choice models. Models 8–14 report results of panel logistic regression with mine and year fixed effects. Heteroskedasticity robust standard errors clustered at the mine appear in parentheses.

$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

increase in the probability of a CBA ($p = 0.001$). The probability of a CBA is also higher for communities with full property rights ($p = 0.009$) and for communities that have mobilized against the focal firm or mine in the past ($p = 0.000$).

We test our first hypothesis that firms are more likely to sign CBAs with communities who possess use rights to the land where the mine is located in model 2. We find that communities with use rights over the land on which the mine is located have a 3.7% higher probability of a CBA ($p = 0.016$). We find several cases in our data where firms signed CBAs with communities with use rights that were equidistant from other communities with no property rights. For example, in 2011 Canadian Zinc signed a CBA with the Liidlii Kue First Nation for the Prairie Creek Mine. The community has use rights over the mine's land, located 192 km from the community, through its historic treaty (Treaty 11, 1921). Conversely, the Fort Nelson First Nation, located 197 km from the same mine, does not have a CBA. Fort Nelson has no use rights over the land on which the mine is located, because its historic treaty (Treaty 8, 1898) does not extend to the area. Neither community is subject to externalities, and they have similar levels of past mobilization.

We test our second hypothesis in models 3 and 4 by including environmental and social externalities separately in the regression. In model 3, colocation in the same watershed subdrainage area is associated with a higher likelihood of a mine-community dyad signing a CBA ($p = 0.002$). Communities at greater risk of environmental externalities have 8.2% higher probability of a CBA, controlling for the distance between the mine and the community. The case of SGX Resources and two equidistant communities, Mattagami (61 km from the project) and Mattachewan (60 km from the project), illustrates this finding. Although Mattagami and Mattachewan are nearly identical on all other dimensions (i.e., no property rights; no conflict with the mine; similar levels of past mobilization, employment rate, population, and experience with CBAs), SGX Resources only signed a CBA with Mattagami, which is located in the same watershed as SGX Resource's mine. In model 4, we find that communities are also more likely to have a CBA if they have a greater risk of social externalities ($p = 0.001$). Communities at greater risk of social externalities have a 40.1% higher probability of a CBA. Together, these results corroborate our hypothesis that firms are more likely to sign CBAs with communities at greater risk of negative externalities. In supplementary analysis, we confirm that the probability of a CBA is higher for communities that both have use rights and are subject to externalities (either environmental or social) than for communities that have only use rights, only externalities, or neither (results are available from the authors).

Finally, Hypothesis 3 is also corroborated in models 5 and 6. A community's capacity for collective mobilization increases the probability of a CBA, whether institutional ($p = 0.000$) or extrainstitutional mobilization ($p = 0.001$). Specifically, a one-standard-deviation increase in a community's past institutional mobilization increases the probability of a CBA by 1.1%, and a one-standard-deviation increase in a community's extrainstitutional mobilization increases it by 1.3%. Model 7 contains all our hypothesized main effects and control variables. Therein, the use rights ($p = 0.038$), environmental externalities ($p = 0.007$), and social externalities ($p = 0.009$) that characterize a transaction all increase the probability that a firm signs a CBA with a community. Similarly, a community's past institutional mobilization ($p = 0.004$) and extrainstitutional mobilization ($p = 0.002$) also increase the probability that it signs a CBA. Our results remain substantively unchanged in the fixed-effects panel logistic estimation reported in models 8–14.[17]

Given complications around the interpretation of interaction terms in nonlinear regression (Hoetker 2007, Zelner 2009) and cautions against their use to compare groups (Hoetker 2007), we test our hypothesis regarding the joint influence of use rights or externalities and mobilization by grouping mine-community dyads into meaningful combinations of the hypothesized covariates. Hypothesis 4 posits that the probability that a firm signs a contract with a community that has mobilized collectively in the past is higher if the community also has use rights or is at risk for negative externalities. Therefore, we assign each mine-community dyad to one of four possible categories of the covariates hypothesized: (1) communities with both past mobilization and use rights and/or externalities, (2) communities without past mobilization but with use rights and/or externalities, (3) communities with past mobilization but without use rights or externalities, and (4) communities without past mobilization and without use rights or externalities.

We present the conditional logit and linear probability regression results for Hypothesis 4 in Table 3. Models 15 and 17 show the results for the full sample of mine-community dyads, with communities having neither past mobilization nor use rights or externalities as the reference (excluded) category. Models 16 and 18 show the results excluding these communities and using communities with past mobilization but without use rights or externalities as the reference category. Consistent with our hypothesis, we find that communities that have mobilized in the past and that also have use rights and/or that are subject to externalities have heightened probability of a CBA

Table 3. Estimates of the Probability of CBA (Testing Hypothesis 4)

	Discrete choice		Linear probability	
	Full sample	Excluding communities with neither	Full sample	Excluding communities with neither
Independent variables	M15	M16	M17	M18
Mobilization experience and use rights or externalities	2.683***	2.845**	0.121***	0.0883**
	(0.449)	(0.956)	(0.029)	(0.028)
No mobilization experience and use rights or externalities	0.939*	1.100	0.0194*	–0.0142
	(0.392)	(0.928)	(0.009)	(0.015)
Mobilization experience and neither use rights nor externalities	–0.193	(Reference category)	–0.00398	(Reference category)
	(0.784)		(0.009)	
Dyad controls				
Mine-community geodesic distance	–2.431***	–2.277***	–0.0468***	–0.0730***
	(0.182)	(0.204)	(0.004)	(0.008)
Full property rights	2.297	17.35	0.679***	0.641***
	(1.436)	(2,730)	(0.133)	(0.141)
Past conflict in dyad	18.30	19.56	0.841***	0.821***
	(4,256)	(5,923)	(0.021)	(0.052)
Community controls				
Extrainstitutional mobilization by distant communities	–0.656***	–0.619**	–0.0137*	–0.0224*
	(0.179)	(0.191)	(0.006)	(0.009)
Community's past CBAs	0.240***	0.288***	0.00793**	0.0140**
	(0.048)	(0.056)	(0.003)	(0.005)
Proximate community CBAs	0.174*	0.0831	–0.00325*	0.000348
	(0.087)	(0.120)	(0.001)	(0.003)
Population	–0.0462	–0.0162	0.00291	0.00621
	(0.158)	(0.177)	(0.003)	(0.006)
Employment rate	1.637	1.879	0.0573+	0.141*
	(1.172)	(1.331)	(0.030)	(0.058)
Indigenous language speakers	0.166	0.508	0.0165	0.0251
	(0.623)	(0.797)	(0.016)	(0.032)
N	5,739	2,601	5,739	2,601
Log likelihood	–247.1	–190.3	1,854.9	123.1
Pseudo R^2	0.6471	0.6094	0.288	0.326

Notes. Models 15 and 16 report discrete choice regression results, whereas models 17 and 18 report results from linear probability models with choice-set fixed effects. In models 16 and 18, communities that have no past mobilization and neither use rights nor heightened risk of externalities are excluded. Heteroskedasticity robust standard errors clustered at the mine appear in parentheses.

$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

(model 15, $p = 0.000$) compared with those that have neither, or, in the smaller sample, compared with those that have mobilized in the past but that have no use rights or externalities (model 16, $p = 0.003$). Moreover, the linear probability results (model 17) confirm that the magnitude of the positive effect is higher than for communities that have mobilization capacity but do not have use rights or externalities (F-test statistic = 26.8, degrees of freedom = 123). Results of the linear regression where the reference category is communities with mobilization capacity but without use rights or externalities (model 18) suggest that communities that combine use rights and/or higher risk of externalities with past mobilization have an 8.8% higher probability of a CBA than those that have mobilized in the past but that do not have use rights or externalities ($p = 0.002$).

Robustness to Alternative Estimation, Choice Sets, and Sample

We test the robustness of our results to alternative estimation models, community choice sets, and mine subsamples. First, we re-estimate the results using linear probability models with choice-set fixed effects and robust standard errors clustered at the mine level. Linear probability models facilitate the interpretation of the magnitude of the coefficients in the discrete choice model (we use model 19 in Table 4 for this purpose) and allow us to cluster standard errors simultaneously at the mine and community levels to account for communities appearing in multiple choice sets (model 20). Linear probability models also allow us to test the robustness of our results to the inclusion of community fixed effects to control for time-invariant community characteristics (model 21).

Table 4. Robustness Analyses

	Linear probability					Discrete choice model		
	Full sample	Full sample	Full sample	High-toxicity minerals	Less toxic minerals	Same province	Excluding BC	Province fixed effects
Independent variables	M19	M20	M21	M22	M23	M24	M25	M26
Use rights (H1)	0.0372***	0.0372**	0.0631***	0.0396*	0.0368***	1.186*	1.987*	1.773**
	(0.009)	(0.013)	(0.012)	(0.018)	(0.011)	(0.592)	(0.857)	(0.619)
Environmental externalities (H2)	0.0821***	0.0821***	0.0825***	0.127***	0.0679**	0.752*	0.911*	0.829**
	(0.018)	(0.021)	(0.016)	(0.030)	(0.021)	(0.350)	(0.408)	(0.318)
Social externalities (H2)	0.401***	0.401***	0.384***	0.468***	0.334**	1.207*	1.198*	1.260*
	(0.082)	(0.091)	(0.074)	(0.117)	(0.110)	(0.534)	(0.557)	(0.543)
Institutional mobilization (H3)	0.0198*	0.0198+	0.0405**	0.0245	0.0177+	0.299***	0.735***	0.329***
	(0.009)	(0.011)	(0.015)	(0.017)	(0.010)	(0.085)	(0.138)	(0.081)
Extrainstitutional mobilization (H3)	0.192*	0.192+	0.220**	0.582**	0.178*	1.265***	17.15***	1.321***
	(0.085)	(0.106)	(0.072)	(0.188)	(0.088)	(0.382)	(1.511)	(0.391)
Dyad controls								
Mine-community geodesic distance	–0.0325***	–0.0325***	–0.0361***	–0.0224***	–0.0362***	–2.294***	–2.431***	–2.369***
	(0.003)	(0.005)	(0.004)	(0.004)	(0.005)	(0.286)	(0.362)	(0.271)
Full property rights	0.460**	0.460**	0.431**	0.595***	0.441*	2.476+	1.456	2.434+
	(0.171)	(0.172)	(0.150)	(0.154)	(0.219)	(1.433)	(1.089)	(1.350)
Past conflict in dyad	0.815***	0.815***	0.797***		0.822***	17.24***	15.94***	18.66***
	(0.031)	(0.033)	(0.045)		(0.030)	(1.451)	(1.438)	(1.481)
Community controls								
Extrainstitutional mobilization by distant communities	–0.00963*	–0.00963+	–0.00687	–0.0188*	–0.00512	–0.623**	–0.889*	–0.671**
	(0.005)	(0.006)	(0.007)	(0.008)	(0.006)	(0.207)	(0.400)	(0.207)
Community's past CBAs	0.00856**	0.00856*	–0.0223***	0.0109*	0.00611+	0.383***	0.438***	0.311***
	(0.003)	(0.004)	(0.007)	(0.004)	(0.003)	(0.097)	(0.118)	(0.083)
Proximate community CBAs	–0.00250*	–0.00250	0.00580**	–0.00413*	–0.00126	0.180+	0.213*	0.177+
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.093)	(0.099)	(0.096)
Population	0.00271	0.00271	–0.289*	0.00618	0.00164	0.0301	–0.0194	0.0210
	(0.003)	(0.004)	(0.119)	(0.004)	(0.004)	(0.190)	(0.207)	(0.190)
Employment rate	0.0551+	0.0551		0.126*	0.0258	1.444	–1.979	1.687
	(0.031)	(0.035)		(0.060)	(0.034)	(1.463)	(1.276)	(1.391)
Indigenous language speakers	0.0188	0.0188		0.0158	0.0215	–0.886	–1.576*	–0.710
	(0.017)	(0.021)		(0.025)	(0.023)	(0.706)	(0.800)	(0.705)
N	5,739	5,739	5,728	1,854	3,885	4,369	4,335	5,739
Log likelihood	2,005.7	2,005.7	2,638.9	769.2	1,268.9	–203.6	–157.9	–223.2
Pseudo R^2	0.325	0.325	0.458	0.316	0.335	0.6533	0.6742	0.6812

Notes. Models 19–23 report results from linear probability models with choice-set fixed effects, and model 21 also includes community fixed effects (11 communities dropped from sample because they only appear once). Models 24–26 report discrete choice model results. Heteroskedasticity robust standard errors clustered at the mine appear in parentheses except for model 20, where standard errors are simultaneously clustered at the mine and community levels. BC, British Columbia.

$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

Our hypothesized results remain substantively unchanged in these models.

We also use linear probability models to investigate how the magnitude of the results differ for mines expected to produce very large environmental externalities. Specifically, gold and uranium mining are highly toxic, because of the use of cyanide and arsenic in gold mining and the radioactive nature of the mineral in uranium mining. Although the direction and significance of our results remain substantively unchanged for these mines, the magnitude of the environmental externalities coefficient is higher for highly toxic mines, as expected (model 22). Communities at risk for environmental externalities from high-toxicity mines have a 12.7% higher probability of a CBA (model 22), whereas communities at risk for environmental externalities from all other mines have a 6.8% higher probability of a CBA (model 23).

In models 24–26, we return to the discrete choice model and check the robustness of our results to alternative choice sets and fixed effects. In model 24, we include in the choice set only those communities located within the same province as the mine, because regulatory requirements—and accordingly,

a company's incentives for signing a CBA—vary by province. In model 25, we exclude mining projects located in British Columbia, a province where indigenous rights to land are continuously evolving through the British Columbia Treaty Process; and disputes over those rights have resulted in particularly acrimonious relations between the province, communities, and mining firms. In model 26, we return to our full sample but include province fixed effects to account for other unobservable province-level covariates. In all three models, our hypothesized results remain substantively unchanged.

Finally, we investigate the robustness of our results to using samples that are defined by smaller distances from the mine. Although communities with CBAs have a mean distance of 127 km from the focal mine, over 10% of the CBAs in our sample are with communities located more than 300 km from a mine. Therefore, one concern is that our results may change depending on where we draw the boundary around communities that we include in the choice set (i.e., in the estimation sample). Figure 1 plots the sensitivity of the discrete choice model estimates to smaller community choice sets, beginning with only those communities within 150 km of the mine and increasing the radius defining the choice set by 10 km, up to 500 km. Our hypothesized coefficients are above zero in all the choice sets. In some choice sets, the coefficients are only marginally significant ($p < 0.1$), as the 95% confidence intervals drop slightly below zero (e.g., environmental externalities are only marginally significant with p-values below 0.6 in samples including only communities within 310-km or 320-km buffers from the mine). Overall, the proposed effects are consistent across the different risk sets included in our analyses.

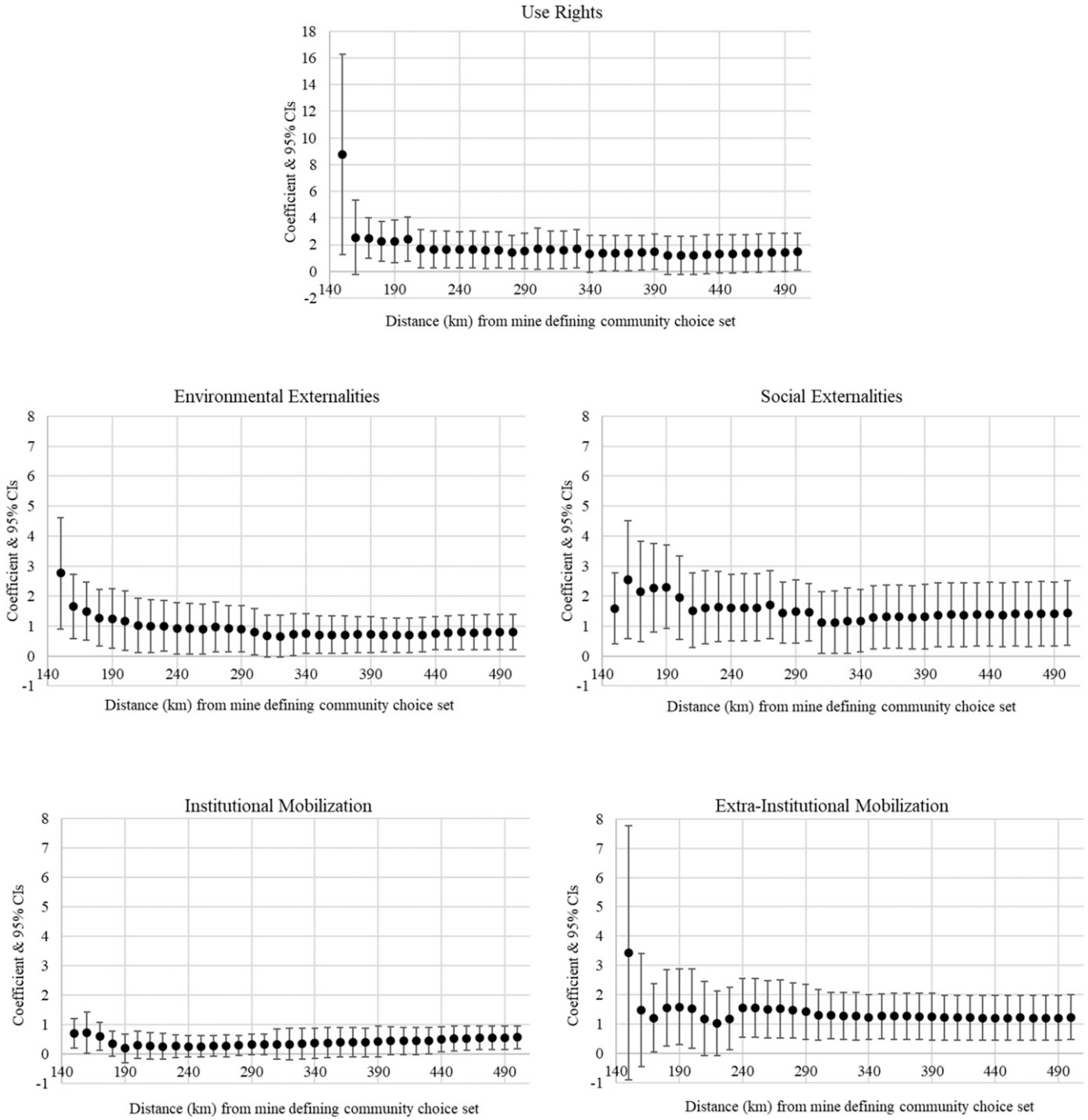
Discussion and Conclusion

We examine transactions between firms and local communities for access to valuable sites to understand when firms are more likely to use contracts to govern these transactions. We confirm that, as most would expect, firms sign contracts with communities that have full property rights over resources that firms want to access. In our research, we argue and find that firms are also likely to sign contracts with communities that have use rights over resources and with communities that bear the risk of negative environmental and social externalities generated by the firms' use of these resources. Moreover, we also find that firms are likely to contract with communities that can mobilize—either through institutional channels (lawsuits and regulatory petitions) or extrainstitutional means (protests and blockades)—because these communities pose a high holdup risk for firms making large site-specific investments.

In contrast to prior strategy research that has used TCE to understand firm boundaries and contract designs (see Macher and Richman 2008 for a review), we build on TCE insights to examine contracts between firms and nonmarket stakeholders that have heretofore been the subject of little study. We draw attention to transactions between firms and nonmarket stakeholders by theorizing the governance of transactions for *access* to critical resources (Rajan and Zingales 1998) and combining TCE's insights on how transaction attributes shift the comparative costs of alternative governance mechanisms, with insights from property rights theory that allow us to differentiate among seemingly similar exchange partners. Our theoretical reach allows us to expand the scope of the stakeholder governance literature to include not only market stakeholders (Wang et al. 2009; Klein et al. 2012, 2019; Barney 2018) but also nonmarket stakeholders and to focus on understanding the conditions that lead firms and local communities to use contracts to govern their transactions. Our findings highlight property rights, negative externalities, and a community's capacity to mobilize as drivers of contractual governance between firms and local communities. Each of these provides an important contribution to research on stakeholder governance.

First, we build on early conceptualizations of property rights as bundles of privileges (Libecap 1989) to differentiate stakeholders according to the privileges they possess over resources that firms seek to access. We acknowledge that firms are very likely to contract with stakeholders who have full property rights and confirm this expectation in our empirical results. More interesting and more common, however, are situations in which firms seek to use resources (e.g., land sites) over which nonmarket stakeholders (e.g., local communities) have use rights that give them the privilege of enjoying the resource but not the privilege of preventing others (including a firm) from doing the same. Quite often, communities' use of the land and firms' use of the land reflect divergent interests, which increases the potential for conflict between them and raises the risk of holdup for the firm. Whereas recent scholarship has emphasized the importance of bringing stakeholders' property rights into the discussion of stakeholder governance (Klein et al. 2012, 2019) and into value creation and appropriation frameworks (Brandenburger and Stuart 1996, see Gans and Ryall 2017 for a review), there is less emphasis on different privileges possessed by stakeholders. By contrast, we highlight the distinction between stakeholders' full property rights and their use rights, emphasize the relevance of this distinction in transactions with nonmarket stakeholders, and show empirically that stakeholders' use rights over resources valuable to a firm affect the probability

Figure 1. Discrete Choice Model Across Different Choice Sets (Defined in Terms of Distance from the Mine)



Notes. Figures present coefficient estimates and their 95% confidence intervals of the discrete choice model results for hypothesized variables using community choice sets defined by different distance radii from the mine. CIs, confidence intervals.

that the firm contracts with them for access to those resources.

Second, we highlight that the negative externalities associated with a transaction between firms and nonmarket stakeholders are another antecedent of contracting between them. Although both Coase (1960) and Ostrom (1990) argue that externalities play a central role in governance decisions, externalities have not garnered much attention in research on firm-stakeholder relationships (see King 2007 for an exception). This is an important oversight, considering that stakeholders are "groups and individuals who can affect, or *are affected by*, the accomplishment of organizational purpose" (Freeman 1984, p. 25; emphasis added). We emphasize that studies of stakeholder governance (Dorobantu and Odziemkowska 2017, Klein et al. 2019) need to

consider externalities, and we provide empirical evidence that the anticipation of negative externalities increases the probability of firms' contracting with stakeholders. Furthermore, we consider both environmental externalities (e.g., water usage, toxic releases) and social externalities (e.g., social inequities, the spread of illegal behavior) and demonstrate that both affect the governance of transactions between firms and nonmarket stakeholders.

Third, our theoretical approach extends beyond TCE to emphasize that an important consideration in transactions between firms and some nonmarket stakeholders is the stakeholder's ability to hold up the firm through sanctions that rely on collective mobilization (e.g., protests, blockades, petitions). Market actors typically considered by TCE (e.g., suppliers, franchisees) are hierarchical organizations assumed to have the ability to represent and defend their interests in transactions with other market actors (but see Argyres and Bercovitz 2015 for a discussion of the role of franchisee associations). By contrast, nonmarket stakeholders representing collectives of individuals and/or organizations (e.g., local communities or social movements) vary in their ability to articulate their collective interests and to mobilize collectively to protect those interests. For instance, local communities are often silent when faced with proposals for large industrial developments that are likely to impact their well-being (McAdam and Boudet 2012). As such, we argue that a community's capacity for collective mobilization affects its ability to hold up a firm and show that it affects the probability that the firm seeks to minimize holdup risk through a formal contract with the community. Our findings suggest that capacity for collective mobilization is an important consideration in the study of the relationships between firms and nonmarket stakeholders that face challenges of collective action.

More broadly, our research contributes to the growing literature on stakeholder relations and firm responses to stakeholder pressure. Stakeholder theory (Freeman 1984, Freeman et al. 2010) has long emphasized that the cooperation of various stakeholders is critical for the survival of a firm, and empirical research has provided strong support for this claim (Hillman and Keim 2001, Henisz et al. 2014, Dorobantu et al. 2017a). Recent research highlights that firm responses depend on the source of pressure (Delmas and Toffel 2008, Reid and Toffel 2009, Doshi et al. 2013, Hiatt et al. 2015) and include a range of strategies, from the adoption of more stringent, self-regulation policies (Lenox 2006, Okhmatovskiy and David 2011, Dowell and Muthulingam 2017), to selective disclosure of information (Kim and Lyon 2014), to symbolic actions (Marquis and Qian 2013). To the best of our knowledge, the use of formal contracts as a governance mechanism for relationships between firms and nonmarket stakeholders has received little attention to date. Our focus on contractual agreements brings us back to stakeholder theory as a paradigm focused on the implicit and explicit contractual relationships between a firm and its stakeholders and allows us to clarify the conditions that make formal (explicit) contracts with nonmarket stakeholders more likely. The returns to establishing formal governance with nonmarket stakeholders vary, and early research suggests they depend on choosing the right stakeholder to partner with (Dorobantu and Odziemkowska 2017, Odziemkowska and McDonnell 2019). As such, examining firms' capabilities in identifying the most beneficial nonmarket partners, and the locus of those capabilities within the firm (Argyres and Mayer 2007), are important areas for future research.

The insights we provide on the emergence of contracts between firms and nonmarket stakeholders also advance nascent scholarship on cooperative nonmarket strategy—formal collaborations between firms and nonmarket stakeholders. Although scholarship in nonmarket strategy has focused mainly on firms' unilateral efforts to manage nonmarket stakeholders (e.g., corporate social responsibility), a few recent studies build on prior work on strategic interactions between firms and NGOs (Baron and Diermeier 2007) to examine collaborations between them (Chatain and Plaksenkova 2019, Odziemkowska 2020). Modeling the preferences of both firms and NGOs to understand partnership formation, these studies highlight that firms' motivations can range from lowering cost`s or raising consumers' willingness to pay (Chatain and Plaksenkova 2019) to borrowing the reputational resources of the nonmarket partner (Odziemkowska 2020). By focusing on a ubiquitous but rarely studied nonmarket stakeholder—local communities—we emphasize yet a different motivation underlying cooperative nonmarket strategy: the mitigation of holdup risk in transactions with nonmarket stakeholders. As nonmarket strategy scholarship deepens its study of collaborations between firms and nonmarket stakeholders, careful consideration of the transaction involved, the contracting hazards, and the costs of governance are critical to developing theory on this growing but understudied phenomenon.

At the same time, our research has a number of limitations. First, although a contract is easy to define and its existence is straightforward to establish, it is more difficult to define the relationship between a firm and a community in the absence of a contract. One possibility is that the absence of a contract indicates the absence of a transaction. We account for this possibility by examining the sensitivity of our results to varying community samples at risk for formal contracts, with the expectation that communities

in closer proximity to the mine are more likely engaged in a transaction with its owners. Another possibility is that in the absence of a contract, the firm and the local community have established a strong working relationship, thus relying on relational governance to align their interests and resolve disagreements. We have argued that relational governance is insufficient for the governance of transactions involving access to sites with site-specific investments because firms making these investments are at risk for being held up by communities demanding larger rents. Nonetheless, we recognize that, with the data we have collected, we cannot rule out empirically the possibility that firms and communities use relational governance to govern their transactions. Future research could complement our study with data on a wider range of interactions (e.g., meetings, noncontractual collaborations on joint projects) between firms and local communities to examine whether such interactions exist and can be reasonably interpreted as relational governance. A final possibility is that the absence of a contract indicates a complete lack of agreement between the firm and the community with regard to access to the site. Some communities are ideologically opposed to mining and other extractive industries (e.g., the "keep it in the ground" movement) and would never consent to the development of a mine by signing a CBA with a firm. Our knowledge of the Canadian context gives us confidence that this is not the case for the vast majority of indigenous communities in our data. Nonetheless, we recognize that we cannot rule out this possibility entirely. Future studies can advance research in this area by developing approaches that also account for the ideological preferences of the local communities and other nonmarket stakeholders interacting with firms.

Second, although we focus our study in one country (Canada) to control for the broader institutional environment, we recognize that institutional considerations are important boundary conditions for the effects we observe. Importantly, the validity of the CBAs we examine is partly due to the strong rule of law and the growing recognition of indigenous rights in Canada—two conditions that may not be present in other countries where firms and local communities transact for access to valuable resources. Indeed, North (1990) has argued that throughout most of history, property rights have not evolved toward efficiency, often because of other institutional constraints that structure political, social, and economic interactions (or lack thereof). Future research might focus on understanding how broader institutions shift the comparative costs of formal contracting (Henisz and Williamson 1999) to affect the likelihood of CBAs. We expect that novel governance forms, such as CBAs, are less likely to emerge in countries where a lack of freedom of expression and assembly limit communities' (and other nonmarket stakeholders') recourse to address concerns about negative externalities and where weak rule of law limits communities' ability to keep firms accountable in the event of a breach. By contrast, in countries where regulations on negative externalities are incomplete or weakly enforced, CBAs might be an effective way of adding to the existing institutional environment a set of locally negotiated rules that govern access to a valuable site (Dorobantu et al. 2017b).

Third, we also recognize that our focus on property rights and externalities as time-invariant factors that affect the dyadic exchange between a firm and a community relegates to the background institutional considerations that vary across time (e.g., increased expectations for a CBA resulting from the institutionalization of CBAs as an industry practice). Although we account for time trends in our robustness analyses, we recognize that the effects we examine might be stronger for the first CBAs signed between firms and indigenous communities (i.e., those signed in the early 1990s) than for CBAs signed later, when CBAs became a more established practice. Future research could study more directly the diffusion of formal contracting with communities, including the role played by learning in this process. Just as firms learn to adjust contracts over time (Mayer and Argyres 2004), they are likely to learn about the conditions that require contracts to govern transactions with local communities and other nonmarket stakeholders. At the same time, both firms and communities may learn from observing the experiences of other firms and communities or from third parties such as CBA negotiators offering their consulting services. Thus, future research can extend our study by considering not just the emergence of contracts with nonmarket stakeholders but also the temporal evolution of contracting beyond the market.

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Appendix

This appendix includes examples of CBA clauses specifying contract objectives (Panel A), implementation (Panel B), dispute resolution (Panel C), benefits provided to the local community (Panel D), and mitigation of negative impacts (Panel E). We extracted these examples from the following publicly available CBAs, and we reproduce exactly the illustrative clauses as they appear in these agreements:

Agreement #1: Inuit Impact Benefit Agreement signed between the Agnico-Eagle Mines (AEM) Limited and the Kivalliq Inuit Association (KIA), dated October 19, 2011 (78 pages).

Agreement #2: Collaboration Agreement between The Northern Village of Pinehouse and Kineepik Metis Local Inc. and Cameco Corporation and Areva Resources Canada Inc., dated December 12, 2012 (63 pages).

Agreement #3: The Raglan Agreement, signed by five communities (Makivik Corporation, Qarqalik Landholding Corporation of Salluit, Northern Village Corporation of Salluit, Nunatulik Landholding Corporation of Kangiqsujuaq, Northern Village Corporation of Kangiqsujuaq) and Société Minière Raglan du Quebec Ltée, dated January 25, 1995 (319 pages).

Panel (A) Contract Objectives

Agreement #1, Clause 2.1 Purpose. The purpose of this agreement is to (a) ensure that the Meadowbank Mine contributes to the well-being of Inuit; (b) provide for training, employment and business opportunities for Inuit arising out of the Meadowbank Project; (c) address, as far as reasonably possible, any detrimental impacts on Inuit and provide benefits for Inuit from the Meadowbank Mine; (d) establish a positive working relationship and effective channels of communication between the Parties; and (e) achieve any other goal that is consistent with Section 26.3.3 of the Nunavut Land Claims Agreement.

Agreement #2, Clause 2.1 Purposes of Agreement. The purposes of this Agreement are to establish: (a) the principles and framework for a long-term working relationship between Cameco, AREVA and Pinehouse with respect to the Operations, building upon existing programming; (b) the basis upon which Cameco and AREVA will continue to undertake the Operations in a manner that is mutually beneficial to Kineepik and to Cameco and AREVA, recognizing the importance of the environment and Kineepik's traditional use of the Traditional Territory together with Cameco's and AREVA's need to undertake the Operations in a commercially viable manner; (c) a framework built around the Four Pillars for: (i) identifying specific community investments by Cameco and AREVA; (ii) development of Pinehouse's workforce through education, training and employment opportunities; (iii) outlining commitments by Cameco and AREVA to assist Pinehouse with building long term sustainable businesses with the capacity to deliver services to the Operations; (iv) addressing means to enhance community engagement plans and protocols in respect of the Operations; and (v) establishing commitments for addressing potential environmental issues associated with the Operations; and (d) the basis on which Pinehouse will support the Operations.

Panel (B) Implementation

Agreement #1, Clause 5.4 Reimbursement of Costs. AEM will reimburse KIA for the costs that it incurs in carrying out the activities contemplated by this Article 5, provided that those costs form part of a budget proposed by KIA that AEM, acting reasonably, has approved in advance. The budget will cover the costs of the activities that are reasonably anticipated to be required in order to carry out the activities contemplated by this Article 5.

Agreement #1, Clause A2. Implementation Committee. Not later than 60 days after the Effective Date, or at such earlier time agreed to by the Parties, an Implementation Committee will be established.

Agreement #1, Clause A3. Membership of the Implementation Committee. The Implementation Committee shall have four members and consist of two members appointed by each Party. One of the KIA members shall be the KIA Board Director from Baker Lake. One of the AEM members shall be the General Manager of the Meadowbank Mine. While new members may be appointed from time to time in accordance with this Section A3, each Party shall endeavour to maintain consistent membership on the Implementation Committee.

Agreement #1, Clause A17. Annual IIBA Implementation Report. AEM will prepare an annual report on the implementation of this Agreement (the "Implementation Report"). AEM shall forward the Implementation Report to KIA not later than three months after the Effective Date or on the next ensuing April 1, whichever is the later. AEM shall provide subsequent Implementation Reports to KIA by April 1of each year. *Clause A18*. The Implementation Report shall contain detailed information on: (a) progress toward achievement of the MIEGs described in Schedule E; (b) economic benefits arising from Inuit participation in the Meadowbank Mine; (c) contracts awarded, detailing progress toward CIEP implementation, as described in Schedule F; (d) training programs which AEM implemented, contributed to or participated in, detailing Inuit participation; and (e) other matters pertaining to this Agreement, as appropriate.

Panel (C) Dispute Resolution

Agreement #1, Clause 3.15 Dispute Resolution. The Parties shall resolve a Dispute in accordance with the following: (a) either Party may refer the Dispute to the Implementation Committee for informal resolution for a period of not more than 20 consecutive Business Days; (b) if the Implementation Committee fails to resolve the Dispute, either Party may refer the Dispute to the respective Presidents of the Parties for informal resolution for a period of not more than 20 consecutive Business Days; and (c) if the respective Presidents of the Parties fail to resolve the Dispute, either Party may refer the Dispute for resolution by arbitration in accordance with Schedule M.

Agreement #2, Clause 7.1 Dispute Resolution. (a) In the event a Dispute arises, the parties to the Dispute will

exercise all reasonable efforts to resolve it amicably. (b) In the first instance, if the JIC is unable to resolve a Dispute, they will refer the matter to a discussion between the sitting Mayor of the Village, the sitting President of Kineepik, and the Vice President of Corporate Social Responsibility, or its equivalent, for Cameco and/or AREVA, as applicable. (c) The parties to a Dispute may resolve the Dispute by mutual agreement at any time and all such agreements will be recorded in writing and signed by authorized representatives of the relevant parties to the Dispute. (d) All Disputes that cannot be resolved in accordance with Sections 7.1(a) through 7.1(c) may, if each Party to an applicable Dispute agrees in writing, be submitted to non-binding mediation in accordance with the then-existing non-binding mediation procedure of the ADR Institute of Canada, Inc. or its successor ("ADRIC"), provided that if no ADRIC mediation procedure is in existence at the time, the most recent mediation procedure of the Canadian Foundation for Dispute Resolution or its successor shall be used in place thereof. (e) All Disputes that cannot be resolved as set out in Sections 7.1(a) through 7.1(d) may be submitted to arbitration by either party to the Dispute upon written notice to the other party or parties to the Dispute (with a copy to any other Party which is not a party to the Dispute) and will be resolved as follows: (i) arbitration of the Dispute will be before a panel of three arbitrators and in accordance with and under the provisions of *The Arbitration Act, 1992* of Saskatchewan or other similar legislation in force in the Province of Saskatchewan from time to time; [clause continues].

Panel (D) Benefits Provided to the Community

Local Employment

Agreement #1, Clause E6, Preferential Hiring. Where an applicant who is an Inuk and an applicant who is not an Inuk are equally qualified for a position at the Meadowbank Mine, whether by virtue of their respective Equivalent Qualifications or Formal Qualifications, AEM shall give preference to the applicant who is an Inuk. Where two equally qualified Inuit have applied for the position, and one is a resident of Baker Lake while the other is not, AEM shall give preference to the Inuk who is a resident of Baker Lake.

Agreement #1, Clause E9, Establishment of Minimum Inuit Employment Goals. The Implementation Committee shall establish, for each 12-month period of operations at the Meadowbank Mine, a Minimum Inuit Employment Goal ("MIEG") for each of the four principal centres of activity, namely: (a) mining; (b) milling; (c) supporting services performed by AEM's own employees at the Meadowbank Mine, including administration, purchasing, human resources, environmental management, health and safety, security and transportation; and (d) services performed by AEM's Contractors, whether performed at the Meadowbank Mine site or elsewhere, to the extent that such services are performed exclusively in support of, or in relation to, the Meadowbank Mine, each of which shall be referred to as an "Activity Centre".

Agreement #3, Clause 5.3.4 Hiring Priority. In order maximize the number of jobs for Inuit Beneficiaries in the operation of the Raglan Project, Société Minière shall hire and fill vacancies in all categories of jobs from among available qualified candidates in the following order: (1) Inuit Beneficiaries residing in Salluit and Kangiqsujuaq; (b) Inuit Beneficiaries residing in the other Northern Villages; (c) persons of Inuit ancestry, whether an Inuit Beneficiary, residing in a Northern Village or elsewhere and Inuit Beneficiaries residing elsewhere than in a Northern Village; and (d) Southerners residing inside and outside of Nunavik.

Training and Education Opportunities

Agreement #1, Kivalliq Inuit Work Force Development Plan. *Clause D2* Concurrent with the execution of this Agreement and on each anniversary of that event, AEM shall provide to KIA and the Implementation Committee a list showing each position to be filled at the Meadowbank Mine during the ensuing year, together with a summary of the skills and knowledge required to perform the duties of each such position. *Clause D3.* AEM, in consultation with KIA and the Implementation Committee, shall prepare a plan to be used to achieve the Minimum Inuit Employment Goals established in Schedule E (the "Work Force Development Plan"). The Work Force Development Plan shall include: (a) the information described in Section D2; (b) labour supply information, including the Kivalliq Inuit labour supply information to be provided by KIA in accordance with Sections E26 and E27; (c) a description of strategies to enhance employability and advancement of Inuit in all positions of the Meadowbank Mine including: (i) the barriers that must be removed or minimized to increase the number of potential Inuit employees at the Meadowbank Mine; (ii) the barriers that must be removed or minimized to enhance the advancement of existing Inuit employees within the Meadowbank Mine labour force; and (iii) a description of training programs developed by AEM and governmental agencies responsible for training of Inuit; (d) proposed funding and programs for the implementation of the Work Force Development Plan; and (e) other information pertinent to sound human resource planning.

Agreement #1, Inuit Education Opportunities. Clause D16. AEM shall make a payment to KIA in the amount of $14,000 on the Effective Date of this Agreement, and thereafter on the anniversary of that date, to establish and maintain a scholarship fund for the benefit of Inuit post-secondary students from the Kivalliq Region (the "Kivalliq Scholarship Fund"). *Clause D17.* Scholarships awarded from the Kivalliq Scholarship Fund shall be granted preferentially to individuals who wish to pursue post-secondary studies in fields such as geology, engineering, accounting, information technology and environmental sciences that will enable them to pursue employment in the mineral exploration and mining industry. *Clause D18.* If KIA does not distribute the total amount available in the Kivalliq Scholarship Funds in any one year, the remaining funds shall accrue and may be used in subsequent years. KIA shall administer the Kivalliq Scholarship Fund through a trust, and KIA shall develop terms of reference for the granting of scholarships, including guiding principles, size and duration of awards.

Local Procurement

Agreement #3, Clause 6.4 Invitation to Tender. For services required during the Development Phase, other than air transportation services, and for services required during the operations Phase not awarded pursuant to subsection 6.3, Société Minière shall (a) invite qualified Inuit Enterprises pursuant to subsection 6.7 to tender for said services; and (b) identify to bidders (including Inuit Enterprises requested to bid) that are invited to submit tenders those Inuit Enterprises qualified to provide goods or services required as sub-contractors or suppliers.

Panel (E) Mitigation of Negative Impacts

Agreement #1, Clause K2, Wildlife Reporting. Not later than 20 Business Days after the Effective Date, AEM shall establish a wildlife sighting and incident program consistent with the final Terrestrial Ecosystem Management Plan for the Meadowbank Mine that the Nunavut Impact Review Board accepted under its project approval process (the "TEMP"). In accordance with this program, AEM will: (a) submit reports of wildlife sightings and incidents to KIA and the Baker Lake Hunters and Trappers Organization (the "Baker Lake HTO") on a quarterly basis; (b) to the extent required by law, report to KIA, the Baker Lake HTO and others any incident that results in the death or injury of any species of wildlife as a result of Meadowbank Mine activities, as soon as practicable after the incident; and (c) subject to any requirement of law, deliver any valuable parts of wildlife killed as a result of Meadowbank Mine activities to the Baker Lake HTO in a timely manner, in order to preserve the quality of those wildlife parts.

Agreement #1, Clause K10 Terrestrial Ecosystem Management Plan (TEMP). AEM shall implement wildlife management and conservation measures that are no less comprehensive than those set out in the TEMP. AEM undertakes and agrees to consult with KIA on any material change to the precautionary, preventative, monitoring or adaptive management practices described in the TEMP before making any material change. AEM shall provide an annual summary of the findings it derives from the TEMP as part of each Annual Wildlife Report.

Endnotes

[1] We use the term CBA to also include agreements known as community development agreements (O'Faircheallaigh 2015) and impact and benefit agreements (Sosa and Keenan 2001).

[2] The density of contracts with communities increases as the distance from a mine decreases, so that 8.6% of communities within 300 km of a mine have contracts and 32.6% of communities within 100 km have contracts.

[3] The strong form of foresight assumed by Williamson (1996) is not necessary for our arguments to hold, as instances of community holdup of firms in access transactions usually attract considerable media attention, as in the Amazon case. Therefore, it is sufficient that managers can learn from other firms' experiences with community holdup, in line with Mayer and Argyres's (2004) semistrong version of foresight.

[4] We do not differentiate between contracts that establish new property rights and those that modify them. Our approach builds on Libecap's (1989, p. 4) argument that "because the underlying forces are viewed to be the same, in the analysis of contracting, no distinction is made between creating a property right that never existed and negotiating to change an established right in response to new market or political conditions."

[5] Rajan and Zingales (1998) illustrate the point that ownership is not a necessary condition for one party to offer or deny access to a valuable resource to another party with the example of the head of a Mafia family, who does not "own" the mafia organization but can prevent outsiders from gaining access nevertheless.

[6] In some instances, communities do possess full property rights over the site sought by the firm; however, these instances are relatively rare. We therefore focus on use rights to improve the generalizability of our theory and findings to other firm-community contexts where community full property rights over a location is unlikely.

[7] More broadly, potential for conflict exists in other situations where corporate developments that use resources alter others' ability to use those same resources (e.g., public roads around a busy commercial mall; fishing stock used by both recreational users and commercial fishing fleets).

[8] Even in the absence of actual disturbances, communities may have alternate means to hold up a firm. Williamson (1985, p. 80) highlights that "parties to a bilateral trade can contrive to introduce a disturbance that alters the profit prospects of the other," including making "false state of the world declarations."

[9] Beyond provisions for monitoring externalities, CBAs often mention unforeseen externalities, with the implication that they will be addressed within the contract's dispute resolution procedures, where courts are a last resort. For instance, the Raglan Agreement seeks "to ensure that monitoring of impacts takes place and that unforeseen impacts, or impacts the scope or significance of which are greater than foreseen, are dealt with" (Clause 2.1.5) (http://communityrenewal.ca/sites/all/files/resource/Raglan%20Agreement.pdf).

[10] More broadly, research on community mobilization is still investigating whether a capacity to mobilize is higher for communities with cohesive mobilizing structures (i.e., formal organizations and informal networks), shared stories and interpretations that can be leveraged to highlight a collective identity (McAdam et al. 1996), or for communities with stronger precolonial ethnic institutions that shaped the accountability of local leaders (Gennaioli and Rainer 2007, Michalopoulos and Papaioannou 2013).

[11] The treaties signed prior to the 1780s focused on military alliances (e.g., "Peace and Friendship" treaties with the Mi'kmaq and Maliseet tribes between 1725 and 1779).

[12] For a small number of communities that have neither reserve lands nor modern treaties, we supplemented the lands map with latitude and longitude coordinates for the geographic center of the community to ensure that we include them in the sample.

[13] An overarching ideology of separation of indigenous and nonindigenous populations resulted in the segregation of indigenous communities to remote (nonurban) areas, with less than 5% of indigenous peoples residing in urban areas in 1901 (Wilson and Peters 2005).

[14] Our results are robust to the exclusion of communities with modern treaty rights, giving us confidence that our results are not biased because of unobservable community characteristics that may correlate with the possession of full property rights.

[15] In our examination of contracts that are typically signed before the start of a mine's construction and operations, we cannot rely on measures of observed externalities (e.g., toxic releases), so we focus on measures that indicate higher probabilities of externalities ex ante.

[16] The NRN contains geospatial data of Canadian road phenomena, including all nonrestricted usage roads and ferry connection linear segments (https://open.canada.ca/data/en/dataset/e81802cf-9bad-47b8-8d45-591921316c66).

[17] Panel logistic regression results are robust to the inclusion of firm (e.g., experience with CBAs), mine (e.g., mine value), and institutional setting (e.g., media attention to indigenous issues) controls. Results available from authors.

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