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## Spinning Gold: The Financial Returns to Stakeholder Engagement

#### Abstract

We provide direct empirical evidence in support of instrumental stakeholder theory's argument that increasing stakeholder support enhances the financial valuation of a firm, holding constant the objective valuation of the physical assets under its control. We undertake this analysis using panel data on 26 gold mines owned by 19 publicly traded firms over the period 1993–2008. We code over 50,000 stakeholder events from media reports to develop an index of the degree of stakeholder conflict/cooperation for these mines. By incorporating this index in a market capitalization analysis, we reduce the discount placed by financial markets on the net present value of the physical assets controlled by these firms from 72 percent to between 37 and 13 percent.

#### **Keywords**

political risk, instrumental stakeholder theory, corporate social responsibility, international business, shareholder value

#### **Disciplines**

Business Administration, Management, and Operations

### Spinning Gold: The Financial Returns to External Stakeholder Engagement

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#### Spinning Gold: The Financial Returns to External Stakeholder Engagement

#### **ABSTRACT**

We provide direct empirical evidence in support of instrumental stakeholder theory's argument that increasing cooperation and reducing conflict with stakeholders enhances the financial valuation of a firm holding constant the objective valuation of the physical assets under its control. We undertake this analysis using panel data on 26 gold mines owned by 19 publicly traded firms over the period 1993-2008. We code over 50,000 stakeholder events from media reports to develop an index of the degree of stakeholder cooperation or conflict for these mines. By incorporating this index in a market capitalization analysis, we reduce the discount placed by financial markets on the net present value of the gold controlled by these firms from 72 to between 33 and 12 percent.

#### Introduction

In response to the growing societal challenge to multinational corporations' strategic pursuit of short-term economic returns, these organizations increasingly seek to buttress the political and social support for their operations. The empirical literature examining the returns to such investments is, however, highly equivocal and provides limited evidence of at best a marginal and contingent positive relationship between these efforts and financial performance. Theoretical explanations for the imbalance between rhetoric in support of such activities and their limited financial impact focus on either managers' incentives to extract rents from the economic value chain or shareholders or the particular set of circumstances required for redistribution of existing rents among members of the economic value chain to enhance financial performance. We highlight another theoretical argument consistent with the original tenets of instrumental stakeholder theory (Clarkson, 1995, Donaldson & Preston, 1995, Jones, 1995). We argue that efforts to win the cooperation of and reduce the conflict with external stakeholders, rather than merely altering the distribution of rents among direct factors of production, can be conceived of as investments in political and social capital. Such investments reduce opportunistic hold-up by a broad range of political and social actors thereby enhancing the probability that a business plan can proceed on schedule and on budget and, ultimately, generate sustainable shareholder value.

Our empirical analysis is set in the gold mining sector where strong stakeholder conflict resulting from the social and environmental consequences of mining and its association with corruption and private rent seeking has led to costly delays and disruptions in project development and execution. The resulting cost overruns or revenue shortfalls have triggered substantial corrective investment in stakeholder engagement strategies by many mining companies. Ironically, the very companies that were once pilloried for their lack of concern for anything but the short-term financial bottom line are now global leaders in the

implementation of stakeholder engagement. Their growing preference for operating mines under conditions of political and social support are also affecting small mining companies, who, motivated by their desire to eventually sell their operations to the majors, are increasingly acknowledging the need to obtain a "social license" for their mining projects around the world. This sentiment was expressed to us in the following quote from the Chief Operating Officer of one of the mines in our sample.

It used to be the case that the value of a gold mine was based on three variables: the amount of gold in the ground, the cost of extraction, and the world price of gold. Today, I can show you two mines identical on these three variables that differ in their valuation by an order of magnitude. Why? Because one has local support and the other doesn't." (Yani Roditis, COO Gabriel Resources, interview by authors)

Our empirical design follows directly from this observation in linking information on financial market valuation to the intrinsic value of the gold mine and demonstrating that the degree of stakeholder cooperation and conflict helps to explain the gap or difference between these figures. We undertake this analysis using panel data on 26 gold mines over the period 1993-2008.

We manually code over 50,000 stakeholder events from the population of media reports covering these mines. Our sentence-level coding protocol identifies the population of media relevant stakeholders initiating an action or expressing a sentiment as well as the target of that action or statement. It codes the action or expression according to a well-developed scale in the conflict studies literature that quantifies the degree of cooperation or conflict among political and social actors. We explore various means to aggregate this time varying network of stakeholder cooperation and conflict into a single time varying metric of political and social support for the mine. We demonstrate that these metrics are an important component, together with characteristics of the mine and the price of gold, in calculating the financial market valuation of the 19 publicly traded parent firms. Specifically, by incorporating this metric in a market capitalization analysis that also includes macro-political

level constraints on policy change, we reduce the discount placed by financial markets on the net present value of the gold controlled by these firms from 72 to between 33 and 12 percent.

We first summarize the theoretical literature highlighting the various causal mechanisms that authors have argued influence the relationship between stakeholder conflict and cooperation and financial market valuation. We highlight the lack of direct empirical evidence for the core argument of one mechanism in instrumental stakeholder theory: a positive relationship between cooperation with a broad set of stakeholders and corporate financial performance contingent upon objective asset valuation. Next we describe the empirical context in which we find empirical support for this relationship including anecdotal and qualitative evidence supporting our hypothesis as well as the specific data we amass for the purpose of this test.

We close by discussing the contribution of this analysis to the literatures on instrumental stakeholder theory, corporate social responsibility as well as multinational strategy. We also argue for the generalizability of the analysis beyond gold mining and natural resource extraction more broadly to a wide array of multinational activity. We highlight, in particular, the myriad benefits offered by deploying project-level event data as reported in the media in this context and in many other elements of management research. This discussion reveals next steps in a broader research agenda designed to enhance the theoretical and empirical support for the implementation of stakeholder engagement.

### An Extended Formulation of Instrumental Stakeholder Theory

Multiple theoretical models explore the mechanisms by which managerial efforts to enhance cooperation and reduce conflict with stakeholders could positively or negatively impact financial performance. One set of models highlight that, given imperfect corporate governance, managers may seek to enhance cooperation and reduce conflict with stakeholders in order to improve their quality of life, their reputation or their status even if it

is not profitable for shareholders. They predict a negative relationship between efforts at enhancing stakeholder cooperation and reducing conflict and financial performance. A second group of models identify a set of market conditions and contingencies whereby managerial decisions to alter the nature of the production process or product increase consumers' willingness to pay and/or reduce suppliers' reservation price. Together these models suggest a distribution of potential relationships and contingencies with a growing body of empirical literature corroborating this prediction. A final group of models incorporate strategic activists. These models are as of yet largely indeterminate in their predictions regarding the sign of the relationship and its magnitude, with variance explained by characteristics of the activists and the strategic response of firms. The attention and commitment to stakeholder engagement by senior managers suggest that these theoretical extensions to incorporate a broader set of stakeholders in the basic model focusing on the economic value chain are warranted. However, we lack both clear empirical evidence regarding the magnitude of the potential returns available through such efforts and data to test the contingencies that are beginning to emerge from this theory. We seek to provide both.

Scholars skeptical of efforts to engage stakeholders or seeking to explain negative empirical associations between such efforts and shareholder value have argued that managers use relationships with external stakeholders to pursue self-interest seeking perquisites, career enhancement or moral peace of mind. Levitt (1958) and Friedman (1962, 1970) famously attack efforts by managers to pursue objectives other than shareholder value maximization as short-term conflict avoidance by managers. They advocate instead a single-minded all-out focus on profit maximization (see Sundaram and Inkpen, (2004) for a literature review of the shareholder value debate). Jensen (2002) models shareholder principals' loss of control over managerial agents who may seek to pursue personal social interests (Hemingway & Maclagan, 2004) by in the presence of multiple hard-to-quantify performance metrics.

Authors have also highlighted the possibility of collusion between managers and either institutional shareholders (Cespa & Cestone, 2007) or non-shareholding stakeholders (Surroca & Tribó, 2008) in support of managerial tenure and social responsibility at the expense of (non-institutional) shareholder returns. Institutional theorists have highlighted the pressures for managerial conformity that can arise from regulation, peer behavior and civil society independent of the efficiency of adoption (Campbell, 2007, Jennings & Zandbergen, 1995, Margolis & Walsh, 2003, Marquis, Glynn, & Davis, 2007).

Empirical research supporting these mechanisms include studies showing that financial slack is a determinant of corporate social performance (McGuire, Alison, & Schneeweis, 1988, Waddock & Graves, 1997); headquarter policies rather than local conditions drive social responsibility programs in foreign subsidiaries (Husted & Allen, 2006); shareholder activism reallocates discretionary resources away from corporate social performance (David, Bloom, & Hillman, 2007); and insider ownership and leverage (i.e., factors that increase managerial alignment with shareholder interests) are negatively associated with corporate social responsibility (Barnea & Rubin, 2006). Baron, Harjoto & Jo (2009) find that social pressure diverts resources away from corporate financial performance towards corporate social performance, social performance has no net effect on financial performance (though further analysis shows that the result is positive in consumer goods and negative in industrial industries) and that social pressure is directed at soft targets.

Scholars supportive of efforts to engage stakeholders or seeking to explain a positive empirical relationship between such efforts and shareholder value shift the focus of the theoretical argument from the costs of *ex post* managerial discretion to external stakeholders' influence over *ex ante* managerial strategy with respect to members of the value chain (see Laplume Sonpar and Litz, (2008) or Kitzmueller & Shimshack (2011) for a literature review). This literature seeks to formalize elements of Freeman's (2010, 1984) stakeholder

approach to strategic management which emphasizes how the preferences and objectives of the myriad actors with a political, economic or social stake in the operations should be incorporated within strategy-making. Hill & Jones (1992) emphasize the potential for stakeholder engagement to reduce the transaction costs of exchange and monitoring between interdependent counterparties. Freeman & Evan (1993, 1990) and Phillips (1997) claim that "fairness" in stakeholder relations in a Rawlsian sense minimizes these transaction costs thereby maximizing shareholder value. Logsdon & Wood (2002, 2002, 2001), Matten & Crane (2005) and Gardberg & Fombrun (2006), by contrast, emphasize the obligations and responsibilities of citizenship that stakeholders implicitly impose on corporations as a means of determining appropriate activities. Mackey, Mackey & Barney (2007) incorporate the supply and demand for corporate social responsibility activities into a contemporaneous model of corporate valuation. Several formal accounts of this logic analyze the competition for charitable contributions from stakeholders between publicly traded companies and notfor-profit entities and consider the implications for consumer welfare, the level of public regulation and the relationship between corporate social performance and financial performance (Besley & Ghatak, 2007, Kotchen, 2006, Navarro, 1988, Zivin & Small, 2005). If combined with differentiated marketing or regulations that place followers at a disadvantage, such activity could itself generate economic rents. The financial benefits to such activities need not accrue contemporaneously. One line of theoretical (Godfrey, 2005) and empirical (Godfrey, Merrill, & Hansen, 2009) work posits and demonstrates that corporate social responsibility can contribute to moral or reputational capital that insulates the firm from negative consequences in the event of future adverse shocks.

While extremely useful in leading to a broadening of the scope of inquiry beyond *ex post* rent distribution, stakeholder theory has struggled with the development of direct empirical tests of these mechanisms. Recent work strives, instead, to create better typologies

for the identification and prioritization of stakeholders (Barnett, 2007, Bourne & Walker, 2005, Mitchell, Agle, & Wood, 1997), their psychological and social motivations (Aguilera, Rupp, Williams, & Ganapathi, 2007, Rupp, Williams, & Aguilera, 2011), their influence tactics (de Bakker & den Hond, 2008a, 2008b, Den Hond & De Bakker, 2007, den Hond, de Bakker, & de Haan, 2010, Frooman, 1999), the resulting optimal form of engagement for multinational corporations with those stakeholders (Greenwood, 2007, van Huijstee & Glasbergen, 2008) and the cross-national differences therein (Matten & Moon, 2008, Williams & Aguilera, 2008). Nevertheless, the link between identification, engagement and, especially, asset valuation or corporate performance remains elusive. One exception is in the area of environmental compliance where scholars find positive financial returns to investments in pollution reduction (Dowell, Hart, & Yeung, 2000, King & Lenox, 2001) and highlight the financial impact of environmental pressure groups (Binder & Neumayer, 2005, Epstein & Schnietz, 2002, Maxwell, Lyon, & Hackett, 2000).

By contrast, a growing body of literature in organizational economics highlights the impact of (stakeholder perceptions of) corporate social responsibility on the supply or price of factors of production (McWilliams & Siegel, 2001) and the extent of shared value creation (Porter & Kramer, 2011). Moral motivations may alter the behavior of numerous stakeholders (Brekke, Kverndokk, & Nyborg, 2003),including consumers who may be willing to pay more for a product or service perceived as socially responsible (Arora & Gangopadhyay, 1995, Casadesus Masanell, Crooke, Reinhardt, & Vasishth, 2009, Elfenbein, Fisman, & McManus, 2009, Elfenbein & McManus, 2010, Hiscox & Smyth, 2011). As a result, where signaling of producer type is more important or effective (McWilliams & Siegel, 2001) or where such consumers are more powerful (Hoepner, Yu, & Ferguson, 2010) or markets vary in their competitiveness (Bagnoli & Watts, 2003, Fisman, Heal, & Nair, 2005, Fisman, Heal, & Nair, 2006), companies should exhibit greater corporate social responsibility. Employees may

prefer to work for a company they perceive to be socially responsible, demand lower wages or benefits or exert greater effort (Besley & Ghatak, 2005, Bhattacharya, Sen, & Korschun, 2008, Brekke & Nyborg, 2008, Collier & Esteban, 2007, Greening & Turban, 2000, Kim, Lee, Lee, & Kim, 2010, Preston, 1989, Turban & Greening, 1997). Suppliers of other factors of production could make similar choices influencing the cost of capital or production (Bruyn, 1991, Mackey, Mackey, & Barney, 2011, Porter & Kramer, 2006a, Sparkes & Cowton, 2004, Waddock, 2000).

Activists themselves can be considered a stakeholder whose preferences, strategies or resources can influence corporate behavior (Baron, 2009, 2001, Baron & Diermeier, 2007, Frooman, 1999, Hendry, 2006, Rehbein, Waddock, & Graves, 2004, Rowley & Berman, 2000, Spar & La Mure, 2003). Efforts at generating such advantages with key stakeholders can generate sustained rents if corporate governance is strong (Shahzad, David, & Sharfman, 2011), customer switching is costly due to the development of relation-based trust (Du, Bhattacharya, & Sen, 2007, Lacey, 2007, Mohr & Webb, 2005, Salmones, Crespo, & Bosque, 2005, Vlachos, Tsamakos, Vrechopoulos, & Avramidis, 2009) or regulation emanating from governments (after lobbying) or industry leaders (Frynas, 2010, Frynas, 2008, Michael, 2003) allows first movers to monetize their advantage. The choice as to whether to engage or confront stakeholders is itself a complex function of competitor strategies and stakeholders' choices between engagement and confrontation (Baron, 2011; Diermeier, Abito & Besanko, 2011).

While these extensions of agency models of managerial discretion highlight circumstances under which the returns to stakeholder engagement may be positive, it must be noted that the circumstances are relatively specific. One interpretation of the equivocal empirical findings regarding the sign and magnitude of the relationship lies in these contingencies. Such findings highlight that while stakeholder engagement may pay for

shareholders of a subset of firms, it is costly for others, and seem to suggest that on balance, the rhetoric surrounding stakeholder engagement is oversold. We disagree.

The emphasis within these formal models and the supporting empirical analysis on stakeholders who form a part of the economic value chain as defined by the producer and whose main choice is the price charged for inputs or willingness to pay for outputs runs counter to the broader precepts of a stakeholder approach. The addition of homogenous activists able to increase production costs or reduce consumer willingness to pay is a welcome extension, but we argue for an even broader conceptualization of relevant stakeholders and offer an alternative empirical approach to demonstrating the financial impact of broad stakeholder engagement.

For many production processes, an implicit or explicit social license to operate is a necessary if difficult to specify input. For example, fifteen billion dollars of gold sitting in a mountainside cannot be transformed into shareholder rents with financial, engineering and marketing inputs alone. It also requires the political and social support of key stakeholders including not only members of the economic value chain but also government officials, regulators, community leaders and members of civil society (Henisz & Zelner, 2005). These stakeholders may reside locally, nationally or internationally. As their degree of conflict with the owner and operator of the proposed gold mine increases, they are able to either extract rents for their preferred causes from the efficient operation of the mine or coordinate public and private activity (e.g., in the government, among unions or activists) to delay the opening of the mine, suspend its operations or so raise the cost of continued development or operations as to make the mine owner and operator choose to suspend or abandon it. Efforts to build community support are made not to increase consumer willingness to pay for the gold nor to extract rents from suppliers but rather in order to maintain the right formally and directly granted by the government but informally and indirectly granted by a broader set of

external stakeholders to transform the gold and generate rents from that process (Aden, Kyu-Hong, & Rock, 1999, Dasgupta, Laplante, & Mamingi, 2001, Liu, 2009). In this formulation, activities perceived by stakeholders as socially responsible build up political and social capital that enhances stakeholder cooperation and reduces stakeholder conflict. As a result, the probability that a business plan can proceed on schedule and on budget is enhanced and the financial market discount applied to the objective (i.e., free of stakeholder influence) valuation of the tangible assets is reduced. The resulting empirical prediction is that we should observe that stakeholder cooperation positively and stakeholder conflict negatively impact the market valuation of a firm, *holding constant the objective value of firm assets*.

#### **Empirical Analysis**

We conduct our empirical analysis of this hypothesis in the gold mining industry due to the unique availability of data that allows for the identification of the financial impact of stakeholder relations and due to the widespread acknowledgement of the critical role of such relations for profitability even in the absence of the causal mechanisms considered in the recent extant literature. A recent report by Control Risks Group examines the importance of above surface (i.e., political and social) risks highlights that given the declining reserves in industrialized democracies and the rising mean price and volatility in price, increased political and social conflict over the distribution of rents during boom years and losses during lean years is inevitable. The report concludes that "The successful 21st century mining company will have to become a master at managing political risk. It will make sophisticated, informed and rational decisions about political risk and will manage the implementation of value-creating risk management programmes. It will not be afraid to pursue opportunities in most parts of the world. As a consequence, it will create substantial and enduring value for its shareholders (Control Risks Group, 2006)."

Note that in the case of mining companies, there is little evidence that the channels by which the organizational economics literature posits this relationship to exist are operative. Consumers are unable to differentiate between gold from one mine or company or another. There is little evidence that miners or managers of mining companies are defecting or offering wage or productivity benefits to more responsible mining companies. An insufficient number of investors are allocating capital on socially responsible grounds to influence managerial behavior. Activists, though prominent, are unable to impose substantial direct costs on mining companies. By contrast, mining is an industry where the valuation of a fixed resource (i.e., a gold mine), could vary wildly based on the degree of stakeholder cooperation or conflict so the indirect costs that activists and other stakeholders could impose may be substantial. Stakeholder relations can influence the regulatory environment, land permitting, environmental regulation, taxation, labor contracts, terms of capital intensive imports and the like. The value of a fixed stock of gold is thus plausibly linked to these stakeholders' preferences on whether the owner should have the right to transform the underground gold into shareholder capital.

Our specific empirical context is the population of 19 publicly traded mining firms on the Toronto Stock Exchange who own and operate one, two or three mines outside of the United States, Canada and Australia as listed in the Raw Materials Database<sup>1</sup>—a total of 26 mines in 20 countries that have reached the stage of a feasibility study.<sup>2</sup> We have gathered all relevant financial and operating data on these companies during the period that they were publicly listed after the completion of their feasibility studies. This sampling criterion allows us to draw upon strict Canadian disclosure requirements<sup>3</sup> for financial and operating data of mining firms, in order to obtain sufficient information to estimate the intrinsic value of the

<sup>&</sup>lt;sup>1</sup> Raw Materials Database – <a href="http://www.rmg.se">http://www.rmg.se</a>.

<sup>&</sup>lt;sup>2</sup> A feasibility study is an economic study based on sample drilling results and engineering analysis, which presents enough information to determine whether or not the project should be advanced to the construction and production stage. These estimates are intended to be accurate within a 15 percent error band.

<sup>&</sup>lt;sup>3</sup> http://www.tsx.com/en/listings/tsx\_issuer\_resources/continuous\_disclosure.html

mines using widely accepted resource valuation models; and exploit the clear and direct links between media reports on a single (or two or three) mine(s) and changes in financial performance without contamination from numerous other news stories covering other assets or practices of the same publicly traded company.

For these mines we combine financial and operating data from the parent company's quarterly financial reports filed with SEDAR filling system<sup>4</sup> and the stock price information from the Toronto Stock Exchange. These data allow us to measure the current market valuation of the firms, the intrinsic valuation of their gold reserves and their degree of stakeholder cooperation or conflict as detailed below.

Financial Market Valuation. We use a simple financial valuation formula that models stock market value as a function of the value of a company's announced resource stock and the likelihood that the company will successfully extract these resources without extensive planning or operational delays. Formally, we estimate

$$MV_{it} = \alpha + \beta \sum_{j=1}^{m_i} (RV_{jit}P_{jit}) + \varepsilon_{it}$$
, where

 $MV_{it}$  refers to the market value of company i at time t

 $RV_{iit}$  reflects the current valuation of mine j of company i at time t,

 $m_i$  is the number of mines owned and operated by company i, where i = 1, 2 or 3, and  $P_{jit}$  is the probability at time t that company i will advance the exploitation of the resources at mine j according to the announced schedule.

We calculate the market value of company i at time t ( $MV_{it}$ ) by multiplying the stock price times the number of common shares outstanding and adding company debt. Stock price data was obtained directly from the Toronto Stock Exchange. Shares outstanding and debt information are taken from the COMPUSTAT North America database.

Our analysis aims to show the extent to which fluctuations in the financial values of the companies in our sample can be explained by the value of the gold in the ground or needs to be broadened to incorporate non-market factors that might affect the timely extraction of

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<sup>&</sup>lt;sup>4</sup> The SEDAR filing system provides access to most public securities documents and information filed by public companies and investment funds with the Canadian Securities Administrators (CSA).

the resources and that signal to investors that they should discount the value they ascribe to the gold still in the ground. We discuss below the evaluation of the resource value  $(RV_{jit})$  and the measurement of two factors affecting the exploitation of the resource  $(P_{jit})$ : the level of stakeholder cooperation or conflict and country-level political risk.

Resource Valuation. We build upon a baseline resource valuation model developed by Cairns and Davis (1998), who propose a modified formulation of the Hotelling valuation principle for valuing hard-rock mineral properties (Miller & Upton, 1985a, 1985b) that relies on assumptions used by mining engineers when planning the rate of extraction for a mine.<sup>5</sup>

We apply Cairns' and Davis' model to our empirical context by adding a time dimension and considering the possibility that companies in our sample own multiple mines for which the resource value can be assessed separately. Formally, we evaluate each mine j of company i as follows

$$RV_{jit} = W_{jit}S_{jit}\frac{1-e^{-r_t(T_{jit}-y_{jit})}}{r_t(T_{jit}-y_{jit})}$$
, where

 $W_{iit}$  = average forecast operating profit per unit of gold of mine j and time t,

 $S_{iit}$  = quantity of gold reserves of gold mine j at time t,

 $T_{jit}$  = quarters of estimated mine life for gold mine j at time t, <sup>6</sup>

 $y_{iit}$  = quarters of operation of gold mine j at time t,

 $r_t$  = Treasury bond yield with term  $T_{jit} - y_{jit}$  at time t.

We compute the average forecast operating profit per unit of gold for mine j of company i at

time 
$$t$$
 as  $W_{jit} = \frac{1}{(T_{jit} - y_{jit})} \sum_{k=t}^{T_{jit} - y_{jit}} (GoldPrice_t - CostExtraction_{jk})$ , or the average

quarterly profit for the remaining period of operation. Following Cairns and Davis (1998), we use the current price of gold to estimate forecast profits. For each mine, data on the cost of extraction ( $CostExtraction_{jk}$ ), the remaining quantity of proven and probable gold

<sup>&</sup>lt;sup>5</sup> The model retains the central parameters of the Hotelling valuation principle (commodity price, cost of production, and mineral reserve data) but allows for the use of average cost data which is more readily available for different mines.

<sup>&</sup>lt;sup>6</sup> T denotes *total* estimated mine life, not the remaining mine life at time t. T is indexed by t because companies often adjust their estimates of the total life of a mine to reflect adjustments in reserve estimates, or changes in technology or production schedules.

reserves  $S_{jit}$ , the estimated mine life  $T_{jit}$ , and the production start date used to calculate the quarters the mine has already been in operation  $y_{jit}$  were collected from company annual and quarterly reports, annual information forms, technical reports and press releases available on the companies' websites or filed with SEDAR. For the Treasury-bond yield  $r_t$  we use Treasury constant-maturity data provided by the Federal Reserve Bank of St. Louis and available for different terms from 1 month to 30 years.

We posit that investors discount heavily the resource value when they anticipate that the probability that the company will successfully develop its mining reserves according to the announced schedule is low. The value of hundreds of ounces of gold reserves to the company's shareholders is zero if the mining company has its license to exploit revoked or if it cannot get approval to begin the construction of the mine. On the basis of this intuition, we discount the resource value by the probability that the resource will be exploited without significant planning and operational delays and model this probability: (1) as a function of project-level risks determined by the level of conflict or cooperation between the company and various stakeholders affected or interested in the development of the gold mining project, and (2) as a function of country-level policy uncertainty. We describe the operationalization of the stakeholder conflict-cooperation and of country-level policy uncertainty in the following sections.

Stakeholder Conflict-Cooperation. Our research advances the study of the financial impact of stakeholder engagement through the development of media-based stakeholder event data that captures the level of cooperation or conflict between the company and its various political, social and economic stakeholders. Throughout the nearly four-decade long history of empirical literature on the link between stakeholder relations and corporate financial performance (see Margolis, Elfenbein and Walsh (2007) and Orlitzky, Schmidt & Rynes (2003)), measurement of the former construct has proven a daunting challenge. Early

performers or used corporate responses to surveys. Over time, external sources of data replaced researchers' own ratings and the data became more objective relying upon consumer polling and analysis of annual reports and other public documents regarding corporate practices. While these external and more objective data sources were a clear improvement over their predecessors both in assuaging concerns on construct validity and in expanding the sample of covered firms, their unit of analysis remained the corporation. Scholars thus explored the link between corporate-level disclosures, audits and policies and performance, but struggled with converting these results into operational guidance to front line managers tasked with resource allocation decisions. Doing so required untenable assumptions that corporate policies translated into operational practices for stakeholder relations and that strategies were not contingent upon country, stakeholder, issue, time, industry and project context. Scholars seeking to loosen these assumptions struggled with a lack of more fine grained data.

By contrast, scholars seeking to highlight the costs to corporations of irresponsible activity or of being targeted by activists, have long used more micro-level event data drawn from media reports (Earl, Martin, McCarthy, & Soule, 2004). A wide body of literature links media reporting of adverse events including product recalls (Davidson & Worrell, 1992), corporate criminal activity (Davidson & Worrell, 1988, Gunthorpe, 1997, Karpoff, Lee, & Vendrzyk, 1999, Karpoff & Lott Jr, 1993, Reichert, Lockett, & Rao, 1996), violations of labor law (Davidson, Worrell, & Cheng, 1994, Hersch, 1991) and environmental violations (Karpoff, Lott Jr, & Wehrly, 2005) to negative financial performance. More recently and closely related to our analysis, King & Soule (2007) demonstrate that activist campaigns in the media negatively impact market valuation particularly for campaigns targeting consumers or workers in firms who themselves lack a strong prior record of media coverage (i.e., a stock

of reputational capital). These studies typically proceed by linking information on the date of an adverse event to abnormal stock market returns or a long-term reduction in market valuation. King & Soule (2007) go further in coding information on the size of the protest, the number of sponsoring organizations and the type of issue.

Scholars in international relations and conflict studies have gone even further in their coding of event data in their long-standing examination of the impact of 'soft power' or the degree of conflict and cooperation among states on subsequent relations between those states including the incidence of military conflict (for a review of this literature see Schrodt (1993)). In this literature, events are coded as subject-verb-object triples in which one actor undertakes an action or expresses an opinion connoting conflict or cooperation with another actor. The intertemporal evolution of dyadic and network conflict and cooperation is analyzed to ascertain the determinants of escalation of international conflict or cooperation.

The closest analogue to this type of data in the management realm lies in the realm of corporate reputation (Fombrun & Shanley, 1990) where the appearance of negative words in the media is associated with subsequent deterioration in earnings and stock prices (Tetlock, Saar-Tsechansky, & Macskassy, 2008) as well as overall stock index levels, trading volume and volatility (Das & Chen, 2007, Loughran & McDonald, 2010, Remus, Heyer, & Ahmad, 2009). The tone of earnings press releases is associated with subsequent earnings and short term stock price movement (Davis, Piger, & Sedor, 2007). Text analysis of Amazon seller reviews similarly demonstrates that strong reputations are associated with increasing market power (Ghose & Ipeirotis, 2008).

Following such an event-based approach to testing instrumental stakeholder theory offers numerous advantages over the extant approaches of relying on corporate disclosures, audits or principles. First, a much larger sample of firms could potentially be incorporated within an analysis. Second, the perceptual or stakeholder opinions that are included within

the media reports are more likely to be those who have direct association with the firm as opposed to more distant topical experts. Third, real time event reports in the media offer a much more accurate source of information on how a company is perceived by its stakeholders at a moment in time than do periodic audits or expert surveys. As stakeholder cooperation and conflict fluctuates with events and tactics, a measure which captures these dynamics should outperform those that are more static. Finally, it is easier to separate and, in particular, examine the interdependence of stakeholder actions and opinions and those of the focal firm.

We create a novel stakeholder events database comprising events linking firms and their stakeholders from the full set of media documents in the FACTIVA database that mention the mine or the parent company of the mine. For each mine, every article is read and all stakeholder events are hand-coded according to a detailed coding protocol adapted from the international conflict studies literature (Bond, Bond, Oh, Jenkins, & Taylor, 2003, King & Lowe, 2003).

First, a stakeholder event is an instance in which a media-relevant<sup>7</sup> stakeholder acts or expresses sentiment towards the firm or vice-versa. Events may be cooperative or conflictual and vary in their strength along these two dimensions. We distinguish between the initiator of the event and the target of the relation by coding which source actor did what to which target actor, i.e., concisely captured by the phrase: who (SOURCE actor) did what (VERB or VERB PHRASE) to whom (TARGET ACTOR)? This unique stakeholder event database includes over 50,000 hand-coded stakeholder events of which approximately half include the investing firm and are therefore included with our empirical analysis.

Second, the degree of conflict or cooperation is coded using a modified version of the Goldstein (1992) scale, which we augmented to better apply to relations between firms and

<sup>&</sup>lt;sup>7</sup> Our reliance on the media to define the population of relevant stakeholders generates an inclusive set of political, social and economic actors without regard to their normative legitimacy. As we seek to measure the financial impact of stakeholder cooperation and conflict not the choice by managers as to whether to engage with a specific stakeholder, we believe this strategy appropriate.

stakeholders in the business context. Our scale measures company-stakeholder relations from most cooperative (+10) to extremely conflictual (-10) using a vocabulary of over 5,000 unique verbs or verb phrases (see Appendix 1 for the summary categories; the full vocabulary is available from the authors upon request). Table 1 provides several examples of sentences from our database coded according to this protocol.

We aggregate these stakeholder events to reflect the level of a company's cooperation or conflict with stakeholders at each mine in every quarter of available data, and compute a rolling stock of stakeholder cooperation-conflict. The empirical measure is constructed using a moving average that discounts the "relevance" of past reports by weighing less a report dating from the past than a current report. Formally, for each mine j of each company i at time t we calculate:

$$CC_{jit}^* = \sum_{l=0}^w \frac{\delta^l n_{ji,t-l}}{\sum_{m=0}^w \delta^m n_{ji,t-m}} cc_{ji,t-l}$$
, where

 $cc_{jit}$ = level of stakeholder conflict-cooperation at mine j for company i at time t  $n_{jit}$ = number of new media reports for mine j of company i at time t, w = window of the moving average, and  $\delta$ = discount factor.

The main results presented below are estimated using a window of eight quarters and a discount rate of 0.8; sensitivity checks show that these results are robust to specifications using alternative values. Summary statistics and a correlation matrix for the variables in our dataset are reported in Table 2.

Policy Uncertainty. We measure the country-level policy uncertainty using the Political Constraint Index (POLCON) dataset (Henisz, 2000a). The construction of this measure begins with the identification of the number of independent branches of government with veto power over policy change (e.g., one or two legislative chambers, the judiciary, and sub-federal states or provinces). A measure of institutional constraints is then generated by assuming that the preference of each branch and the status quo policy is drawn independently

and identically from a uniform distribution. The measure is then modified to take into account the extent of alignment across the branches of government and the extent of preference heterogeneity within each legislative branch. The final values of the POLCON index range from 0 (least constrained) – which corresponds to an executive with no formal checks or balances on his behavior – to 0.89 – which corresponds to an executive checked by a fractious bicameral legislature, the judiciary, and sub-federal provincial or state governments (e.g., Belgium).

To the extent that such constraints serve to inhibit a host-country government from reneging on prior commitments made to respect property rights (i.e., responding to the time consistency problem they face in the case of long-term investment), countries with fewer constraints have weak commitment mechanisms and, therefore, a more uncertain relationship between resource valuation and financial market valuation or one that is more contingent upon stakeholder engagement. Based on a similar logic to what we employ here, previous studies have found that higher levels of POLCON are associated with a reduction in the volatility of macroeconomic policies (Fatás & Mihov, 2003, Henisz, 2004) and the sensitivity of trade policy to increases in unemployment (Henisz and Mansfield 2006).

#### Econometric models and results

Cooperative relationships between the firm and its various stakeholders indicate that the company is likely to continue the development of the mining project without significant planning or operational delays. We test whether the expected value of the company's mining resources matches the market value, using random-parameter models which can accommodate individual (i.e., parent firm level) heterogeneity in the relationship between resource and financial market valuation, as well as random effects (or random intercept) models and fixed effects models. A wide array of coefficient estimates obtained in company-by-company regressions (results not shown) indicate that investors assign different dollar

values to a unit increase in the resource valuation (or the expected resource valuation) of different mines. Random-parameter estimators can accommodate such unit to unit variation by relaxing the assumption that the relationship between  $Y_i$  and  $X_i$  is defined by a vector of *true* coefficients  $\beta_i$  and assuming instead that the coefficients  $\beta_i$  are random variables.

We estimate the following random-parameter model:

$$MV_{it} = \alpha_i + \beta_i \sum_{j=1}^m RV_{jit} P_{jit} + \varepsilon_{it}$$
 where  $\alpha_i = \alpha + \gamma_{\alpha} v_{i,\alpha}$ ,  $\beta_i = \beta + \gamma_{\beta} v_{i,\beta}$ , and  $v_{i,\alpha}, v_{i,\beta} \sim N(0,1)$ .

Results vary considerably when estimating the regression coefficient on the resource valuation for each company  $(RV_{jit})$  and the *expected* resource valuation  $(RV_{jit}P_{jit})$  that takes into consideration stakeholder relations and policy uncertainty. The results obtained using the random-parameter model are shown Table 3. The models assume that the coefficients are random variables drawn from a normal distribution, and estimate both the mean and the standard deviation for the intercept and the slope.

Model (1) shows that, when assuming that investors do not factor in the possibility of delays in the planning stages and disruptions in the production stage, they are willing to pay, on average, about 28 cents for an increase of 1 dollar in the resource valuation of a gold mining company. By contrast, when we consider the possibility that in bringing the mine to production the company will likely encounter various obstacles that delay the extraction of the resources and model it in terms of the level of stakeholder cooperation or conflict (model 2), in terms of the level of political constraints (model 3), or in terms of both the level of stakeholder cooperation/conflict and political constraints (models 4 and 5), the estimated unconditional means for the coefficients are higher and closer to 1. More specifically, if we adjust the resource valuation by the level of stakeholder cooperation/conflict as a proxy for the likelihood of considerable delays or disruptions, our random estimate suggests that investors are willing to pay, on average, about 52 cents for every dollar increase in the

company's expected resource valuation. If we adjust the resource valuation by the level of country-level political risk as a proxy for the likelihood of delays in the project development schedule (model 3), the random coefficient estimates indicate that investors are willing to pay about 46 cents for every dollar increase in the company's resource cash flows. Finally, if we model the likelihood that the company will face delays and disruptions at its mine(s) in terms of *both* the level of cooperation/conflict with stakeholder and country-level political risk using the mean of the two (model 4) or their product (model 5), and we discount the valuation of the company's resources by these values, the estimated random coefficient suggests that investors are willing to pay, on average, between 63 and 86 cents for every dollar increase in the expected resource valuation of a mining company.

We also estimate the equivalent of a random-intercept (or random effects) model in which only the intercept is assumed to be a random variable,  $\alpha_i = \alpha + \gamma_\alpha v_{i,\alpha}$ , while the coefficients on the independent variables are "fixed" (i.e., non-random). The results presented in Table 4 suggest that investors are willing to pay about 35 cents for an increase of 1 dollar in the valuation of a company's gold mine project(s) if the possibility of delays and disruptions is not accounted for; but they are willing to pay between 60 and 99 cents for an increase of 1 dollar in the valuation of a company's gold mining project(s) if the likelihood of moving ahead according to the announced schedule is defined in terms of the level of stakeholder cooperation/conflict and the country-level political constraints. The results shown are estimated using robust standard errors and are robust to specifications that control for AR(1) processes. We obtain very similar results if estimating the parameters using fixed effects and panel corrected standard errors (results not shown).

#### Robustness checks and sensitivity analysis

We checked the sensitivity of our results to considerations related to various definitions of stakeholder relations and the measurement of this concept, the direction of

causality, and concerns related to the mine development schedule considered in the analysis.

Overall, our results are robust to alternative measures and empirical specifications.

Stakeholder conflict/cooperation measure. Much of the work on the impact of stakeholder engagement on corporate operations and performance is limited by data availability to the analysis of stakeholders in the value chain. While our media-based event data allows us to also incorporate various political actors (local, regional, national, and foreign government officials and bureaucrats) and social stakeholders (community representatives and various cultural, religious, ethnic, environmental and human rights organizations), we check the robustness of our results to the inclusion/exclusion of stakeholders in the company's value chain, such as private and state-owned businesses in the mining industry and corporate and individual service providers. If we include in the analysis only stakeholders in the value chain (but not other political and social actors) or exclude them altogether, results are similar to the ones we presented above, which were estimated using all the stakeholders identified by our media-based event data.

We also consider the sensitivity of our results to the choices we made while constructing our measure of stakeholder cooperation/conflict. First, this measure represents a moving average of event data that weighs less heavily stakeholder relations described in past media reports relative to current information. The results shown were estimated using a discount factor of 0.8 and we confirmed that our results are robust to a wide range of discount factors, suggesting that our choice of a particular value does not affect the power of the estimates. Second, we verified that our results are robust when model specifications include measures of conflict/cooperation computed over different rolling windows. Specifically, results do not change much if we use the contemporaneous level of stakeholder cooperation/conflict or moving averages over two, four, or eight quarters. Finally, we considered the possibility that similar levels of stakeholder cooperation/conflict can have

Our results do not change if we use a measure of stakeholder relations that is normalized by the overall country-level stakeholder relations as generated by an automated (i.e., computer-based) coding using the same conflict and cooperation scale of all Reuters news stories in which the subject and object of the headline are both identified as nationals of the host country (Bond, Bond, Oh, Jenkins, & Taylor, 2003, King & Lowe, 2003).

Direction of causality. First, to address concerns that our results are driven by managerial agency or time variant firm-level heterogeneity, we regressed stakeholder cooperation on lagged financial market valuation using the same set of specifications detailed above. In no cases did we observe a statistically significant relationship. Second, we confirmed that the resource valuation discounted using stakeholder cooperation/conflict and political risk Granger causes the company market value and also verified that resource valuation using future changes in the values of stakeholder cooperation/conflict (at times t+1 and t+2) do not predict market value. Third, we confirmed empirically that exogenous increases in gold reserves (i.e., significant jumps in the net present value of a mine) do not trigger adverse reactions from stakeholders, thus eliminating concerns that companies' discovery announcements rather than their interactions with stakeholders influence the level of cooperation or conflict with stakeholders and indirectly market value.

Mine development schedules. By the end of our panel dataset, eleven mines in our sample had reached production, while the remaining fifteen continued to be in either the feasibility or construction stage, and therefore more vulnerable to future planning delays or disruptions. Companies try to re-assure investors that production will begin in the near future by announcing the planned production start date, but they sometimes have to revise these announcements to reflect delays. We account for such real-life uncertainty by estimating the resource value using both companies' announced production start date and a range of mine

development schedules that accommodate different times for each of the exploration, feasibility, construction, and production stages. The results we presented are estimated using companies' announced production schedules; however, our results are robust to calculations that assume very tight (or "optimistic") development paths as well as more conservative (or "slower") planned schedules.

We also checked that mine development schedules do not vary systematically across the mines in our sample with either the level of stakeholder cooperation/conflict or the level of political risk. We found that there is no evidence that companies are systematically accelerating development and extraction schedules in environments with low stakeholder cooperation or high political risk.

#### **Discussion**

Our theoretical arguments and empirical results point to the existence of a direct positive and economically substantive relationship between financial market valuation and stakeholder relations. Future research and analysis should continue to explore not only tradeoffs but also complementarity between resource allocations to enhance stakeholder cooperation and productive efficiency. This finding has important implications for future research on corporate social responsibility, instrumental stakeholder theory and multinational strategy which we discuss in turn. We also discuss the limitations of our analysis including, in particular, questions regarding its generalizability beyond our sample of 19 publicly traded gold mining companies. This discussion reveals exciting topics for future research.

The research on corporate social responsibility has struggled to make the business case for such activity (Vogel, 2005). Initially supportive empirical results were rightly attacked on the grounds of spurious or reverse causality and inappropriate metrics. Agency theorists and financial economists countered with theoretical and empirical analysis that highlighted how managers' pursuit of perquisites or individual morality diverted shareholder

returns to stakeholder interests. Organizational economists extended these models to allow for shareholder value maximizing redistributions to stakeholders in the direct economic value chain under certain circumstances. Yet, in our empirical context, none of the mechanisms emphasized by organizational economists are operative (i.e., consumers are unable to identify the mine or company from which their purchase originates, miners and mining company managers are not seen as leaders in social responsibility, investors who emphasize social responsibility are seen as relatively peripheral and activists have limited power to cause direct harm to investors).

We argue, by contrast, for a broader conceptualization of the potential financial impact of stakeholders drawn from instrumental stakeholder theory. The value of certain assets can be diminished if external stakeholders directly interfere with or lobby government to interfere with the property rights of the owner of that asset. In our case, financial models that generate a valuation for a gold mine omit the future uncertainty over government regulation, permitting, and community relations, or take these factors to be exogenously or environmentally determined. While it certainly simplifies financial models to make this assumption, the actions of managers in the industry and analysts who both devote resources and effort to mitigate and quantify what they call "above-ground" risks suggest that they disagree with this characterization and see variation in political and social support as a source of competitive advantage or economic rents.

While managers, scholars of stakeholder relations and some activists have long asserted the existence of a positive benefit from stakeholder engagement, empirical evidence using corporate level data has been equivocal at best. The focus among theorists and empirical scholars has turned to special circumstances where a link may yet exist. Our results point to a need to broaden the scope of such inquiry. Where stakeholder cooperation is

necessary to transform an asset into shareholder returns, a direct link between productive efficiency and stakeholder cooperation exists.

This link offers an opportunity for instrumental stakeholder theory to address the question of which stakeholders are more important and how much should managers invest in their relationships. Current empirical efforts to examine corporate-level reporting and practices are too far removed from the operational practices of greatest concern to stakeholders both external and internal to the corporation. By tracking the actions and statements of media-relevant stakeholders, scholars and practitioners can avoid subjective biases, broaden the potential pool of covered firms and better identify which practices at which times substantively contribute to market valuation. In ongoing research, rather than simply capturing a moving average of stakeholder cooperation and conflict, we construct stakeholder networks for each of the 26 mines. Using the same coding protocol we deployed here, we capture every stakeholder event in which the mine OR another stakeholder is the object of the sentence. The resulting dataset is amenable to analysis using tools developed in the network literature to ascertain the relative importance of various stakeholders in the diffusion of cooperation or conflict as well as the optimal strategies for an organization seeking to enhance its degree of stakeholder cooperation (Nartey, 2010, Nebus & Rufin, 2010, Rowley, 1997, Rowley & Moldoveanu, 2003). While currently time intensive, progress in information extraction software development (King & Lowe, 2003) could allow for lowercost deployment in the near future.

Such progress is particularly needed in the study of multinational firms who, by virtue of their foreignness, are more likely to engender a conflictual relationship with a given host country stakeholder than a cooperative one (Zaheer, 1995). Such reactions may be based on intrinsic nationalism or opportunistically formented (i.e., by a domestic opponent or other stakeholder who seeks to supplant or stop project development). Whereas the political risk

literature in international business has made great strides in modeling the formal institutional structures that govern the likelihood of policy change in response to such pressure (Henisz, 2000b), the extent to which investors from one country may be more or less susceptible to this pressure (Holburn & Zelner, 2010) and the existence of experiential learning in the mitigation of these pressures (Delios & Henisz, 2002a, 2002b, Henisz & Delios, 2004, 2002, 2001), the tactics or mechanisms that firms actually deploy in such cases remain largely unexamined despite long-standing exhortations for analysis (Behrman, Boddewyn, & Kapoor, 1975, Boddewyn & Cracco, 1972, Kobrin, 1979) as does the use of project-level data rather than firm-level proxies (Kobrin, 1979). The dynamic and contingent analysis of stakeholder networks could usefully extend the existing literature examining the impact of political risk on multinational strategy bringing it closer to scholarship in non-market strategy (Baron, 1995a, 1995b, Baron, 2009, Baron & Diermeier, 2007, Hillman & Hitt, 1999) as well as strategic corporate social responsibility (Kytle & Ruggie, 2005, Porter & Kramer, 2011, Porter & Kramer, 2006b, Post, Preston, & Sauter-Sachs, 2002)

We believe that the scope of such potential inquiry is far wider than the gold mining industry. While we chose this empirical context because it allowed us to clearly identify the existence of the mechanism we posited between stakeholder cooperation and market valuation in isolation from numerous potential competing causal explanations, the contingent nature of property rights faced by owners of gold mines has widespread analogues in other industrial contexts. The argument clearly applies to other natural resources (e.g., minerals, oil or gas, agriculture and water). Industries with substantial upfront investments and long payback periods are similarly influenced by the realization of property rights over those upfront investments in property, plant and equipment, intellectual property, production processes or brand. Concerns over government and stakeholder support for the right to transform property are heightened where the good or service manufactured or the production

process is politically or socially salient. Such salience is a function of perceptions of spillovers both negative (e.g., environmental or social costs, disruptions of cultural tradition and heritage, and the reinforcement of preexisting inequity) and positive (e.g., categorization as high technology or desirability, creation of high value added jobs, consistency with broader social or political objectives, or a critical and undersupplied input into a production process that itself has these characteristics). While the absolute and relative importance of this direct link between perceptions of social responsibility and market valuation will obviously vary enormously across industries and countries, we would argue from the above set of conditions that its existence is ubiquitous. In short, the social license to operate is more than rhetoric. It is operationalizable, empirically testable and strategically relevant. For these mining firms, pursuing cooperation from and minimizing conflict with stakeholders is not just corporate social responsibility but enlightened self-interest.

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**Table 1: Samples of Stakeholder Event Coding** 

Sentence Text	Source (i.e.,	Verb(s)	Target(s) (i.e.,	Conflict-	Conflict-
	subject)		object(s))	Cooperatio	Cooperation
				n Category	Scale
ASG Chairman Stephen Everett also praised RAMSI and local police and	ASG	Praise;	Local Police;	[express	3
thanked the Solomons government for its positive support	Chairman	Thank	Solomons	support	
	Stephen		Government	verbally]	
	Everett				
On September 14 <sup>th</sup> 2007, President Nursultan Nazarbayev of Kazakhstan	President	Ceremonially	Varvarinskoye	[show	4
ceremonially kicked off the process of extracting gold and copper ore at the	Nazarbayev	kicked off	deposit [owned	support	
Varvarinskoye deposit. He was quoted as saying that this mine is one of			by European	through	
many enterprises in the region that will "build up the power of			Minerals	action]	
Kazakhstan's economy			Corporation]		
[George] Salamis [President of Rusoro, Russian firm] shied away from	Salamis -	build	Venezuelan	[build	3
commenting directly on the importance of Rusoro's Russian component but	President of	connections	government	positive	
instead said: "We wouldn't be anywhere in Venezuela if it weren't for the	Rusoro			relations	
great connections we've built with the Venezuelan government at all levels.				with]	
Mr. Kabila has ordered foreign companies operating there to negotiate or	Mr. Kabila	ordered to	Foreign	[Threaten]	-4
see their concessions sold to rivals. The companies involved - the Toronto-	[leader of	negotiate or	companies		
based exploration company Banro Resource, a Belgian-Canadian	ADFL rebel	see their	Banro, Mindev		
consortium called Mindev and Barrick Gold, one of the world's largest gold	group]	concessions	& Barrick		
companies - are in an unenviable position.		sold			
Kabila's government is fighting for its survival as rebels backed by	Kabila's	fight for	rebels	[opposed	-10
neighboring Rwanda and Uganda have pushed their way westward toward	government	survival		in active	
the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila				military	
with arms and troops.				conflict]	
Kabila's government is fighting for its survival as rebels backed by	Rwanda	back	Rebels	[support in	10
neighboring Rwanda and Uganda have pushed their way westward toward	government;			active	
the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila	Uganda			military	
with arms and troops.	government			conflict]	
Kabila's government is fighting for its survival as rebels backed by	Zimbabwe	Support with	Kabila	[support in	10
neighboring Rwanda and Uganda have pushed their way westward toward	government;	arms		active	
the capital city of Kinshasa. Zimbabwe and Angola are supporting Kabila	Angola			military	
with arms and troops.	government			conflict]	

 Table 2. Summary statistics and Correlation Matrix

Variable	Obser	vations	Mean	Std. Dev.	Min	Max	
Market Value		176	304.227	355.215	3.930	2279.556	
Resource Valuation		147	594.553	522.003	83.819	2294.293	
Valuation * Conflict/Cooperation		112	221.013	166.453	0.000	799.493	
Valuation * ((Conflict/Cooperation + Political							
Constraints)/2)		73	125.524	79.642	9.790	339.052	
Conflict/Cooperation		115	0.507	0.218	0.000	1.000	
Political Constraints		176	0.158	0.198	0.000	0.670	
	Market Value		Kesource Valuation	valuation* Conflict/Coop Valuation*	(Conflict/Coop + Political Constraints)/2)	Conflict/Coop	Political Constraints
Market Value							
Resource Valuation	0.110						
Valuation * Conflict/Coop	0.121	0.9	1				
Valuation * (Conflict/Coop + Political							
Constraints)/2	0.206	0.9	13 0	0.905			
Conflict/Cooperation	0.082	-0.1	16 0	0.260	0.092		
Political Constraints	0.155	-0.08	35 -0	0.241	0.152	-0.203	

Table 3. Random coefficient estimates

	(1)	(2)	(3)	(4)	(5)
Resource valuation of company	0.284* (2.55)				
Resource Value * Cooperation/Conflict		0.523* (2.41)			
Resource Value * Political Constraints			0.464 <sup>*</sup> (2.21)		
Resource Value * (Cooperation/Conflict +				0.631***	
Political Constraints)/2				(4.02)	
Resource Value * Cooperation/Conflict * Political Constraints					0.867 <sup>*</sup> (2.52)
Constant	183.5*** (4.32)	177.7*** (3.60)	208.8*** (5.30)	176.7*** (4.41)	195.7*** (4.99)
lns1_1_1	***			*	
Constant	-0.982*** (-4.13)	-0.308 (-1.17)	-0.615 (-1.60)	-1.026* (-2.06)	-0.126 (-0.33)
lns1_1_2		• • • • • • • • • • • • • • • • • • • •	,	,	
Constant	5.070**** (23.95)	5.205*** (23.83)	4.731*** (12.56)	4.720*** (9.81)	4.706*** (12.01)
atr1_1_1_2	, ,	, ,	, ,	, ,	,
Constant	-0.337 (-1.05)	-0.487 (-1.55)	-0.121 (-0.27)	0.155 (0.29)	-0.231 (-0.49)
lnsig_e					
Constant	4.946*** (111.93)	4.860*** (97.21)	4.816*** (73.20)	4.810*** (73.40)	4.825*** (71.17)
Observations	289	235	141	141	136

t statistics in parentheses; p < 0.05, p < 0.01, p < 0.001

Table 4. Random effects estimates with robust standard errors

	(1)	(2)	(3)	(4)	(5)
Resource valuation of company	0.355* (2.43)				
Resource Value * Cooperation/Conflict		0.221*** (5.90)			
Resource Value * Political Constraints			0.495*** (3.50)		
Resource Value * (Cooperation/Conflict + Political Constraints)/2				0.594*** (4.50)	
Resource Value * Cooperation/Conflict * Political Constraints					0.988*** (4.21)
Constant	168.1** (3.06)	231.2*** (4.81)	223.5*** (3.99)	188.4*** (3.33)	208.1*** (4.02)
Observations	289	235	141	141	136

t statistics in parentheses; p < 0.05, p < 0.01, p < 0.01