3-20-2014

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Recommended Citation
Bass, A., Chakrabarty, S. Resource security: Competition for global resources, strategic intent, and governments as owners. J Int Bus Stud 45, 961–979 (2014). https://doi.org/10.1057/jibs.2014.28

Resource security: Competition for global resources, strategic intent, and governments as owners

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Abstract

We develop a resource security theory by examining the intent of acquisitions of scarce resources by multinational firms. Results suggest that owners of firms can shape the intent of resource acquisitions. Specifically, state-owned enterprises (SOEs) tend to acquire and pay more for resources for exploration rather than exploitation. This is because SOEs' owners – governments – are most concerned with securing their country's future. We contribute to the literature by suggesting that ownership influences resource acquisitions, that resource security is of importance to multinational enterprises, and that SOEs invest abroad to safeguard both their own and their home countries' future.

Keywords:

corporate entrepreneurship; international entrepreneurship; resource dependency; resource-based view; securing natural resources; state-owned enterprises

INTRODUCTION

State-owned enterprises (SOEs) are growing in presence and power in global markets (Büge, Egeland, Kowalski, & Sztajerowska, 2013; Marcel, 2006). This is especially true in industries related to the extraction of natural resources (Kowalski, Büge, Sztajerowska, & Egeland, 2013; Marcel, 2006). Because natural resources are scarce, competition in these industries is fierce. SOEs compete head-to-head with other SOEs as well as non-state-owned enterprises (NSOEs). Operating as foreign-policy instruments with financial backing from their home governments, many SOEs compete for natural resources to enhance the long-term viability, geopolitical position, and power of the home country (Cuervo-Cazurra & Dau, 2009; Zif, 1983, 1981). The desire of SOEs' owners – governments – to reduce dependence on other firms and countries and

increase their own presence and power is apparent across natural resource sectors (Büge et al., 2013). For instance, SOEs have a 34% share in the crude petroleum and natural gas extraction sector and a 35% share in the coal and lignite mining sector (Kowalski et al., 2013: 27). Although the resource dependence literature suggests that firms with the most resources have the most power and the least dependence on others (Pfeffer & Salancik, 1978; Wry, Cobb, & Aldrich, 2013), this literature is largely silent on the intent with which firms acquire resources. That is, it does not indicate whether resources are secured with the intent of satisfying short-term needs or as a safeguard for the future. We attempt to address this theoretical gap by developing a resource security theory using insights from the resource dependence literature.

By developing a resource security theory, we investigate the association between ownership of multinational enterprises and the intent of their resource acquisitions. We argue that multinationals acquire resources either for exploration (i.e., the initial search and discovery of value in resources, for long term resource security) or for exploitation (i.e., the production using resources of known value, for relatively shorter-term resource security). Examining resource security in an exploration vs exploitation framework allows us to assess the strategic intent of investments made abroad by SOEs and NSOEs. Resources acquired for exploration have little or no utility toward satisfying short-term needs. However, SOEs are more interested than NSOEs in acquiring resources for exploration because such resources allow their owners – governments – to secure their home country's future (Gaille, 2010; He & Wong, 2004). SOEs can ascribe value to these acquired resources through exploration and hold them in reserve as a safeguard for the future. Such resource acquisitions can help increase geopolitical position and power by lessening the SOE's future dependence on other firms and countries for resources (Gaille, 2010). When resources are exploited and consequently consumed, the long-term strategic benefits, including enhanced geopolitical position and power, are correspondingly depleted.

We use the global upstream petroleum industry as the setting for our study. This industry is appropriate because, in the words of French industrialist and Senator, Henri Berenger, "he who owns the oil will own the world." This statement echoes the sentiment that firms (and countries) with access to valuable resources, such as oil, have the most power and least dependence on other firms (and countries) for these resources. Yet for firms operating in this industry, gaining access to petroleum resources is challenging for several reasons. First, competition for this non-renewable resource is increasing as demand increases (EIA, 2012). Second, petroleum resources are unevenly dispersed across the globe, which requires many firms to operate as multinationals. Third, the industry is a complex web of numerous players ranging from governments and SOEs to non-state-owned publicly traded and privately held firms. Additionally, the petroleum industry is an appropriate setting for our study because exploration (i.e., the search and discovery for availability of petroleum) and exploitation (i.e., petroleum production) are the two most critical activities in this industry.

Our study offers several implications for theory. First, we highlight that owners may influence the intent of resource acquisitions by multinationals. Governments, as owners, typically orient firms to secure resources in a way that will ensure resource independence and geopolitical power for the home countries and thereby provide long-term resource security. Second, we examine how multinationals pursue resource security through the resources they acquire. Multinationals can secure resources either to satisfy short-term needs or to secure resources as a long-term safeguard for the future. For some multinationals, resources that secure the firm's (or home country's) future are worth more than resources that can be exploited to satisfy short-term needs. These multinationals secure resources to decrease their resource dependence (thus ensuring their resource independence) in the future. Third, we explain why multinationals investing abroad to acquire resources is in fact beneficial for the home country. At the surface-level, an investment abroad by a multinational appears as an investment lost at home. However, we suggest that while the investment outflow might be perceived as a short-term loss for the home country, the investment abroad helps the SOE acquire resources to secure its country's future. The pressure on SOEs to align their priorities with that of the home country shapes the strategic intent of SOEs with regard to resource acquisitions.

RESOURCE SECURITY

Resource dependence theory (RDT) is traditionally used to investigate why and how firms vie for resources from a finite resource pool. Firms with the most resources have the most power and the least dependence on other firms, whereas firms with the least resources have the least power and the most dependence on other firms (Pfeffer & Salancik, 1978). By internalizing resources, firms can increase power and reduce dependence on other firms. Further, the resource-based view suggests that internalized resources can help improve performance (He, Chakrabarty, & Eden, forthcoming; Volberda, van den Bosch, Flier, & Gedajlovic, 2001). We suggest a complementary theory – that firms are often on the quest for resource security. We suggest that firms choose to acquire resources for long-term security (e.g., acquire resources for exploration that can be held in reserve) or for relatively shorter-term security (e.g., acquire resources that can be exploited to satisfy more immediate consumption needs).

Exploration vs Exploitation of Resources

Once resources are acquired, they can be secured through exploration, or made for consumption through exploitation. As applied to knowledge resources, Levinthal and March (1993: 105) suggested that exploration is the "pursuit of new knowledge," and exploitation is the "use and development of things already known." That is, firms can (1) search, discover, or experiment to explore for valuable knowledge or (2) produce, refine, and execute to exploit available knowledge (March, 1991). More recently, the exploration vs exploitation framework has been extended to resources other than knowledge (Lavie, Stettner, & Tushman, 2010). As shown in Table 1, the framework can be applied to a wide variety of settings including product-based industries (Hoang &

Rothaermel, 2010; McNamara & Baden-Fuller, 2007), retail banking and insurance (Flier, van den Bosch, & Volberda, 2003; Volberda et al., 2001), investment banking and venture funding (McNamara & BadenFuller, 2007), professional service firms (Groysberg & Lee, 2009), and theaters (Voss, Sirdeshmukh, & Voss, 2008), among others. In general, there is a "higher level of risk inherent in exploratory activities, which require significant investments with uncertain payoffs," whereas exploitation involves payoffs from "existing or minimally modified competencies" that can happen only "following successful exploration" (Voss et al., 2008: 147). Consistent with the broad literature illustrated in Table 1, in this study we define exploration as the search and discovery of value in resources, where the value of the resources was previously undetermined and exploitation as the production using resources, where the value of the resources has already been determined (Vermeulen & Barkema, 2001).

Table 1 Exploration vs exploitation in the literature: Theories and industry proxies

Theories		
Theoretical perspective	Exploration	Exploitation
Resource dependence theory (reducing dependency through external resources)	Increase power and reduce dependency by acquisition of external resources that are available for exploration	Increase power and reduce dependency by acquisition of external resources that are available for exploitation
Resource-based view (utilizing internal resources)	Exploration of internal resources allows for eventual exploitation of the internal resources	Exploitation of internal resources helps improve performance
Resource Security Theory (acquiring external resources)	Resources are secured to enhance long-term resource security – as a safeguard for the future	Resources are secured to enhance short-term resource security – to satisfy needs and consumption demands

Industry proxies		
	Proxies for operationalization	
Industry	Exploration	Exploitation
Product-based industries (Hoang & Rothaermel, 2010; McNamara & Baden-Fuller, 2007)	R&D/Learning/Experimenting	Commercialization/Manufacturing
Retail banking/Insurance (Flier, van den Bosch, & Volberda, 2003; Volberda, van den Bosch, Flier, & Gedajlovic, 2001)	Entering new markets and product/service innovation	Increasing efficiency in existing markets using existing products/services
Investment banking/Venture funding (McNamara & Baden-Fuller, 2007)	Funding new ventures for new products/ services that are not currently available	Funding new or existing ventures for refinement of existing products/services
Professional service firms (Groysberg & Lee, 2009)	Initiate new analyses of sectors in which the firm has performed no previous research	Analyze a sector in which the firm has already established research
Theaters (Voss, Sirdeshmukh, & Voss, 2008)	Creation of new-to-the-world plays and the injection of creative new forms of artistic expression	Incrementally modified/refined productions from the existing canon of plays
Petroleum industry (this study)	Exploring for petroleum on land that is made available for exploration for the first time, on awarded land where no exploration activity has occurred, or in areas where discoveries have previously been made, but have not been developed and put into production	Operation of fields in geographic areas where petroleum has been found and are currently in production, or in geographic areas that were once producing, but operation of these fields has previously ceased and has since been revitalized

Resource Security Theory

Our study offers a resource security theory to analyze the strategic intent that drives resource acquisitions. Acquiring resources for exploration increases long term resource security – with the resources serving as a safeguard so that the value can be unlocked in the future through search and discovery. Acquiring resources for exploitation increases short-term security – by using the resources for production and thereby satisfying the demands of consumption.

Firms view and pursue resource security differently. On the one hand, firms strategizing for the short-term acquire resources to satisfy short-term needs, such as consumption, and do so through exploitation activities. On the other hand, firms strategizing for the long-term attempt to achieve resource security by acquiring resources with the intent of converting their resource dependence (i.e., dependence on external/foreign entities that hold the resources) into future resource independence (by securing the resources as a safeguard for the future).

Owners, Firms, and Resource Security

In this study, we focus on how owners influence resource acquisition intents. Owners provide the necessary support, including capital, to facilitate a multinational firm's resource acquisitions. Through these acquisitions, the intent of the firm should ideally align with the directions provided by the owners (Demsetz, 1983; Wry et al., 2013). The owner can dictate the intent of the firm and subsequently influence how and where the firm competes to acquire resources. Governments, via the SOEs they own, are increasingly pursuing cross-border investment opportunities to acquire globally dispersed resources to secure the future of their countries. SOEs, acting on behalf of governments, therefore acquire resources as a safeguard for the future (rather than to satisfy short-term needs or market demands). In doing so, SOEs can help reduce their home-country's dependence on foreign entities for these resources in the future. NSOEs, in contrast, usually compete to boost short-term returns and wealth creation for shareholders (Gaille, 2010; Mascarenhas, 1989). NSOEs are often more concerned with acquiring resources that will help satisfy current market demands and thereby provide short-term benefits to the firm and its shareholders.

HYPOTHESES: SOEs VS NSOEs

SOEs and NSOEs pursue business opportunities for differing purposes. NSOEs operate under the logic of market capitalism and operate largely with business intent. NSOEs often focus on short-term profitability and return on investment for non-state shareholders (Gaille, 2010; Sundaram & Inkpen, 2004). In comparison, SOEs operate under an economic logic of state capitalism in which both geopolitical intent and business intent dictate where and how they compete (Cuervo-Cazurra & Dau, 2009; Zif, 1981). SOEs are often concerned with "wealth re-distribution, jobs creation, general economic development, [and] economic and energy security" (Pirog, 2007: 1). SOEs are sensitive to political interests, public accountability, and foreign policy goals of their

home-country governments (Gaille, 2010; Mascarenhas, 1989; Ramaswamy, Li, & Veliyath, 2002). Thus many SOEs operate to enhance the geopolitical position and power of their home countries (Bradshaw, 2009; Bremmer, 2009). SOEs and NSOEs also differ in efficiency considerations. SOEs are often less efficient than their NSOE counterparts. Hence to safeguard against marginal returns and wealth depletion, SOEs may choose to avoid activities where efficiency is critical (Bremmer, 2009; Gaille, 2010; Lin, Cai, & Li, 1998).

Competition between SOEs and NSOEs for Resources

State ownership influences the likelihood of acquiring resources for exploration

We suggest that SOEs are more likely to acquire resources for exploration than exploitation. SOEs must satisfy the political intents of their home country governments, which are generally concerned with long-term viability (Katusa, 2012; Musacchio & Flores-Macias, 2009; Musacchio & Lazzarini, 2014). Considering that exploration precedes exploitation (Lavie et al., 2010; Voss et al., 2008), acquiring resources for exploration provides SOEs the flexibility to hold the resources in reserve,engage in exploration as per their convenience, and wait to exploit the explored resources until the demand arises (Kaplowitz, 2004). As suggested to us by the Chief Operating Officer of a Canadian oil and gas company, “[SOEs] place more importance on strategic benefits, in particular, security of national energy supply for the future.” SOEs are increasingly under pressure from their home governments to acquire resources for exploration as a safeguard for the future of their home countries. Acquiring resources for exploration helps position the SOEs and their home countries to be less dependent on other firms and countries in the future. This enhances the geopolitical position and power of the home countries. Thus we suggest that the extent of state ownership increases the likelihood of acquiring resources for exploration.

> **Hypothesis 1:**
>
> Multinationals with greater state ownership are more likely to acquire resources for exploration and less likely to acquire resources for exploitation.

State ownership influences the price paid for resources for exploration

SOEs place greater value than NSOEs on acquiring resources for exploration for two reasons. First, these resources do not require efficiency and technical competence (which many SOEs lack and many NSOEs have expertise in) (Gaille, 2010; Zif, 1981). Resources for exploitation may expose this technical inferiority of SOEs and threaten the business intent of wealth maximization for these firms. Second, exploration of resources is a way for the SOE to ensure it has access to resources that can potentially satisfy future demand. Paying more for such resources benefits the SOE because exploration of resources helps secure the future of the SOE’s home country in terms of national security and geopolitical position (Klein & Robinson, 2011). As stated to us by an industry executive in reference to investments in exploration of resources, “[SOEs]

ascribe a premium to the value … above and beyond the risked economic potential of the investment as seen by [NSOEs].” Finally, SOEs tend to be highly funded, with access to low-cost capital provided from the stable backing of their host governments (Katusa, 2012). Thus access to financial capital to pay a premium for acquiring resources for exploration is less of a concern for SOEs. This sentiment was echoed in a statement to us by an industry executive in reference to investments in exploration of resources: “most [SOEs] have significant ability to purchase and fund development … They also invest for the long term and are not as concerned about current quarter profit reporting, as public companies are.” In sum, we argue that, compared with NSOEs, SOEs place higher value on exploration of resources and are willing to pay a premium for the same.

Hypothesis 2:

Multinationals with greater state ownership pay higher prices for acquiring resources for exploration and lower prices for resources for exploitation.

Moderators: Target Country’s Resource-richness and Target Country-specific Experience

Moderators of the influence of state ownership on the likelihood of acquiring resources for exploration

Geographic location can determine access to resources (Amburgey & Rao, 1996; Wry et al., 2013) and subsequently the resource acquisition behaviors of multinationals. As multinationals seek to acquire resources for exploration, they may look to regions that are resource-rich and in which they have previous experience.

Multinationals are more likely to acquire resources for exploration when the target country is rich in resources. Resource-rich countries have higher resource potential (Almeida & Phene, 2004). That is, these countries have more resources that are currently being exploited and/or can be explored. Like NSOEs, targeting resource-rich countries provides SOEs with the opportunity to satisfy the business intent of wealth maximization. However, unlike NSOEs, SOEs can also satisfy the geopolitical intent of their home-country governments when targeting resource-rich countries. That is, gaining a foothold in resource-rich countries enhances an SOE’s geopolitical position and decreases its home government’s future dependence on foreign entities. Further, SOEs are more likely to acquire resources for exploration when they have previous experience in the target country. Target country-specific experience indicates an SOE’s knowledge and familiarity with the country. An SOE is more willing to acquire resources in countries in which it has experience because it is more familiar with the country and has location specific knowledge about the country’s resources. This location-specific knowledge helps the SOE to operate more effectively and make informed decisions about exploration activities. In sum, we suggest that SOEs are more likely to acquire resources for exploration when the target country is resource-rich and when they have previous experience in the target country.

Hypothesis 3a:

Multinationals with greater state ownership are much more likely to acquire resources for exploration when the target country's resource-richness is high.

Hypothesis 3b:

Multinationals with greater state ownership are much more likely to acquire resources for exploration when the multinational's target country-specific experience is high.

Moderators of the influence of state ownership on the price paid for resources for exploration

Extending the above argument to prices paid, we suggest that SOEs pay much higher prices for resources for exploration when the target country is resource-rich and when the SOE has more target country-specific experience. SOEs are increasingly investing abroad in resource-rich countries to acquire resources to protect the energy security and geopolitical position of their home governments. Paying more for resources for exploration in resource-rich countries is worthwhile for at least two reasons. First, SOEs have the option to develop and exploit the resources in the future at any time of their choosing – perhaps when their home country needs the resources the most. Second, SOEs have the option of selling the yet-to-be-exploited resources to other firms that are eager to exploit the resources. The potential to exploit resources in the future or sell the resources to others ensures the long-term viability of the SOE. Similarly, an SOE places more value on resources in countries in which it has more experience. In these locations, the SOE has more familiarity with the country and location-specific knowledge about the country's resources. This familiarity further enhances the SOE's ability to satisfy political intent of enhanced geopolitical position and power and business intent of wealth maximization. In sum, we suggest that SOEs pay much higher prices for resources for exploration both when the target country is resource-rich and when the firm's target country-specific experience is high.

Hypothesis 4a:

Multinationals with greater state ownership pay much higher prices for resources for exploration when the target country's resource richness is high.

Hypothesis 4b:

Multinationals with greater state ownership pay much higher prices for resources for exploration when the target country-specific experience of the multinationals is high.

METHODS

While SOEs are present in a wide variety of industries such as service, manufacturing, and utility industries, a critical focus area of governments and their SOEs has been on

the natural resource-based industries (Büge et al., 2013). Natural resource based industries include metallic minerals (e.g., iron, copper, bauxite, etc.), non-metallic minerals (limestone, quartz, gemstones, etc.), and hydrocarbons (e.g., methane, coal, and petroleum). Among the natural resource-based industries, the petroleum (i.e., oil and gas) industry has gained special attention of governments because the world economy has become heavily dependent on petroleum (Karev, 2013). Securing petroleum resources across the world to safeguard the country's future has become a national priority for many countries (Gaille, 2010; Karev, 2013). The petroleum industry has three sectors: upstream, midstream, and downstream. The setting for this study is the upstream sector of the petroleum industry. This is an appropriate setting because SOEs and NSOEs in this sector actively attempt to acquire resources around the world for exploration and exploitation (Tordo, Tracy, & Arfaa, 2011).

Data and Procedure

Our data consist of market-based transactions for petroleum resource acquisitions by multinationals (both SOEs and NSOEs) across the world. We compiled the data from various sources such as company websites, annual reports, trade journals, finance portals, industry lists, trade publications, and petroleum industry sources that track petroleum transactions (DP, 2012; PLS, 2012). We focused on the period 2005 to 2012. Though thousands of transactions were announced during this period, a constraint we faced is that limited or no data were publicly available for a large majority of the transactions. Thus we put substantial efforts into identifying transactions with as much non-missing data as possible for the variables of interest. Further, while thousands of transactions were announced during the period 2005 to 2012, only a fraction were cross-border (i.e., transactions where the resource was located in a country that was foreign to either the acquirer firm, seller firm, or both firms). As such, we focused our data collection efforts on multinationals involved in such transactions. We were able to collect data on 404 transactions involving SOEs and NSOEs acquiring petroleum resources across the world. Some of our regressions (in the results section) use this entire sample size of 404 market-based acquisition transactions while other regressions use slightly reduced sample sizes because of missing data for some of the variables of interest.

Table 2 provides the sample characteristics. The transaction value, or the purchase price, is USD 787 million on average. The sample consisted of transactions for acquiring resources for exploitation(34.9%) and exploration (28.7%). Fifty-eight percent of the transactions had a SOE as an acquirer or seller of resources. We highlight the involvement of SOEs in our sample in Figure 1, which illustrates a few examples from our sample (of national governments, their SOEs, and their target countries).

Table 2 Sample characteristics: Acquisitions of petroleum resources by multinationals

Average financial and operations data of acquisition transactions	Mean
• Acquisition transaction value, in millions of dollars	787.3
• Exploration: Value of undeveloped acres, in millions of dollars	50.9
• Exploration: Purchased acreage available for Exploration, in acres	825,092.1
• Exploitation: Net proved + Probable reserves, in barrels of oil equivalent	125,903,459.0
• Exploitation: Daily production (extraction), in barrels of oil equivalent	19,910.8
Distribution of acquisitions by calendar year of announcement	Freq (%)
2005	1.5
2006	7.9
2007	17.1
2008	11.9
2009	12.6
2010	21.3
2011	17.3
2012 (first three quarters of year)	10.4
Distribution of acquisitions by state ownership of firms	Freq (%)
• No state ownership involved: Neither acquirer nor seller is state-owned	41.8
• State ownership involved: Either (or both) acquirer and seller is state-owned	58.2
Distribution of acquisitions: Exploitation vs exploration	Freq (%)
• Exploration (new exploration awards, exploration blocks previously awarded, discoveries not yet under development)	28.7
• Exploitation (producing fields, redevelopment fields)	34.9
• Others (mix of various asset types, corporate M&A, fields under development)	36.4
Distribution of acquisitions by petroleum hydrocarbon type	Freq (%)
Oil	41.3
Gas	24.5
Oil + Gas	18.8
Coal Bed Methane (CBM) Gas	4.0
Oilsands	2.2
Not specified	9.2

Table 2: (*Continued*)

Distribution of acquisitions by regions where hydrocarbon field being bought is located	Freq (%)
• Africa	9.6
• Middle East	2.0
• Former Soviet Union	17.6
• Asia (excluding Middle East and Former Soviet Regions)	7.2
• Europe's North Sea	8.7
• Rest of Europe (excluding North Sea and Former Soviet Regions)	1.7
• Australia	5.9
• North America's Gulf of Mexico	5.0
• North America (excluding Gulf of Mexico)	30.9
• South/Central America	11.4

Notes: Sample size: 404 market-based acquisition transactions (events). Petroleum resources include oil and gas. Oil is defined as "the portion of petroleum that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric conditions of pressure and temperature" (SPE, 2007). Gas (sometimes referred to as natural gas) is defined as "the portion of petroleum that exists either in the gaseous phase or is in solution in crude oil in natural underground reservoirs, and which is gaseous at atmospheric conditions of pressure and temperature" (SPE, 2007).

Measures of Dependent Variables

Exploration and exploitation are so essential in the petroleum industry that they are a part of the industry's standard nomenclature (Gaille, 2010; PLS, 2012; SPE, 2007, 2012). Our binary measures for firms acquiring resources for exploration vs exploitation and our continuous measures for the prices paid are described below. The data for these dependent variables are from one of the years between 2005 and 2012 (whenever the event, i.e., transaction announcement, occurred).

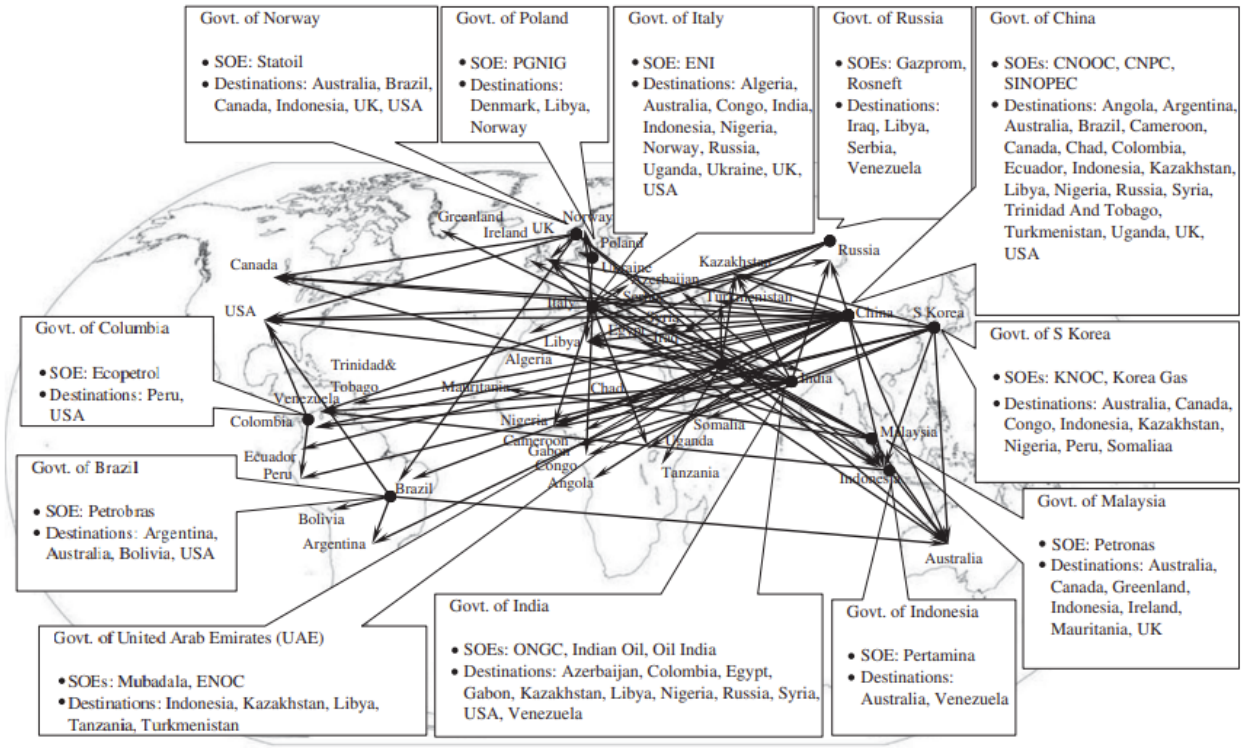

Figure 1 Select examples of governments, their SOEs, and their global destinations (target countries) for acquiring petroleum resources.

Acquiring resources for exploration

This dependent variable is measured as a binary variable. It has a value of 1 if the transaction type clearly indicates resources for exploration. These are transactions of undeveloped resources, or resources that are "expected to be recovered through future investments" (SPE, 2007: 27). These transactions of undeveloped resources are classified as exploration of resources for the first time (new exploration awards), resources that have been awarded but no exploration activity has occurred (exploration blocks previously awarded), or exploration of petroleum resources in areas where discoveries have previously been made but have not been developed and put into production (discoveries not yet under development) (PLS, 2012). It has a value of 0 for all other transaction types, such as those indicating exploitation or those that do not clearly fall in the category of either exploration or exploitation (e.g., mix of various asset types, corporate M&A, or fields under development).

When a firm acquires petroleum resources for exploration, it cannot immediately start generating returns from the resources. This is because the resources (i.e., fields) cannot be exploited (production-related activities) until they have initially been explored and successfully developed into producible fields. Hence the main benefit of acquiring resources for exploration is that it provides the firm with a long-term reserve of unexploited resources that can be used in the future (SPE, 2007).

Price paid for acquiring resources for exploration

We use two proxies to measure the price paid to acquire resources for exploration: (i) value of undeveloped acres purchased, and (ii) deal value per unit acre for exploration (PLS, 2012; SPE, 2012).

First, the *value of undeveloped acres purchased* is measured as the dollar value of the undeveloped portion of the acreage acquired by the multinational. The net undeveloped acreage, in acres, refers to the lease acreage on which wells have not been completed to a point of testing or allowing production (SPE, 2012). The dollar value of this acreage provides the measure of the price paid to acquire resources for exploration (Crawford, 1970).

Second, the *price per unit acre for exploration* is measured as the total purchase price (amount in $) divided by the portion of acreage available for exploration. This measure incorporates how much was paid in total for the deal (in $) as the numerator, divided by the amount of area (in acres) that can be used for exploration. The ratio, in dollars per acre, is used as another measure of the price paid to acquire resources for exploration (PLS, 2012).

Acquiring resources for exploitation

This dependent variable is measured as a binary variable. It has a value of 1 if the transaction type clearly indicates resources for exploitation. These are transactions of developed resources, or resources of "expected quantities to be recovered from existing wells and facilities" (SPE, 2007: 27). These transactions of developed resources are classified as operation of fields in geographic areas where petroleum resources have been found and are currently in production (producing fields), or in geographic areas that were once producing but operation of these fields has previously ceased and has since been revitalized (redevelopment fields) (PLS, 2012). It has a value of 0 for all other transaction types, such as those indicating exploration or those that do not clearly fall in the category of either exploration of exploitation. Once a firm acquires petroleum resources for exploitation, it can generate returns from the resources through production (Gaille, 2010; He & Wong, 2004).

Price paid for acquiring resources for exploitation

We use two proxies to measure the price paid to acquire resources for exploitation: (i) transaction premium for proved and probable reserves, and (ii) transaction value per unit of production (PLS, 2012; SPE, 2012).

First, the *premium paid for proved and probable* reserves is measured as a ratio minus the average of that ratio for all transactions made that year. Specifically, it is the [purchase price in $ / sum of proved and probable reserves in barrels of oil equivalent] for the focal transaction minus the average of the [purchase price in $ / sum of proved and probable reserves in barrels of oil equivalent] for all petroleum transactions that were made that year around the world by various parties. This difference reflects the

extent to which the firm paid a premium (difference is a positive value) or a discount (difference is a negative value). The denominator of the ratio, proved and probable reserves, is calculated as the net reserves expected to accrue to the firm after the host government takes its share under a production sharing agreement/contract (PLS, 2012). Technically, “proved reserves are those quantities of petroleum, which by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under defined economic conditions, operating methods, and government regulations” (SPE, 2007: 28).

Second, the *price per unit of production* is measured as the purchase price (amount in $) divided by the daily production (in barrels of oil equivalent) from the purchased asset. This measure incorporates how much was paid in total (in $) as the numerator, divided by the volume of actual crude petroleum (oil and natural gas) extraction each day. The denominator refers to the net production expected to accrue to the firm after the host government takes its share under a production sharing agreement (PLS, 2012).

Measures of Independent Variables

We lag the independent variables behind the dependent variables to indicate the longitudinal direction of the influence being tested. While the data for the dependent variables are from one of the years between 2005 and 2012, the corresponding data for independent variables “extent of state ownership” and “target country’s resource-richness” are from the years 2002 to 2009. Results of regressions are similar when alternative lag periods (such as one, 2, or 4 years) are used. The data for independent variables “firm’s target country-specific experience” and “firm’s ratio of exploration to exploitation experience” are from the 5 years preceding the date of the focal purchase transaction.

Extent of state ownership

This is measured as the percentage of equity shares of the multinational that is owned by the national government of the multinational’s home country.

Target country’s resource-richness

This is measured, in dollars, as the ratio of the value of the stock of energy resources to the remaining reserve lifetime (World Bank, 2011). It is equivalent to the product of unit resource rents and the physical quantities of energy extraction in the country.

Firm’s target country-specific experience

A multinational’s target country-specific experience is measured in terms of frequency of past involvement in the target country. That is, the number of purchase transactions in the target country during the 5 years preceding the date of the focal transaction.

Measures of Control Variables

Dummy variables for year of transaction

Dummy variables are created to control for the year in which the transaction was announced. The 2005 to 2012 period was a turbulent time, with earlier years being mostly favorable and later years being mostly unfavorable for the global economy.

Dummy variables for region where resource is located

Dummy variables are created to control for ten global regions (listed in Table 2) where the resource being acquired is located. This helps control for numerous extraneous factors (e.g., political and civic unrest, infrastructure, geological features, extraction difficulties, etc.) that can contribute to differences across locations.

Hydrocarbon source

This is a binary variable on whether the hydrocarbon is conventional (e.g., oil, gas, and coal) or unconventional (e.g., tight sands, coalbed, and shale, which are more difficult to extract and require more technological capabilities) (SPE, 2012).

Foreign direct investment

This is measured as ratio of the foreign direct investment inflow to gross domestic product of the target country (Chakrabarty & Bass, 2013a; World Bank, 2011). Inflow of FDI is both an indication of, and a contributor to, better investment climates, and hence we control for the same.

RESULTS

Table 3 provides the descriptive statistics and correlations for our study. Logistic regressions are used to test hypotheses where the dependent variables are binary. These are Hypotheses 1, 3a, and 3b. OLS regressions are used to test the hypotheses where the measures of the dependent variables are continuous. These are Hypotheses 2, 4a, and 4b. The regressions results are presented in Tables 4 and 5.

Competition between SOEs and NSOEs for Resources

Likelihood of acquiring resources for exploration vs exploitation

Consistent with Hypothesis 1, the extent of state ownership has a significantly positive influence on the probability of a multinational deciding to acquire resources for exploration ($\beta = 0.24$ with $p<0.01$ in model A2 of Table 4). Additionally, the extent of state ownership has a significantly negative influence on the probability of a multinational deciding to acquire resources for exploitation ($\beta = -0.26$ with $p<0.001$ in model B2 of Table 4). The findings suggest that, when comparing SOEs with NSOEs, SOEs are more likely to acquire resources for exploration, and NSOEs are more likely to acquire resources for exploitation.

Table 3 Descriptive statistics and correlations: Acquisition of resources by multinational enterprises

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
Dependent variables												
1. Acquisition of resources for exploration	0.29	0.45	1.00									
2. Acquisition of resources for exploitation	0.35	0.48	−0.46	1.00								
3. Price paid (exploration): value of undeveloped acres pur. (millions $)	50.91	307.97	−0.03	−0.11	1.00							
4. Price paid (exploration): price per unit acre for exploration ($/acre)	360.19	1732.00	−0.05	−0.16	0.65	1.00						
5. Price paid (exploitation): premium for proved & probable res. ($/BOE)	4.07	9.99	−0.66	0.40	0.09	−0.09	1.00					
6. Price paid (exploitation): price per unit of production ($/BOE)	5.28E+04	6.68E+04	−0.60	0.23	−0.01	−0.04	0.50	1.00				
Control variables[a]												
7. Hydrocarbon source	0.87	0.33	0.12	0.16	−0.38	−0.46	−0.08	−0.30	1.00			
8. Foreign direct investment (%)	3.17	3.06	−0.03	−0.03	−0.07	−0.05	0.05	−0.01	0.02	1.00		
Independent variables												
9. Extent of state ownership in firm (%)	37.61	41.91	0.18	−0.22	0.13	0.12	−0.33	−0.15	−0.11	−0.01	1.00	
10. Target country's resource-richness ($)	6.16E+10	6.46E+10	0.19	−0.10	0.26	0.34	−0.29	−0.20	−0.10	−0.09	0.04	1.00
11. Firm's target country-specific experience	2.03	3.75	0.22	−0.14	0.14	0.21	−0.06	−0.13	−0.12	−0.03	−0.01	0.50

[a]Additional control variables that are used in this study but not reported above are: dummy variables for *Year of Transaction* [2005 to 2012] and dummy variables for *Region Where Field is Located* [Africa, Middle East, former Soviet Union, Asia (excluding Middle East and former Soviet regions), Europe's North Sea, rest of Europe (excluding North Sea and former Soviet regions), Australia, North America's Gulf of Mexico, North America (excluding Gulf of Mexico), South/Central America].

Price paid by SOEs vs NSOEs for resources for exploration vs exploitation

Consistent with Hypothesis 2, the extent of state ownership has a significantly positive influence on the price paid to acquire resources for exploration ($\beta = 0.16$ with $p<0.01$ in model C2 and $\beta = 0.18$ with $p<0.001$ in model D2 of Table 5). Additionally, the extent of state ownership has a significantly negative influence on the price paid to acquire resources for exploitation ($\beta = -0.23$ with $p<0.001$ in model E2 and $\beta = -0.16$ with $p<0.01$ in model F2 of Table 5). The findings suggest that, when comparing SOEs with NSOEs, SOEs tend to pay higher prices than NSOEs to acquire resources for exploration, and NSOEs tend to pay higher prices than SOEs to acquire resources for exploitation.

Moderators of the influence of state ownership on the likelihood of acquiring resources for exploration

Consistent with Hypotheses 3a and 3b, the influence of state ownership on the probability of acquiring resources for exploration is moderated by the target country's resource-richness ($\beta = 0.14$ with $p = 0.06$ in model A3 of Table 4) and the firm's target country-specific experience ($\beta = 0.20$ with $p<0.05$ in model A4 of Table 4). As shown in the interaction plots in Figure 2, the influence of state ownership on the probability of acquiring resources for exploration is more strongly positive when the target country's

resource-richness and the firm's target country-specific experience are high. That is, when these moderators are high, SOEs are much more likely than NSOEs to acquire resources for exploration.

Table 4 Logistic regressions: Resource acquisition is influenced by extent of state ownership

	Logistic regressions: Standardized parameter estimates β Dependent variables: *Acquire resources…*					
	… for exploration				*… for exploitation*	
	A1	A2	A3	A4	B1	B2
Controls						
Dummy variables for year	yes	yes	yes	yes	yes	yes
Dummy variables for region	yes	yes	yes	yes	yes	yes
Hydrocarbon source	0.17†	0.26**	0.33**	0.33**	0.28***	0.21*
Foreign direct investment	−0.03	−0.05	−0.01	−0.01	−0.05	−0.05
Predictors						
H1: Extent of state ownership		0.24**	0.28**	0.36***		−0.26***
Moderators and interaction effects						
Target country's resource-richness			0.15†			
Firm's target country-specific experience				0.31***		
H3a: (Extent of state ownership×Target country's resource-richness)			0.14†			
H3b: (Extent of state ownership×Firm's target country-specific experience)				0.20*		
Prediction accuracy (% concordant)	75.6%	76.9%	77.3%	80.7%	67.7%	71.0%
Pseudo (Nagelkerke) R^2	0.241	0.267	0.289	0.363	0.136	0.174
Likelihood ratio χ^2	74.50	83.27	90.97	112.05	42.03	54.62
p-value	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	<0.0001
Hosmer and Lemeshow goodness of fit test: χ^2	4.46	8.99	7.19	10.26	5.99	7.67
(… non-significance indicates good fit) *p*-value	0.81	0.34	0.52	0.25	0.65	0.47

Notes: *$p \leqslant 0.05$, **$p \leqslant 0.01$, ***$p \leqslant 0.001$, †$p \leqslant 0.10$ (conservative two-tailed tests). Sample size = 404 acquisition transactions (events). Sample consists of purchase transactions by both SOEs and NSOEs, because the hypotheses compare SOEs to NSOEs. Dependent variable is with regard to events (announcements of transactions) between the years 2005 and 2012. Independent variables are lagged behind the dependent variable. Independent variables are centered (mean = 0) and standardized. Max VIF = 1.28, indicating no evidence of multicollinearity. Results are very similar when independent variables are winsorized at 0.5 and 99.5 percentiles, which indicates that the results are not influenced by outliers.

When comparing SOEs with NSOEs, SOEs are more likely to acquire resources for exploration, and NSOEs are more likely to acquire resources for exploitation. Supportive examples from our data are as follows: (1) Australia as the target country: SOEs tended to acquire resources for exploration in Australia – CNOOC (100% owned by China) in 2010 and 2012, Statoil (67% owned by Norway.) in 2012, Petrobras (54% owned by Brazil) in 2010, and ENI (30% owned by Italy) in 2011, whereas NSOEs tended to acquire resources for exploitation in Australia – Itochu (Japan) in 2007, Sojitz (Japan) in 2008, and Vermilion Energy (Canada) in 2007. (2) Canada as the target country: SOEs tended to acquire resources for exploration in Canada – Sinopec (100% owned by China) in 2005 and Korea Gas (27% owned by South Korea) in 2010, whereas NSOEs tended to acquire resources for exploitation in Canada – Centrica (Britain) in 2010 and Quicksilver (USA) in 2010.

Table 5 OLS regressions: Price paid for resources is influenced by extent of state ownership

	OLS regressions: Standardized parameter estimates β Dependent variables: *Price paid for resources…*											
	… for exploration								*… for exploitation*			
	Value of undeveloped acres purchased				Price paid per unit acre available for exploration				Premium paid for proved & probable reserves		Price paid per unit of production	
	C1	C2	C3	C4	D1	D2	D3	D4	E1	E2	F1	F2
Controls												
Dummies for year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Dummies for region	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hydrocarbon source	−0.40***	−0.36***	−0.26***	0.24***	−0.46***	−0.41***	0.32***	0.38***	−0.06	−0.11	−0.24***	−0.28***
Foreign direct investment	−0.07	−0.07	−0.03	−0.05	−0.09†	−0.09†	−0.04	−0.07	0.00	0.02	−0.01	−0.01
Predictors												
H2: Extent of state ownership		0.16**	0.25***	0.24***		0.18***	0.24***	0.27***		−0.23***		−0.16**
Moderators and interaction effects												
Target country's resource-richness			0.25 ***				0.31***					
Target country-specific-experience				0.09†				0.15**				
H4a: (Extent of state ownership×Target country's resource-richness)			0.28 ***				0.23***					
H4b: (Extent of state ownership×Target country-specific experience)				0.18***				0.21***				
R^2	0.1850	0.2027	0.2951	0.2317	0.2901	0.3126	0.4019	0.3579	0.2207	0.2557	0.2149	0.2302
F-value	4.41	4.67	6.92	4.71	7.79	8.19	10.88	8.52	4.04	4.63	4.51	4.71
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ΔR^2		0.0177	0.0924	0.0290		0.0225	0.0893	0.0453		0.0350		0.0153
F-value		7.74	22.73	5.98		11.22	25.37	24.84		12.03		6.72
p-value		0.006	<0.001	0.003		0.001	<0.001	<0.001		<0.001		0.010

Notes: *$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$, †$p \leq 0.10$.
Sample sizes: 369 acquisition transactions (events) for models C1 to C4, 361 for models D1 to D4, 276 for models E1 and E2, and 319 transactions (events) for models F1 and F2. Samples consist of purchase transactions by both SOEs and NSOEs, because the hypotheses compare SOEs with NSOEs. Variations in sample sizes are due to missing data for variables. Dependent variable is with regard to events (announcements of transactions) between the years 2005 and 2012. Independent variables are lagged behind the dependent variable. Variables are centered (mean = 0) and standardized. Max VIF = 1.21, indicating no evidence of multicollinearity. Results are very similar when independent variables are winsorized at 0.5 and 99.5 percentiles, which indicates that the results are not influenced by outliers.

Moderators of the influence of state ownership on the price paid for resources for exploration

Consistent with Hypotheses 4a and 4b, the influence of the state ownership on the price paid to acquire resources for exploration is moderated by the target country's resource-richness (β =0.28 with p<0.001 in model C3 and β =0.23 with p<0.001 in model D3 of Table 5) and the firm's target country specific experience (β =0.18 with p <0.001 in model C4 and β= 0.21 with p<0.001 in model D4 of Table 5). As shown in the interaction plots in Figure 2, the influence of state ownership on the price paid to acquire resources for exploration is more strongly positive when the target country's resource-richness and the firm's target country-specific experience are high. That is, when these moderator variables are high, SOEs pay much higher prices than NSOEs to acquire resources for exploration.

Post-hoc Analysis: Heterogeneity among SOEs

In previous sections, we argued that SOEs are more likely than NSOEs to acquire resources for exploration and pay higher prices for these resources. This argument should not be incorrectly interpreted to imply somehow that SOEs never acquire resources for exploitation. In fact, there is heterogeneity (i.e., variance) among SOEs in terms of the resources they choose to acquire, and we carried out post-hoc analysis to illustrate the same. We calculated a variable ratio of exploration to exploitation experience of SOEs as the [(number of purchases of resources for exploration) / (number of purchases of resources for exploitation+1)] during the 5 years preceding the

date of the focal transaction. In a subsample comprising only of SOEs, we found that this variable has a significantly positive influence on the prices the SOEs pay to acquire resources for exploration ($\beta = 0.16$ with $p<0.05$ in model G2 and $\beta = 0.30$ with $p<0.001$ in model H2 of Table 6) and a significantly negative influence on the prices the SOEs pay to acquire resources for exploitation ($\beta = -0.25$ with $p<0.001$ in model I2 and $\beta = -0.23$ with $p<0.05$ in model J2 of Table 6). The findings suggest heterogeneity among SOEs. SOEs that participate in fewer exploration activities are possibly inexperienced in this strategic activity, possibly have stronger business intent, or are more inclined to satisfy the short-term consumption demands in their home countries. Such SOEs are more willing than other SOEs to pay higher prices for resources for exploitation. Figure 3 illustrates the characteristics of countries that have SOEs.

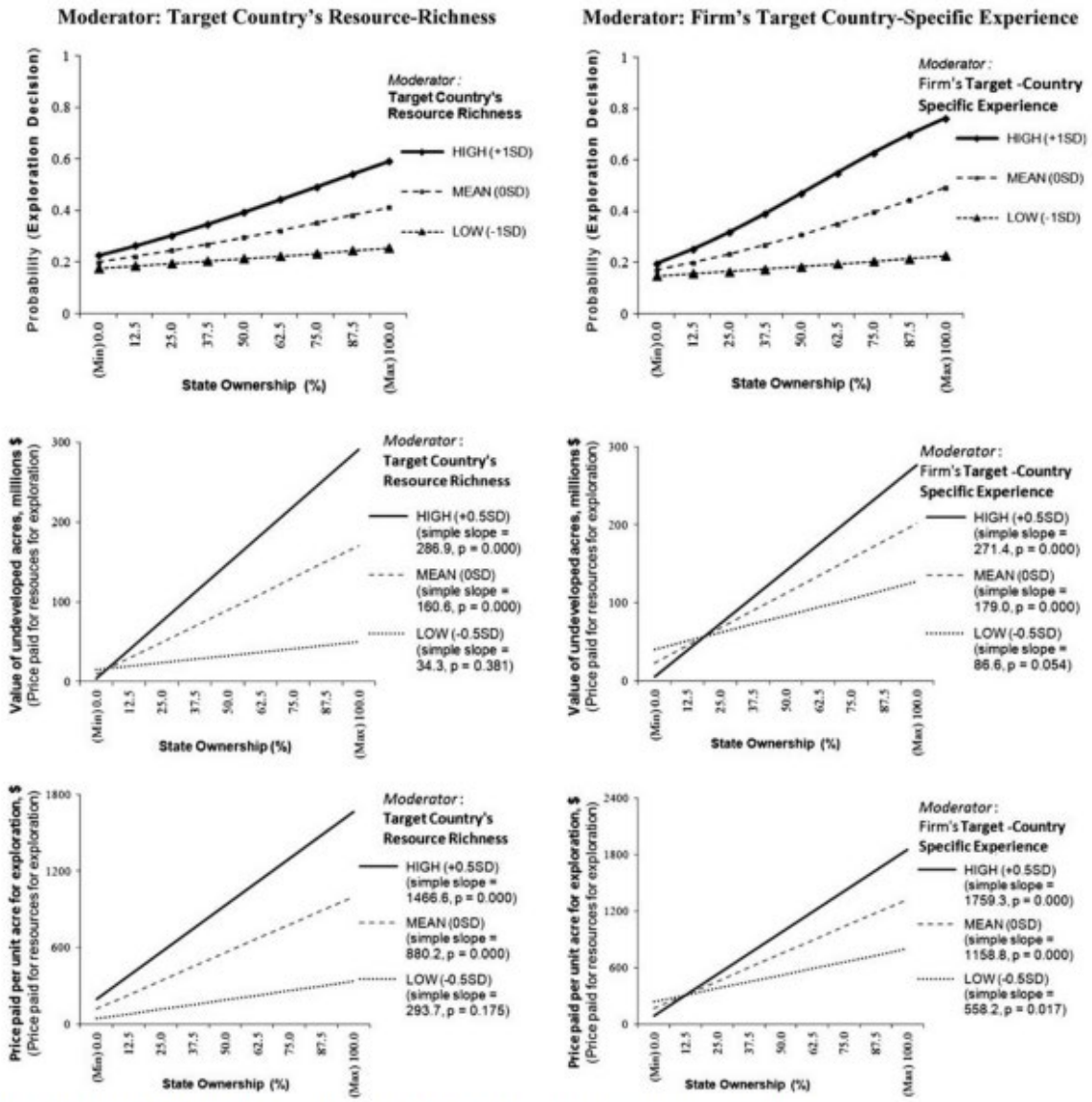

Figure 2 Interaction plots: Influence of state ownership on the acquisition of resources for exploration.

Table 6 Post-hoc analysis on heterogeneity among SOEs: Ratio of exploration to exploitation experience among SOEs influences prices paid

	OLS regressions: Standardized parameter estimates β Dependent variables: *Price paid by SOE for resources…*							
	… for exploration				*… for exploitation*			
	Value of undeveloped acres purchased		Price paid per unit acre available for exploration		Premium paid for proved & probable reserves		Price paid per unit of production	
	G1	G2	H1	H2	I1	I2	J1	J2
Controls								
Dummies for year	yes	yes	yes	yes	yes	yes	yes	yes
Dummies for region	yes	yes	yes	yes	yes	yes	yes	yes
Hydrocarbon source	−0.30*	−0.27*	−0.30**	−0.25*	0.07	0.08	−0.40**	−0.43**
Foreign direct investment	−0.07	−0.05	−0.07	−0.04	0.09	0.07	0.01	0.00
Predictors								
SOE's ratio of exploration to exploitation experience		**0.16***		**0.30*****		**−0.25*****		**−0.23***
R^2	0.2978	0.3152	0.4697	0.5281	0.3119	0.3521	0.2977	0.3353
F-value	3.51	3.59	7.08	8.42	2.32	2.60	2.71	3.03
p-value	<0.001	<0.001	<0.001	<0.001	0.005	0.0013	<0.001	<0.001
ΔR^2		0.0174		0.0584		0.0402		0.0376
F-value		3.96		17.70		5.65		6.46
p-value		0.048		<0.001		0.020		0.012

Notes: *$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$, †$p \leq 0.10$.
Sample sizes: 168 acquisition transactions (events) for models G1 and G2, 163 for models H1 and H2, 111 for models I1 and I2, and 134 transactions (events) for models J1 and J2. Samples consist of purchase transactions by SOEs only, because the hypotheses are about heterogeneity among SOEs. Variations in sample sizes are due to missing data for variables. Dependent variable is with regard to events (announcements of transactions) between the years 2005 and 2012. Independent variables are lagged behind the dependent variable. Variables are centered (mean = 0) and standardized. Max VIF = 1.21, indicating no evidence of multicollinearity. Results are very similar when independent variables are winsorized at 0.5 and 99.5 percentiles, which indicates that the results are not influenced by outliers.

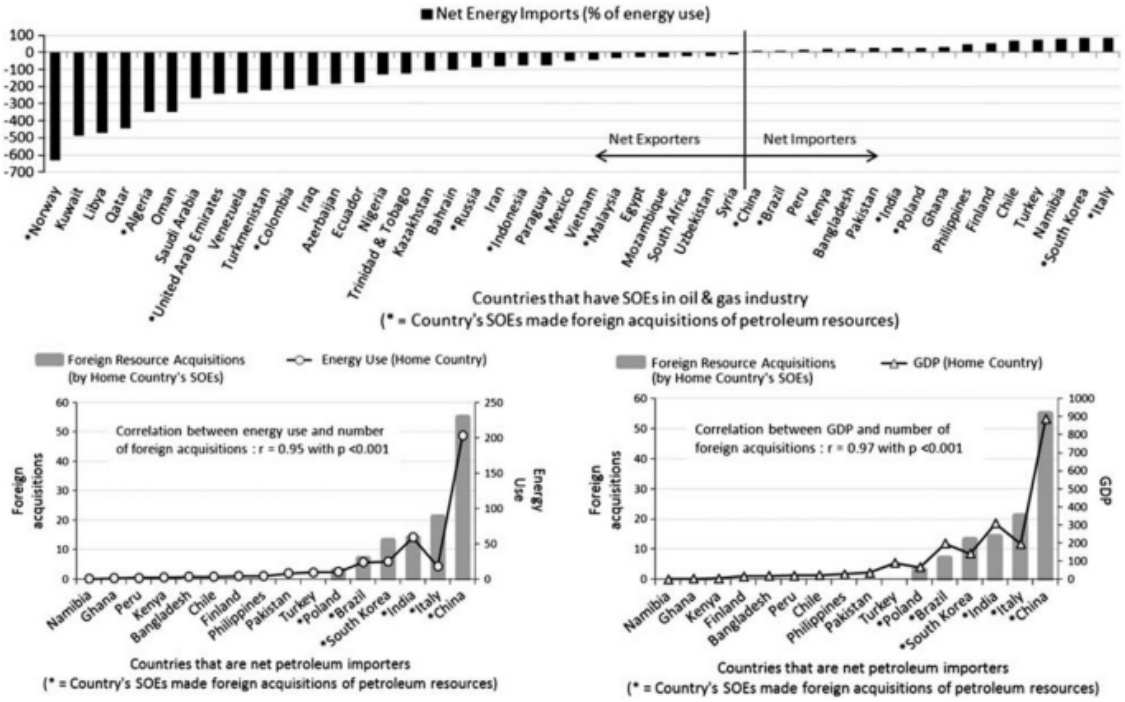

Figure 3 Home countries of SOEs: Net importers, energy use, GDP, and foreign resource acquisitions.
Notes:Net energy imports (% of energy use): [(energy use – production) / energy use]; positive = net importer; negative = net exporter. *Energy use*: in 10^4 kt of oil equivalent; indigenous production plus imports and stock, minus exports. *GDP*: Gross domestic product in 10^{10} dollars using purchasing power parity rates. (References: DP, 2012; PLS, 2012; World Bank, 2011).

CONCLUSION

SOEs that invest abroad to acquire resources operate at the crucial intersection between the political economy and international business. Many governments encourage SOEs to acquire resources in foreign countries, not necessarily for immediate benefits, but as a safeguard for the country's economic and geopolitical future. SOEs that are constrained rather than encouraged by their home-country governments risk falling behind in the global race for scarce resources.

Contributions to Theory

Our study offers several theoretical implications. First, we provide insight into ownership considerations. Many SOEs are actively supported by their home-country governments to invest abroad to acquire resources. We connect the notion of differences in ownership orientations to differences in the resources acquired. In comparison with NSOEs, SOEs are more concerned with pursuing long-term energy and economic security, operating as capitalist foreign-policy arms of their home-country governments, and striving to enhance geopolitical position and power. Operating with both political intent and business intent, SOEs are more likely to acquire resources for exploration to decrease their future dependence on other firms in the industry and provide resource security to their home country. For SOEs, securing the future is about securing future resource independence. It provides SOEs with solace in knowing that they have secured resources that, though not ready for immediate exploitation, could certainly be developed and exploited in the future when the need arises.

Second, we examine how multinationals acquire resources to secure their future. Traditional conceptualizations of RDT focus on the resources that firms need to be powerful at present (Pfeffer & Salancik, 1978; Wry et al., 2013). The only mention of future-oriented firm action is in relation to constraining behavior: "response to the demands of one group constrains the organization in its future actions" (Pfeffer & Nowak, 1976: 43). This study moves beyond traditional RDT arguments by suggesting that forward-looking valuation of resources is needed. As shown in this study, some multinationals strategize for long-term resource security. That is, they acquire resources in which value can be determined by exploration and can be held in reserve to secure the firm's (or home government's) future. For these multinationals, acquiring these resources is worth more than acquiring resources that are exploitable at present. This is in contrast to multinationals that strategize for short-term resource security. These multinationals acquire resources for exploitation to satisfy short-term market demands and to provide prompt return on investment to shareholders. Hence it is important to recognize that multinationals may view and pursue resource security differently.

Finally, we provide insight into multinationals and the need to encourage them to invest abroad (Crilly, 2011; Gomes & Ramaswamy, 1999). When a multinational invests abroad, this investment outflow might be perceived as a short-term loss for the home country. However, we suggest that investments abroad help the home country in the

long-term if they are made to acquire resources to secure the country's future. Apart from reducing future dependence on foreign entities, multinationals also cross borders because of political intent. SOEs operate internationally to gain access to resources in a way that secures the home country's future in terms of economic gains, geopolitical position, and power.

Implications for Policy and Practice

Insights into the complexities of the petroleum industry

Traditionally, SOEs represented nationalism in their home countries and helped create and redistribute domestic wealth among citizens. Why, then, are SOEs crossing borders to invest and compete abroad? SOEs in the petroleum industry (also termed as National Oil Companies, or NOCs) are attempting to secure the future for their home countries. Within this industry, it is largely recognized that, "NOCs' immediate priority is to secure oil supplies" (Karev, 2013: 18). Future energy security stems from building an international petroleum resource portfolio (Mehta, 2013). Given the complexity, and at times instability, of the petroleum market, governments can secure their countries' future by directing their NOCs to acquire petroleum resources in foreign countries. These countries with NOCs feel secure in having a globally dispersed petroleum resource portfolio that can be tapped when needed. Thus an investment made abroad is not necessarily a loss of investment at home. An investment abroad in terms of acquiring petroleum resources means securing control of these resources now as a safeguard for the country's future.

Heterogeneity in home country's internal resource demand

The lack of sufficient resources within a country to meet the country's internal demands can make the country dependent on imports from foreign entities. Such countries are net importers of resources (Karev, 2013). In order to reduce dependence on imports from foreign entities, the governments of these countries are likely to encourage their NOCs to invest abroad to acquire the resources. In our sample, as illustrated in Figure 3, this holds true for the following countries: China, India, Italy, South Korea, Brazil, and Poland. Select examples of NOCs from these countries and their destinations for acquiring resources were illustrated in Figure 1.

In contrast, there are countries that have more than enough resources to satisfy internal demands and are therefore not dependent on imports from foreign entities. Such countries are often net exporters of resources (Karev, 2013). With abundance of resources at home available for export, the governments of such countries do not necessarily need to encourage their NOCs to invest abroad to acquire more resources (Marcel, 2006). Accordingly, we observed that numerous NOCs (such as those from countries in the Middle East – Aramco of Saudi Arabia, KPC of Kuwait, NIOC of Iran, North Oil Company of Iraq, etc.) do not appear in our sample. As illustrated in Figure 3, there are at least 23 countries that are net exporters and have NOCs but their NOCs have not invested abroad to acquire resources.

The exceptions – net exporters investing abroad to acquire even more resources

There are exceptions to the above logic. There are multiple countries that have more than enough resources within their borders to satisfy internal demands and are net exporters of resources. Yet these countries' NOCs still invest abroad to acquire more resources. As shown in Figure 3, there are at least seven countries that are net exporters and yet their NOCs are investing abroad to acquire more resources: Norway, Algeria, United Arab Emirates, Colombia, Russia, Indonesia, and Malaysia.

Take Russia as an example from this group. NOCs from Russia, including Gazprom and Rosneft, are increasingly investing abroad. This is a surprising finding since Russia, as shown in Figure 3, is a net exporter. Why are Russian NOCs making crossborder acquisition of petroleum resources despite having plentiful resources within the country's borders? We believe this surprising fact highlights an interesting complexity that is only made explicit when studying multinational NOCs. We examined publicly available corporate documentation (press releases, presentations, and transcripts from Q&A sessions with investors) to understand this complexity further. Consider a transaction in which Rosneft, a Russian NOC, bought resources for exploration in the US from ExxonMobil. An executive from Rosneft commented that the transaction lays "the foundation for long-term growth of the Russian oil and gas industry" and that it "will allow Rosneft to become one of the global leaders in the oil and gas industry." Similarly, consider a transaction in which Gazprom, a Russian NOC, acquired resources for exploration in Iraq. An executive for Gazprom commented: "Based on our positive experience in cooperation with the Republic of Iraq … the company had decided to expand its presence in this country. Carrying out these projects will allow Gazprom … to expand its presence abroad." Since 2005, Russian NOCs have invested in resource acquisitions in countries – such as Iraq, Libya, and Venezuela – that are of major geopolitical interest to the world. By investing abroad to acquire more resources despite their abundance at home, Russian NOCs are increasing their geopolitical position and power. This increasingly international resource portfolio of Russian NOCs suggests that, in the future, other countries might be more dependent on Russia (and Russian NOCs) to access petroleum resources.

In the last few decades, most of these net exporting countries – Norway, United Arab Emirates, Algeria, and Russia – have created sovereign wealth funds (SWFs) from revenues from the export of petroleum resources. Norway's "Government Pension Fund" has assets of more than $800 billion, UAE's "Abu Dhabi Investment Authority" and other smaller SWFs have combined assets of more than $800 billion, Russia's "National Welfare Fund," "Reserve Fund," and "Russian Direct Investment Fund" have combined assets of more than $185 billion, and Algeria's "Revenue Regulation Fund" has assets of more than $75 billion (SWF, 2013). Governments direct their SWFs to channel financial capital into international investments that directly or indirectly help NOCs acquire petroleum resources across the world. The presence and influence of

SWFs in the acquisition of petroleum resources possibly highlights the aspiration among some countries to increase their geopolitical position and power.

The dominance of Chinese NOCs

Both China and Russia have substantial amounts of petroleum resources within their borders. However, unlike Russia, China is a net importer. This is because, as illustrated by the energy use and GDP numbers in Figure 3, the demand for resources within China is very high and the resources within China's borders are not sufficient. China is projected to increase its demand for natural gas alone by over 300% over the next 20 years (Karev, 2013). For Chinese NOCs, investing abroad is not just about securing the future in terms of geopolitical position and power – it is also about satisfying demand. We see this sentiment reflected in the headlines related to Sinopec, a Chinese NOC, that spent over $17 billion in the 9 months from March to December 2010: "Sinopec acquires interest in Angola Block 18 from parent for $2.5B" (28 March), "ConocoPhillips sells interest in Syncrude Project to Sinopec for $4.65B" (12 April), "Hupecol sells interests in four Llanos Basin blocks to Sinopec for $281M" (18 August), "Sinopec acquires 40% interest in Repsol's Brazilian business for $7.1B" (1 October), "Sinopec acquires 18% interest in Gendalo-Gehem project from Chevron for $680M" (2 December), and "Sinopec acquires Argentina unit of Oxy for $2.5B" (10 December) (DP, 2012; PLS, 2012). Our data suggest that Chinese NOCs acquire resources wherever possible: Angola, Argentina, Australia, Cameroon, Canada, Chad, Colombia, Ecuador, Indonesia, Kazakhstan, Libya, Nigeria, Russia, Syria, Trinidad and Tobago, Turkmenistan, Uganda, UK, and USA. If SOEs and NSOEs from other countries decide to compete for resources with similar vigor, the result could be intense bidding wars for resources across the world.

Limitations and Future Research

We acknowledge the limitations of our study. First, because we focus on state ownership, it is outside the scope of this study to examine the competition among NSOEs. Future research not specifically focused on SOEs could use resource security theory to investigate competition among NSOEs. Second, future research could examine differences between ownership and control (Musacchio & Lazzarini, 2014). Although we focus on ownership in this study, comparing ownership and control could provide more insight into the arguments made in this study. Third, this study utilized the exploration vs exploitation framework. Future research can extend resource security theory to examine alternative frameworks and settings, such as those on corporate social responsibility, sustainability of resource usage (Chakrabarty & Wang, 2012, 2013), and resource scarcity in institutional voids (Chakrabarty & Bass, 2013b, 2014, forthcoming). Finally, we acknowledge some countries may be less inviting for SOEs than others. The role of government not as an owner, but as an approving mechanism that foreign acquirers have to face, can be an avenue for future research.

Concluding remarks

This study developed a theory of resource security and used it to examine the influence of state ownership on resource acquisition decisions by firms investing abroad. For SOEs, resource security implies having sufficient resources as a safeguard for the future. By acquiring resources with a long-term perspective, SOEs can secure the country's future not only by reducing dependence on foreign entities but also by increasing geopolitical position and power of the Country.

ACKNOWLEDGEMENTS

The authors thank Alvaro Cuervo-Cazurra, Kannan Ramaswamy, Andrew Inkpen, Aldo Musacchio, and the reviewers for their valuable guidance. The authors extend their gratitude to the industry professionals and members of the Society of Petroleum Engineers that provided fruitful insights for this research, especially Derek Longfield, Don Verdonck, Ali Rizvi, Stephen Longfield, John Essex, and Yashodeep Deodehar. A previous version of this research was presented at Harvard Business School's 2013 conference, Governments as Owners: Globalizing State Owned Enterprises. Both authors contributed equally to this article.

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