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China's outward foreign direct investment: Location choice and firm ownership

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ABSTRACT

This article evaluates the international location decisions made by public listed Chinese firms during the period 2006–2008, using a Poisson count data regression model. Further, we categorize the firms into state-controlled and privately owned according to majority ownership. We find that the determinants of internationalization differ based on ownership. State-controlled firms are attracted to countries with large sources of natural resources and risky political environments. Private firms are more market seekers. Although all firms have strategic intent, the attraction is commercially viable technology rather than core research content. Our findings also show that existing theories can sufficiently explain the actions of private Chinese firms, but adjustments are needed to understand the behavior of state-controlled multinationals.

1. Introduction

Outward FDI from emerging economies has been considered to be one of the "big questions" in the 21st century International Business research agenda (Mathews, 2006). Two reasons motivate this agenda. First, FDI outflow from developing countries (e.g. China, India, and Malaysia) has increased dramatically in recent years. They accounted for 16% of global outward FDI in 2008, up 13% from 2007 (UNCTAD, 2009). Second, the ability of multinationals (MNCs) from the developing world to invest abroad seems to defy the fundamentals theories of internationalization (Child & Rodrigues, 2005). How could firms without obvious ownership advantages succeed to become among the world's largest firms in their respective industries? This predicament has mooted several researchers to develop new theories. At the very least an overhaul of existing theories is warranted (Buckley et al., 2007; Liu, Buck, & Shu, 2005; Mathews, 2006).

No emerging economy has received as much attention as China—whether by researchers or popular media. Three reasons explain the limelight that China gets. First, until recently, China has been known as a destination of global investment. However, since 2003, investment abroad by Chinese firms has increased substantially (see Fig. 1). In 2008, outward FDI from China surged to USD 52 billion, up 132% from 2007, making it the 13th largest source of capital in the world and third among developing countries (UNCTAD, 2009). However, the size of China's OFDI has to be seen in perspective. Averaging the amount between 2006 and 2008, China's OFDI is a little more than a tenth of FDI from the US, about a fifth of the UK and Germany, and a little more than a half of Hong Kong. Despite the relatively small volume of investment, a great deal of publicity has been generated by the actions of Chinese companies, particularly through M&As of several high profile targets.[1]

Second, Chinese firms seem to be investing into countries that do not fit the standard profile of host locations. Since 1991, there have been some dramatic changes in the geographical distribution of China's OFDI. In the 1990s, Canada, the U.S. and Australia hosted about 40% of Chinese OFDI, but by 2005, the proportion had reduced to 10%. In contrast, developing countries, particularly in Asia and South America, accounted for nearly 90% in 2005. In 2008, Asia continues to dominate (mainly due to flows to Hong Kong) while countries in the African continent accounted for nearly 10% of investment flows (see Table 1). A cursory look at the top destinations of China's OFDI reveals a rather strange set. As shown in Table 2, OFDI tends to flow to tax havens like Cayman Islands, neighboring territories like Hong Kong as well as untypical destinations like Laos, Nigeria and Mali. Third, the change in the

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[1] For instance, Lenovo's acquisition of IBM's PC operation in 2004, CNOOC's attempt to acquire Unocal in 2005 and more recently an unsuccessful attempt by Chinalco to increase its stake in Rio Tinto. In March 2010, Geely (a Zhejiang based car company) successfully signed a deal to acquire Volvo from Ford. For more high profile deals involving Chinese companies in 2009 see

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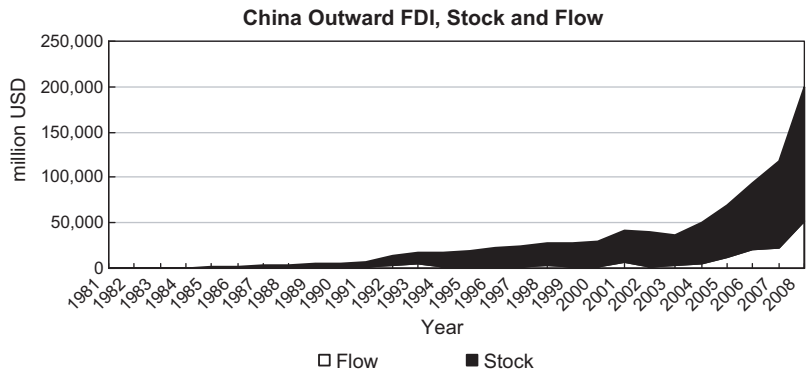

Fig. 1. China OFDI: stock and flow, 1981–2008.UNCTAD, FDI Statistics, www.unctad.org.

industrial distribution of OFDI in recent years is also equally dramatic. Manufacturing accounted for nearly 60% of OFDI in the 1990s (Cheung & Qian, 2009), but had dropped to a mere 3% by 2008. Despite sensational media reports, the mining sector accounted for only about 10% of OFDI in 2008 (see Table 3). Sectors that seem to be gaining momentum are in the services sector, particularly business services, finance and retail.

The objective of this paper is to consider one aspect of China's OFDI, namely its locational determinants. Despite a few attempts by others (Buckley et al., 2007; Cheng & Ma, 2008; Cheung & Qian, 2009; Kolstad & Wiig, 2009) to consider this issue systematically, results are inconclusive. The scarcity of such studies is due to limited time series in Chinese OFDI on the one hand,[2] and the type of outflow data used on the other.[3] Perhaps it is for these reasons that other researchers have resorted to case based analysis to unravel the motivations behind the internationalization process of Chinese firms (Deng, 2007, 2009; Rui & Yip, 2008). In this paper, we attempt to merge these two aspects – where and why – of Chinese OFDI by using a unique dataset of listed Chinese companies. Our dataset, which comprises the location of individual firm's FDI, allows us to segment internationalizing Chinese firms into state-owned and private. Thus, the determinants of location decisions based on ownership can be examined. In addition, by utilizing count data, i.e. the number of investment projects in country *i*, we avoid the tax haven problem that has plagued other similar studies (Cheng & Ma, 2008; Kolstad & Wiig, 2009; Morck, Yeung, & Zhao, 2008). Our findings suggest that there is indeed a need to reconsider the existing theories of international location choice, particularly when OFDI of firms from developing country like China is brought into the equation. More specifically, we find that some determinants of location choice among state-owned Chinese firms are inconsistent with existing theories. Our results have a direct implication to host countries intending to attract greater Chinese FDI. Given the differences between state-owned and private firms, targeting the right type of firms based on their locational determinants becomes imperative.

2. Previous literature and hypotheses development

Previous research on China's OFDI can be divided into three types. The first type tends to be descriptive and provide some justifications as to the state of OFDI at different time periods (Cai, 1999; Hong & Sun, 2004). The second type provides more strategic emphasis and uses case studies of well-known Chinese firms to explain the motivations behind the global outreach of Chinese firms (Deng, 2007, 2009; Rui & Yip, 2008). The third uses macro level data to unravel location choice and factors that push the Chinese firms to go abroad (Buckley et al., 2007; Cheng & Ma, 2008; Cheung & Qian, 2009). In this paper we attempt to merge the latter two types to show locational determinants using firm level decisions.

2.1. Motivations behind China's OFDI

Dunning's eclectic paradigm conveniently explained the motivations behind international investments of firms from developed countries as market, efficiency (or cost reduction) or resource (or strategic asset) seeking. In a much quoted study, Chakrabarti (2001) found that market seeking motivations (especially per capita GDP) seems to be the most robust while other variables are "highly sensitive to small alterations" (p. 108). However, a sound theoretical justification can still be used to explain the determinants of FDI. Now, whether the eclectic paradigm can still explain the motivations behind those firms from

Table 1
China's OFDI—destination, 2003–2008.

Year	Destination of outward FDI flow (%)					
	Asia	Latin America	Europe	Africa	North America	Oceania
2003	52.5	36.5	5.3	2.6	2	1.1
2004	54.6	32	3.1	5.8	2.3	2.2
2005	35.6	52.6	4.2	3.3	2.6	1.7
2006	43.5	48.0	3.4	2.9	1.5	0.7
2007	62.6	18.5	5.8	5.9	4.3	2.9
2008	77.9	6.6	1.6	9.8	0.6	3.5
Average	54.44	32.37	3.90	5.06	2.21	2.02

Statistical Bulletin of China's Outward Foreign Direct Investment, 2008 accessed from http://hzs2.mofcom.gov.cn/accessory/200909/1253869308655.pdf.

Table 2
Top ten China's OFDI location, 2000–2008.

Country	Year 2000 % of OFDI	Country	Year 2006 % of OFDI	Country	Year 2008 % of OFDI
Hong Kong	55.1	Cayman Islands	44.4	Hong Kong	69.1
Myanmar	3.3	Hong Kong	39.3	South Africa	8.6
Australia	3.2	Virgin Islands (E)	3.1	Virgin Island (E)	3.8
South Africa	3.2	Russia	2.6	Australia	3.4
Mali	2.9	United States	1.1	Singapore	2.8
Lao PDR	2.4	Singapore	0.7	Cayman Island	2.7
Canada	2.3	Algeria	0.6	Macao	1.2
Brazil	2.1	Australia	0.5	United States	0.8
Mexico	2.0	Germany	0.4	Russia	0.7
Viet Nam	1.8	Nigeria	0.4	Germany	0.3

China Statistical Yearbook, various years; The Almanac of China's Foreign Trade and Economic Cooperation, 2000.

[2] China's OFDI data that is consistent with the OECD and IMF are only available from 2003 onwards (Cheung & Qian, 2009).

[3] Buckley et al. (2007) and Cheung and Qian (2009) use approved FDI outflow, while Cheng and Ma (2008) and Kolstad and Wiig (2009) use actual FDI flows.

Table 3
China's OFDI—industrial distribution, 2003–2008.

Year	Manufacturing	Mining	Transportation and storage	Business services	Wholesale and retail	Finance	Real Estate	Others[a]
2003	21.8	48.4	3	9.8	12.6			4.4
2004	13.8	32.7	15.1	13.6	14.5			10.3
2005	18.6	13.7	4.7	40.3	18.4			4.3
2006	4.3	40.4	6.5	21.4	5.2	16.7[b]	1.8[b]	3.7
2007	8	15.3	15.4	21.2	24.9	6.3	3.4	5.5
2008	3.2	10.4	4.8	38.8	11.7	25.1	0.6	5.4

Statistical Bulletin of China's Outward Foreign Direct Investment, 2008 accessed from http://hzs2.mofcom.gov.cn/accessory/200909/1253869308655.pdf.

[a] Others mainly include technology service, construction, agriculture, and utility provision.
[b] Data before 2006 did not specify FDI volume of finance and real estate industry respectively.

emerging markets has been a subject of interest (Child & Rodrigues, 2005; Luo & Tung, 2007; Miller, Thomas, Eden, & Hitt, 2008; Yiu, Lau, & Bruton, 2007). Two issues are highlighted by previous research. On the one hand, firms from emerging markets seem to have weak ownership advantages. They also however seem to have leaped frog certain stages in the internationalization process (Luo & Tung, 2007; Mathews, 2006). Thus, they tend to engage in OFDI in order to acquire strategic assets to augment the ownership advantages that they lack (Child & Rodrigues, 2005; Luo & Tung, 2007; Yiu et al., 2007). The desire to augment such an advantage is so strong that they are willing to adopt aggressive, high risk targets. The only ownership advantage that they possess seems to come from the home country, for example low cost production bases, home networks and the experience of operating in a market with significant government presence (Cui & Jiang, 2008; Mathews, 2006).

Buckley et al. (2007) were among the earliest authors to question if existing FDI theories could explain the China OFDI phenomenon because of two distinct differences: (a) capital market imperfections in China provided SOEs access to funds at below market rates, allowing them to invest in riskier location. In addition, Morck et al. (2008) pointed to the extraordinary high savings rate among Chinese SOEs and weak corporate governance to manage these savings as an explanation as to why investments can afford to take place in countries with weak institutions; (b) the investment behavior of Chinese firms are significantly influenced by the policies of the Chinese government. Through the approval system and/or currency control mechanisms (Cheung & Qian, 2009), the authorities were able to allocate OFDI according to the objectives of the State.

The distinct features described above provide China with a potent force to charter its economic performance both in the short and long term. It is evident that China seriously lacks natural resources to support its phenomenal growth. Growing at double digits for more than a decade require large, cheap and easy access to natural resources. However, the significance of natural resources as a pull factor is not conclusive as previous research tends to provide conflicting results. Buckley et al. (2007) suggested that China's OFDI is attracted to natural resources in high (political) risk countries (e.g. Sudan, Democratic Republic of Congo, etc.) whereas Cheung and Qian (2009) and Kolstad and Wiig (2009) found otherwise. Bhaumik and Co (2009) reported a positive relationship but concluded that the coefficient was too small to make much economic sense. The sectoral distribution of China's OFDI (Table 3) shows that the mining industry was an important one between 2003 and 2006. However, in recent years, there has been a marked drop in its significance. Nevertheless, recent efforts by Chinese firms to secure natural resources in Africa, particularly those that attracted media attention[4] were after 2005 (Cheung & Qian, 2009), a period not covered by most studies. As with most other studies, we test the attraction of natural resources by using the host location's exports of ore and minerals as proxy.

Given the confusion of previous literature, we test the attraction of natural resources by hypothesizing that:

H1. Chinese OFDI is attracted to countries which possess large supply of natural resources.

Related to the issue of natural resources is the question whether Chinese firms are attracted to countries that are politically risky. Fig. 2 provides a snapshot of political risk and Chinese OFDI stock in 2008. Countries to the right of the *X*-axis indicate a lower political risk. There seems no apparent evidence to show that more Chinese investments are in riskier countries. Buckley et al. (2007) did find a positive relationship. They claimed that most Chinese OFDI (at least for the time period considered by the authors) was government led. They tend to be promoted by political affiliations and connections between China and other developing host country governments. As a result, Chinese OFDI tends to be less risk averse. In addition, they claimed that Chinese firms are more comfortable and familiar with the workings of governments that are not truly democratic (e.g. Lao PDR). Child and Rodrigues (2005) went as far as to say that Chinese firms face a smaller liability of foreignness in such opaque political environment. More recent studies tend to show limited evidence linking Chinese OFDI and an uncertain political/institutional environment (Cheung & Qian, 2009; Kolstad & Wiig, 2009). The time period used by previous studies might explain the differences in the findings. We use political stability, a dimension of governance from World Bank's Worldwide Governance Indicators to measure the political risks of the host countries.

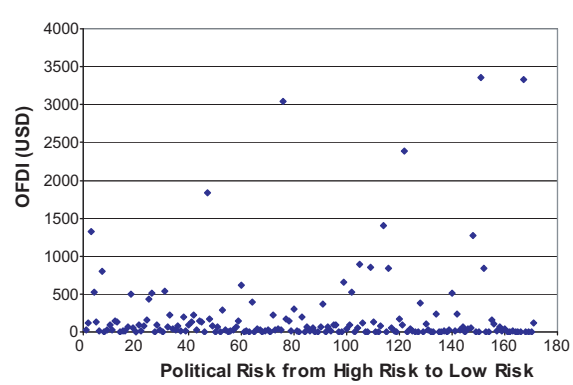

Fig. 2. Political risk and Chinese OFDI stock, 2008.MOFCOM (2009), *2008 Statistical Bulletin of China's Outward Foreign Direct Investment*, Ministry of Commerce, National Bureau of Statistics and State Administration of Foreign Exchange; World Bank (2009), *The Worldwide Governance Indicators Project*. http://info.worldbank.org/governance/wgi/index.asp. *Note*: *X*-axis indicates countries from high political risk to low political risk. *Y*-axis indicates the amount of Chinese OFDI stock in 2008, in million USD.

[4] Sudan, where the government has been accused of genocide in Darfur, for example, is the largest recipient of Chinese FDI. See BBC News, 26 November, 2007 (http://news.bbc.co.uk/2/hi/africa/7086777.stm).

We attempt to confirm the link between OFDI and political risk by hypothesizing that:

H2. Chinese OFDI is attracted to countries that are politically risky.

In a recent survey, Frankel (2010) alludes to the natural resource curse of many developing countries. His conclusions indicate that countries endowed with commodity resources (oil, minerals and some agricultural crops) tend to have "... poor institutions, such as corruption, inequality, class structure, chronic power struggles, and absence of rule of law and property rights" (p. 34). He relied on the rent cycling theory by Auty (2009) which explains that high rent in natural resource endowed countries are captured through political contests, whereas in low rent countries the government needs to promote institutional development that would ensure rents are recycled through markets. Statistical evidence on the link between natural resource endowment and political stability is mixed (Frankel, 2010). Nevertheless, the combined effects of political risk and natural resources in attracting Chinese OFDI seem to show some significant results. Kolstad and Wiig (2009) claimed that the riskier a country, the more likely Chinese OFDI is attracted to natural resources. In other words, a combination of large natural resource reserve and weak institutions (high risk) seem to attract Chinese FDI. We hypothesize that:

H3. In high risk countries, Chinese OFDI is more inclined to seek natural resources.

We attempt to test this hypothesis by considering the linear interaction between the political risk and natural resource variables with our dependent variable.

The other target for ownership advantage that Chinese firms have been focusing on is technology. Khanna and Palepu (2006) pointed to an inefficient legal framework in the home country that pushes a firm out in search of an environment where they can pursue innovation. Deng (2009) showed how Chinese firms faced these obstacles and ended up adopting an imitator strategy and focusing on low end products. A weak local factor market and limited capabilities at home pushes the firm to undertake FDI abroad particularly through M&As. In addition, the increasing competition imposed on these Chinese firms by their foreign counterparts forces these local firms to look for an option that could improve the ownership advantage that is far less time consuming (Rui & Yip, 2008). The acquisition of Korea's Hydis by BOE Technology Group and Thompson's TV and DVD operations as well as Schneider Corp. by TCL are good examples of such M&As. Rui and Yip (2008) further contended that firm specific advantages gained through M&As are further complemented by other competitive advantage already established at home, for instance, a low cost manufacturing base and an abundance of experience in low income markets. These arguments imply that Chinese firms would seek to locate their investments in industrialized countries (Deng, 2007). Case based evidence tends to corroborate this. Time series based research, such as Buckley et al. (2007), show insignificant results when patents are used as proxy for proprietary ownership advantage endowments. The time series which ends in 2001 could be a reason for this insignificant result, as significant M&As took place after that period. Furthermore, whether the proxy represents ownership advantage is doubtful as not all patents are commercially viable. In this paper, we use two proxies to test the strategic intent of Chinese firms—the number of patents registered in host countries (as per Buckley et al., 2007) and the proportion of technology exports to total exports of the host countries. The latter could better represent the applicability of technology and innovation. In sum, we hypothesize that:

H4. Chinese firms are attracted to countries that are endowed with ownership advantages, in particular technical and innovative superiority.

Unlike the natural resource curse, the blessings from a stable political environment are institutions which are conducive for technological development and innovation. North (1981) held that democratic governments are politically more stable than authoritarian regimes. The propensity to abruptly change policies can be destructive in economic decision making (Przeworki et al., 2000). Thus, political stability can significantly influence the innovation activity within a country (Waguespack, Birnir, & Schroeder, 2005). This would imply a positive interaction between the technology and political risk variables:

H5. In low risk countries, Chinese investments are technology or strategic asset seeking.

2.2. Ownership structure of internationalizing Chinese firms

Chinese law allows for six types of shareholding: state, legal person, individual, management, employees and foreign. Chen, Firth, and Xu (2009) found that the latter three comprise less than 2%. The first three can be divided into four types based on the nature of the controlling shareholder:

(1) The state asset management bureau (SAMB)—could come under the central government or provincial governments. They appoint the board of directors and managers of the listed firm and collect the dividends earned and transfer them to the state/provincial treasury.
(2) State-owned Asset Supervision and Administration Commission (SASAC)—controls 157 listed firms and come directly under and scrutinized closely by the central government.
(3) SOEs affiliated to local governments (SOELGs)—controlled by provincial, city or other local governments.
(4) Private investors (PI)—shares owned by individuals or private firms either by acquiring the shareholding of SOEs or as a result of listing of self-established enterprise.

As the number of firms that have undertaken OFDI in the first type (SAMB) is mainly affiliated to local government, we merged it with SOELG. This resulted in three main types of ownership—SASAC, SOELGs, and PI.

The link between financial performance and ownership of Chinese firms is ambiguous at best (Li, Sun, & Zou, 2009). One reason is perhaps the tendency to mix all categories of SOEs into one. Among the three types of ownership mentioned earlier, Chen et al. (2009) found SASAC controlled firms to be the best financially performing firms because of the close supervision by the central government on their activities. These firms are expected to adhere to the government's plans of acquiring strategic assets (including natural resources) in order to compete against other international companies, or what is known as institutional perspective of internationalization (Deng, 2009). Given the central government's support and the lack of corporate governance mechanisms (Kuijs, 2006), SASAC controlled firms can seize these assets even if they are located in high-risk countries. In contrast, among SOELGs, the lack of an incentive system and a severe agency problem may explain the lackluster performance (Qi, Wu, & Zhang, 2000; Wang, Zhao, Ning, & Yu, 2009).[5] In any case, the public sector still controls most resources and SOEs enjoy preferential status in getting bank loans and other key inputs. This implies that even the SOELGs could

[5] While SASAC controlled firms could also face similar issue, it is more prevalent among firms owned by local government.

Table 4
List of Variables and sources of data.

Variables	Proxy for	Source
FDI	Frequency count of Chinese FDI projects in the host country	Annual Reports and Companies' websites
GDP	Host country's GDP (US dollar, constant)	World Bank Development Indicator
GDPC	Host country's GDP per capita	World Bank Development Indicator
GDPG	Host country's GDP growth	World Bank Development Indicator
CEXPORTS	China's exports to the host country divided by China's total exports	China Statistical Yearbooks
CIMPORTS	China's imports from the host country divided by China's total imports	China Statistical Yearbooks
EXORES	Host country's exports of ores and minerals	World Bank Development Indicator
EXTECH	Host country's exports of high technology products divided by the host country's total exports	World Bank Development Indicator
PAT	Number of registered patents in the host country	World Intellectual Property Organization
FDIP	Host country's inflow of FDI divided by host country GDP	World Bank Development Indicator
PRISK	A measure of political stability of host country	World Bank's World Governance Indicator
INF	Host country's rate of inflation	World Bank Development Indicator
CHIPOP	Percentage of Chinese in host country's population	Ohio University Library
DIST	Distance between Beijing and the capital of host country	http://www.distancefromto.net/

underwrite a larger risk by investing in politically unstable countries. Li and Zhou (2008) states that it would take a long time before private firms acquire equal status with SOEs. Despite such disadvantages, Dougherty, Herd, and He (2007) found that productivity is higher among private firms. Nevertheless, in terms of OFDI, state controlled firms (SASAC and SOELGs) dominate the scene. Prior to 2004, PIs were not allowed to invest overseas. Access to foreign exchange was allowed only to approved SOEs. In addition, SOEs were given financial favoritism, privileged access to government networks and monopoly production rights (Dollar & Wei, 2007; Morck et al., 2008). In such an unbalanced business environment, the motivation for going abroad among state and privately owned firms can be different. While SOEs may have a more strategic intent (Deng, 2009), escapism from an unsupportive business environment is a stronger motivation for PIs (Child & Rodrigues, 2005; Luo, Xue, & Han, 2010). In particular, private firms still have legitimacy issues, and are sometimes subject to discriminatory policies (McMillan & Woodruff, 2002) in terms of domestic market access and natural resources. Compared to SOEs, private firms may be forced to seek for newer markets abroad where such one sided policies are absent. However, Liu, Wen, and Huang (2008) found that private firms in China are risk averse rather than opportunity seeking particularly when they are internationalizing. This may result in these firms venturing to host countries that are closer to home. This leads to a series of hypotheses on firm ownership and location choices:

H6a. SASAC and SOELGs controlled companies are attracted to countries with large natural resources.

H6b. SASAC and SOELGs controlled companies are willing to invest in politically risky countries.

H6c. In high risk countries, state-owned firms are more inclined to seek natural resources.

H6d. In low risk countries, state-owned firms are more inclined to be technology or strategic asset seeking.

H6e. Private Chinese firms are market seeking.

H6f. Private Chinese firms are risk averse in location choice.

2.3. Other variables

In addition to the hypothesis stated earlier, we also include other control variables. First is a culture variable. The use of *guanxi* or connections is strong within the domestic market and may also be significant in international markets. Like Buckley et al. (2007) the proportion of Chinese population in host countries as a measure of cultural proximity is used. However, whether *guanxi* is equally important among different type of Chinese companies is of interest. Second, trade between China and the host country can act as a significant determinant of OFDI. In 2008, more than 80% of Chinese OFDI was in services, implying that the investment is made to support the economic link that already exist with the host countries (Buckley et al., 2007; Ramasamy & Yeung, 2010). Finally, we also include total inward FDI flow to the host country as a proportion of GDP, as the agglomeration effect is a well established motivation for investment (Chakrabarti, 2001).

3. The model and data

Model 1 is estimated to test the aforementioned hypotheses:

$$FDI_i = f(GDP_i, GDPC_i, GDPG_i, CIMPORTS_i, CEXPORTS_i, EXTECH_i, PAT_i, EXORES_i, PRISK_i, INF_i, FDIP_i, CHIPOP_i, DIST_i) \quad \text{(Model 1)}$$

However, for H3, H5, H6c and H6d, in order to test the interaction between political risk, natural resource endowment and technology, we further estimate Models 2 and 3:

$$FDI_i = f(GDP_i, GDPC_i, GDPG_i, CIMPORTS_i, CEXPORTS_i, EXTECH_i, PAT_i, EXORES_i, PRISK_i, INF_i, FDIP_i, CHIPOP_i, DIST, EXORES_i \times PRISK_i) \quad \text{(Model 2)}$$

$$FDI_i = f(GDP_i, GDPC_i, GDPG_i, CIMPORTS_i, CEXPORTS_i, EXTECH_i, PAT_i, EXORES_i, PRISK_i, INF_i, FDIP_i, CHIPOP_i, DIST_i, EXTECH_i \times PRISK_i) \quad \text{(Model 3)}$$

Details of variables and the proxies used are explained in Table 4. The selection of independent variables to a large extent mirrors Buckley et al. (2007). These variables have also been consistently used by other non-China studies (Chakrabarti, 2001). In addition, the inclusion of the distance variable brings properties of gravity modeling into our analysis (Blonigen, 2005). The independent variables are country level values averaged over the 2003–2005 periods.

On the other hand, the dependent variable is designed specifically for this study and is based on firm level data for the period 2006–2008.[6] We first selected the 200 largest firms (based on market capitalization) listed on the Shanghai and Shenzhen Stock Exchanges respectively. Their annual reports from 2006 to 2008 were scrutinized to identify if the company had made any

[6] Data for the independent variables are several years behind the dependent variable because lagged effects are assumed. Our assumption is reasonable because current investment location decisions are based on the past data.

Table 5
Sample details.

	Shanghai stock exchange	Shenzhen stock exchange	ALL	No. OFDI projects
Companies with OFDI	56	7	63	**1350**
By ownership				
Private companies	13	4	17	**636**
SASAC companies	24	0	24	**246**
State-owned companies	19	3	22	**468**
No. investment locations	**51**	**28**	**59**[a]	

[a] 51 + 28 − 20 overlapping countries.

overseas investment. We assumed that if not reported, the investment was not significant enough for analytical consideration. From the 1200 annual reports that were considered, we identified 63 companies that had invested abroad during the period 2006–2008. There were 1350 projects across 59 countries, with at least one investment in a country. The frequency counts of OFDIs in the 59 countries were obtained. In order to be certain of our data collection procedures, we cross-checked the overseas projects of these 63 companies by surfing their official websites. Given the missing data in the independent variables, our final sample included 137 countries: 59 that had at least one Chinese investment project, and 78 without any Chinese OFDI. It should be noted that the average OFDI from China to these 59 countries between 2006 and 2008 accounted for 80% of total outward investment.

Ownership information was also obtained from the annual reports of the 63 Chinese multinationals. The companies were classified according to the categories explained earlier as long as ownership by an entity (SASAC, provincial/local government or private) exceeded 50%. Table 5 displays the detailed composition. An average private company has 37 foreign investment projects in 2006–2008, whereas an average SASAC and SOELG company had only 10 and 21 foreign investment projects respectively.

Since the dependent variable is the number of Chinese investment projects in country *i*, it is classified as a count data series. Econometricians suggest count data regression models to deal with such dependent variables (Greene, 2003; Maddala, 1993). In this paper, we attempt to build a regression model that depicts the variations in the count of investment projects from China to the recipient countries. Count data and the relevant regression models are used for both practical and technical reasons. First, many conventional analysis that use the value of OFDI from China to host countries as the dependent variable suffer from potential extreme values as most natural resource seeking projects are capital intensive projects. Such investment projects not only inflate the true attractiveness of the recipient countries in terms of their general FDI performance, but from a technical viewpoint, these extreme values could adversely affect the model fit and estimations.

Second, many of these conventional analyses have disregarded the potential sample selection bias resulting from the exclusion of countries that receive no FDI from China. In contrast, the count data regression models are technically designed for modeling dependent variable that take zero or excess zeroes. Third, if the value of OFDI to recipient countries is used as the dependent variable, a highly skewed distribution can be expected; especially when countries that received no OFDI is incorporated. Consequently, the statistical tests based on the OLS estimations could be problematic. On the other hand, most count data regression models are technically designed for modeling skewed dependent variable. Finally, FDI data used in previous studies are limited to those that are approved by the Chinese authorities. A large proportion of the recorded OFDI are those from SOEs—84% of total FDI by the end of 2005 (Davies, 2009). It is likely that the investment made by private Chinese companies may not have gone through official channels, for instance through third parties in Hong Kong. Nearly one third of our sample companies are private ones and so may reflect the changing nature of Chinese OFDI sources.

Our analysis is based on the Poisson and negative binomial models. The unconditional Poisson probability specification is given as:

$$Pr(y_i) = \frac{e^{\lambda_i}\lambda_i^{y_i}}{y!} \quad \text{for } y_i = 0, 1, 2, \ldots$$

where y is a random variable indicating the number of times an event has occurred (number of Chinese OFDI projects in country i) and λ is the observable expected (mean) rate of occurrences of all i entities (countries) during a specific period (in our case, 2006–2008); $\lambda_i = E(y_i) = Var(y_i)$. The Poisson regression model assumes that the parameter λ for each i is characterized by some explanatory variables, Xs. Parameters βs are estimated by fitting the following equation:

$$\lambda_i = \exp(X_i\beta) \tag{2}$$

where Xs are the independent variables defined in Table 4 and βs are the parameters to be estimated. The model is estimated by the maximum likelihood method. The Poisson model provides a very nice robustness property: βs are consistent (but inefficient) even if the assumption of $\lambda_i = E(y|\mathbf{x}) = Var(y|\mathbf{x})$ does not hold (Wooldridge, 2002). In such cases, the quasi-maximum likelihood estimation can be applied to retain some efficiency for certain departures from the Poisson assumption (Wooldridge, 2002). The approach assumes the variance is proportional to the mean, i.e. $E(y|\mathbf{x}) = \sigma^2 Var(y|\mathbf{x})$ and thus adjustments to the standard errors are allowed even when $\sigma^2 > 1$ (over-dispersion) and $\sigma^2 < 1$ (under-dispersion).

An alternative model that deals with estimating over-dispersed count data is the negative binomial model. The over-dispersion of count data is normally due to the presence of non-observable heterogeneity (Cameron & Trivedi, 2007). The proposed model addresses this issue by assuming that a degree of non-observable heterogeneity exists, which is distributed according to a Gamma function.[7] The negative binomial model relaxes the assumption of Poisson model by re-specifying $E(y_i) = \lambda_i$ and $Var(y_i) = \lambda_i[1 + (1/\theta)\lambda_i]$. As $\theta \to 0$, $Var(y_i)$ is inflated and thus over-dispersion is addressed; as $\theta \to \infty$, $Var(y_i) \to \lambda_i$ such that it returns to a simple Poisson model if θ is significantly differ from zero. So, the negative binomial model is a valid extension of the Poisson model that takes into account the problem of over-dispersion. The model can be estimated by the standard maximum likelihood method. Both the

[7] The technical details of the negative binomial model are not explained here. See Berk and MacDonald (2008) for more details.

Table 6
Results of analysis.

Sample (model)	Private (1)		Private (2)		Private (3)		SASAC (1)		SASAC (2)		SASAC (3)	
Variable	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
INF	−0.000434		−0.000744		−0.00037		−0.003047		−0.002347		−0.004429	
FDIP	−0.072536		−0.073312		−0.070381		−0.017415		−0.017171		−0.038044	
GDP	4.35E−13	***	5.25E−13	***	4.35E−13	***	3.59E−13		4.87E−13		4.69E−13	
GDPC	−1.34E−05		−9.05E−06		−1.19E−05		6.11E−05	**	5.95E−05	**	5.11E−05	**
GDPG	0.05802		0.052017		0.056478		0.058146		0.064612		0.069724	
EXTECH	0.008036		0.007779		0.006704		0.024302	***	0.022938	***	0.030042	***
EXORES	1.08E−12	***	1.15E−12	***	1.08E−12	***	1.58E−12	***	1.17E−12	**	1.79E−12	***
PAT	−4.55E−05	***	−5.46E−05	***	−4.53E−05	***	−0.000075	**	−7.74E−05	***	−8.59E−05	***
CHIPOP	1.30E−08		−2.99E−09		1.68E−08		1.82E−07	**	2.34E−07	**	1.67E−07	**
CEXPORTS	0.207282	***	0.207108	***	0.204542	***	0.125669	***	0.129172	***	0.159882	***
CIMPORTS	0.106332	*	0.150286	**	0.108623	**	−0.079395		−0.106335		−0.155702	
DIST	−0.000205	***	−0.000197	***	−0.000205	***	−9.56E−05		−9.85E−05		−0.000103	
PRISK	0.054271		0.110433		0.083609		−0.507153	**	−0.58668	**	−0.780123	**
INTERACTION			−3.38E−13		−0.002853				5.57E−13		0.017754	**
CONSTANT	0.17441		0.116332		0.180989		−2.386227	**	−2.375787	**	−2.41841	**
Pseudo R^2	0.5546		0.5567		0.5548		0.3932		0.3968		0.4062	
LLH	−98.92297		−98.45848		−98.86772		−62.1787		−61.81048		−60.8441	
Sample (Model)	SO (1)		SO (2)		SO (3)		ALL (1)		ALL (2)		ALL (3)	
Variable	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
INF	−0.057968		−0.125328		−0.058759		−0.004465		−0.005278		−0.004657	
FDIP	0.001038		−0.000412		0.00126		−0.001857		−0.002343		−0.001716	
GDP	−8.61E−13	***	−8.69E−13	**	−8.63E−13	***	−1.06E−14		1.83E−14	**	−1.04E−14	
GDPC	5.09E−05	*	5.76E−05	**	4.99E−05	*	2.83E−05	**	3.07E−05		2.73E−05	**
GDPG	0.032518		0.024713		0.030297		0.029237		0.027972	**	0.028115	
EXTECH	0.022769	***	0.023147	***	0.022831	***	0.013233	**	0.013168	***	0.013533	**
EXORES	1.75E−12	***	2.28E−12	***	1.76E−12	***	1.35E−12	***	1.43E−12	**	1.36E−12	***
PAT	2.28E−05		0.000016		2.29E−05		−2.14E−05	**	−2.53E−05		−2.14E−05	**
CHIPOP	2.01E−07	**	1.85E−07	**	2E−07	**	1.17E−07	**	1.08E−07	***	1.15E−07	**
CEXPORTS	0.210048	***	0.202389	***	0.211551	***	0.160118	***	0.160132		0.161286	***
CIMPORTS	−0.156705		−0.114066		−0.158865		0.01023		0.031131	**	0.00875	
DIST	−0.000028		2.68E−06		−2.86E−05		−0.000131	***	−0.000123		−0.000131	***
PRISK	−0.456159	**	−0.336935	**	−0.4935	*	−0.257095	*	−0.22191	***	−0.283567	
INTERACTION			−8.52E−13	**	0.002094				−1.97E−13		0.001855	
CONSTANT	−2.363636	**	−2.464565	**	−2.34526	**	−0.087116		−0.151974		−0.079183	
PSEUDO R^2	0.6339		0.6443		0.6341		0.6393		0.6403		0.6394	
LLH.	−72.59079		−70.53535		−72.56718		−147.6912		−147.2783		−147.6265	

Model (1): without any interaction term; Model (2): with *PRISK* × *EXORES* as the interaction term; Model (3): *PRISK* × *EXTECH* as the interaction term; LLH: Log pseudolikelihood. Asterisks ***, **, * denote 1%, 5% and 10% significance levels, respectively.

Poisson and negative binomial models are fitted for the sample data and for each subgroup (PIs, SASAC and SOELG).

4. Results of analysis and discussion

We considered both the Poisson and negative binomial models, and the results are quite similar. Our final interpretation is based on the Poisson model (see Table 6) because the likelihood-ratio tests for over-dispersions (H_0: $\alpha = 0$) for the binomial models were insignificant, implying that the Poisson counterparts may be more appropriate.[8] The estimated coefficients for the various models reveal that the criteria for choosing investment locations among firms with different ownerships are not the same.[9]

When the complete set of data, i.e. countries where Chinese firms irrespective of ownership type, are considered, model ALL(1) of Table 6 shows that eight variables are significant at least at the 10% level. Ownership of natural resources, the importance of the host country to China's exports and its proximity to China are significant at the 1% level. The host country average level of income, its level of technology exports and a sizeable Chinese population are significant at the 5% level. Although the number of patents registered in the host country is significant at the 5% level, it carries a negative signs. On the other hand, the alternative proxy we used to capture technology has the correct sign and is significant. Finally, OFDI is attracted to countries that are politically risky since the co-efficient is negative. Our overall results are quite consistent with those of Buckley et al. (2007).

Our empirical results confirm H1 that Chinese firms are indeed attracted to natural resource rich countries. The speed of economic growth that China has experienced over the last three decades and the projected growth in the future means continued demand for natural resources (Davies, 2009). For instance, since 2009 China has become the largest market for passenger cars. This means an increased demand for oil in addition to the energy required to power its industries. Where does China source its natural resources? Our results also accept H2. Chinese investments are attracted to countries that are politically risky. We confirm the results obtained by others (Buckley et al., 2007; Kolstad & Wiig, 2009) that countries (e.g. Sudan, Mali, Lao PDR) which are less than desirable by other (western) investments have become important destinations for resource seeking Chinese companies. The trend of heading to these risky countries that seem to have started after 1992 (Buckley et al., 2007) seem to have continued into this century. The interaction variable in model ALL(2) in Table 6, i.e.

[8] Results using the binomial model are available upon request.

[9] There are no standard tests to examine the multi-collinearity between independent variables for a model that uses count data as the dependent variable. However, an evaluation of the correlations between independent variables generally shows a low figure, except for the correlation between GDP of host country and China's trade with that location. Given that there are strong theoretical foundations (Chakrabarti, 2001) for the inclusion of both variables, we have maintained the original list of variables.

political risk and natural resource endowment turns out to be insignificant. This would mean we have to reject H3, as we are unable to find evidence to show that Chinese investments are attracted to risky countries to tap on their natural resources.

Our results also accept H4 that Chinese firms are motivated to improve their competitive disadvantage in innovation and technology. Chinese firms are attracted to countries that show superiority in these areas. However, our findings show that Chinese investment may not be attracted to countries that excel in core research as our proxy, number of registered patents, shows a significant negative coefficient. Instead, Chinese companies are attracted to countries (e.g. Malaysia and Thailand) that are able to convert core research into commercially viable products and services since our alternate proxy (*EXTECH*) is significant and positive. Chinese firms seem quite pragmatic in the sense that bringing back core research home need not necessarily increase their core competencies if the human capital and other capabilities in China are unable to add value to this core technology. On the other hand, applied research could find more usage, and given the home advantage in the form of low cost production that these firms already have, a synergy can be created. However, the interacting variable in ALL(3) in Table 6 (i.e. political risk × exports of technology) turns out insignificant, and thus H5 is rejected. We find no significant evidence that the attraction to politically stable countries is in search of strategic assets.

Turning now to the locational decisions made by the various types of Chinese firms, our results confirm H6a. Countries with large natural resource reserves (e.g. Indonesia, Ukraine and Tajikistan) are equally attractive to private firms. On closer scrutiny, it should be noted that none of the private Chinese firms with investment abroad in our analysis are mining firms. Instead, those that do invest in resource rich countries are heavy equipment companies like Sany Group Ltd. (for example with its investments in Ukraine) and Tebian Electric Apparatus Stock Co. Ltd. (or TBEA with its investments in Tajikistan). This suggest that private companies follow their state-owned counterparts by investing in natural resource rich countries and provide related products and services to the deals already made by their respective governments. The appetite for risk of private firms is not as large as state-owned ones. We accept H6b. Our results clearly show that both SASAC and SOELG controlled firms have a higher tendency to invest in countries with weak political systems. As mentioned earlier, private firms are relatively more risk averse and our results corroborate this view (H6f). Unlike their state-owned counterparts, private firms are more attracted to countries that are closer to home (e.g. Hong Kong), and weak political systems are not significantly attractive. The familiarity of Chinese SOEs to a highly regulated business environment at home provides a competitive advantage over other multinationals in politically risky countries. For instance, our results show the significance of the Chinese population in host countries (e.g. Indonesia) in location decisions among state-owned firms. This may imply that the use of international *guanxi* among the Chinese Diaspora seems prevalent. It should be noted that SOEs view political risks differently than private firms. IB literature tends to view undemocratic countries negatively because of the lack of institutions that can provide the legitimacy and rights required for long term investments (Globerman & Shapiro, 2002). However, SOEs rely more on the government-to-government (G2G) relationship as the basis of their decisions. Uncertainties like nationalization and contracts failures maybe less likely when the investment is based on a G2G foundation.

Although the interaction variables were not significant when all firms were considered, some interesting results emerge when firms are segregated according to ownership. For SOELGs, the interaction variable in model SO(2) in Table 6 is negative and significant at the 5% level, while in all other cases no significant results are found. In other words, we can accept H6c partially as only SOELGs are attracted to political risky countries for natural resources. In like manner, H6d can be partially accepted because the interaction variable is only significant for SASAC controlled firms (see Model SASAC (3) in Table 6), indicating that they are attracted to politically stable countries for strategic asset seeking motives. These findings show a clear difference even between state-owned firms. To make a general statement that Chinese OFDI exploits countries with poor institutions and large natural resources, such as Sudan (Kolstad & Wiig, 2009) maybe premature as there is a need to consider the type of firm. The consequence of a large appetite for risks among SOELGs however can be seen from the proportion of local government controlled firms that incurred losses in 2009. Beijing Review reported that 28% of the SOELGs were in the red compared to 15% among central government managed enterprises.[10] Weak corporate governance structures and risky management practices were among the reasons cited for this loss.

Private firms are clearly market seekers (H6e). Our results show a significant positive coefficient for the size of the market (GDP). State-owned firms are also market seekers but there seems to be an attraction to relatively richer countries. In fact, SOELGs are more attracted to smaller rich economies. The significant outflow of investments from state-owned financial institutions like the Construction Bank of China, Industrial and Commercial Bank of China and Ping An Insurance to locations like Hong Kong, Luxembourg and the Netherlands are good examples of such investments. The high level of significance for the export variable further implies that Chinese firms, irrespective of ownership, are keen to invest in countries that are already a significant market for Chinese goods. In this sense, Chinese investment tends to follow traditional IB theories like Vernon's product life cycle. On the other hand, the intention to move upstream and control sources of imports seem to be significant only among private Chinese firms. Our findings also clarifies the findings of previous research (Child & Rodrigues, 2005; Morck et al., 2008) in that the attraction of Chinese OFDI to emerging markets/developing economies due to their firm specific advantages is limited to private and SOELG firms. The larger SASAC controlled firms are attracted to richer developed markets.

Finally, the arguments made by other studies (Deng, 2007; Rui & Yip, 2008) that Chinese investments are made with a strategic intention of acquiring technology, brands, marketing, management and other know-how finds more support among state-owned firms. The intention of such acquisition is not only to increase the capacity to compete in the global markets, but also to maintain market shares at home. A large number of industries in China (e.g. utilities and mining) function in oligopoly market conditions with companies owned by the central and provincial governments vying against each other to attract the domestic business. To withstand the onslaught of other foreign competitors who are already in China or waiting at its doorstep, state-owned corporations are attracted to those countries (e.g. South Korea and Hong Kong) that are able to provide them with the competencies necessary for survival in China. Interestingly, technical superiority does not attract private firms. It is likely that at this stage of the internationalization process, private firms are more interested in market expansion using home grown competencies.

5. *Managerial relevance*

Our research shows that the locational determinants of Chinese OFDI differ based on the type of ownership and so the motivations behind such investments may also vary. While local government controlled firms are attracted to natural resource rich countries which may have weak political systems, internationalizing private Chinese firms are more risk averse. Although they too are attracted to natural resource endowed countries, private firms are more likely

[10] Beijing Review No. 2, January 14, 2010.

to provide value added services rather than to exploit the resource itself. Similarly, the strategic intent of going global to acquire technology, brand names and know-how seems more prevalent among SOEs rather than PIs which are more market seeking. In particular, central government controlled firms are attracted to stable political environments to exploit strategic assets.

The policy implications from our findings apply mainly to host governments that desire to attract Chinese FDI. Resource rich countries are attractive to local government SOEs and so a G2G strategy at the provincial level would work more effectively. Conversely, if the purpose of attracting Chinese FDI is to open up the domestic market, then private Chinese companies should be the target. It is too early to say whether and when the Chinese government will exit from the business sector. There is no sign of such withdrawal in the medium term. Until then, a targeted approach towards specific Chinese companies to achieve a particular objective of inward FDI makes economic sense.

The theoretical implications of our findings are that on the one hand the existing theories do need an overhaul since the locational determinants of Chinese companies generally do not follow mainstream literature. The empirical evidence we have provided in this paper supports the strategic motive based on several Chinese cases by previous IB researchers (Deng, 2007, Rui & Yip, 2008). However, the strategic intent seems to be a stronger motivation among state-owned MNCs like Nanjing Automotive and BOE Technology. In this regard, the motivation for OFDI is not very different from the objective of attracting more FDI inflows. Realizing that Chinese firms lacked firm specific assets like technology, management and marketing know-how, the authorities pursued an openness policy to woo foreign companies into China. OFDI seems to be motivated by the same reason—technology and innovation. The difference however, is that with OFDI, Chinese firms can afford to choose who, where and the type of partnership to fulfill their needs. On the other hand, the motivations and locations of private Chinese firms can be explained by existing theories. In other words, they internationalize by utilizing the core competencies they have acquired at home—low cost production, networks in China, *guanxi* with Chinese SOEs, etc. Future research in this regard could consider the OFDI motivations of government linked companies in general, i.e. including internationalizing SOEs from other developing countries like Singapore, South Korea and Malaysia. Perhaps the issue that requires attention is not necessarily FDI from emerging countries *per se* but rather those that are made by SOEs.

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