Do Chinese SOEs and private companies differ in their foreign location strategies?

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Abstract

We empirically analyze the host-country determinants of Chinese outbound foreign direct investments (ODI) in the period from 2003 to 2008, using disaggregated data by country and sector and distinguishing between State-owned enterprises (SOEs) and privately owned firms. Our results show that the pattern of Chinese ODI differs according to corporate ownership. Private firms are attracted by large markets and host-country strategic assets and are averse to economic and political risks when choosing investment locations abroad. Differently, state-owned enterprises follow the strategic needs of their home country and invest more in natural resource sectors, being largely indifferent to the political and economic conditions in the host countries.

Acknowledgments

1. Introduction

Research on the international expansion of Chinese firms through outward direct investments (ODI) has been growing rapidly over the last few years, exploring the foreign location choice of Chinese firms with diverse data sources and statistical techniques. So far, the bulk of empirical research has relied on data at the aggregate level, often distinguishing the determinants of Chinese ODI according to the income level of the host economy (see for instance Buckley et al., 2007; Cheng and Ma, 200, Kolstad and Wiig, 2012). There is some agreement on the fact that Chinese ODI show a unique pattern, different from traditional investing countries, as Chinese firms appear to be attracted to countries that do not correspond to the standard profile of host locations (Ramasamy et al., 2012). The reasons why Chinese multinational enterprises (MNEs) seem to choose foreign locations according to criteria that do not fit into the standard theory could be better investigated by taking into account two additional factors. The first is including, together with a geographical dimension, a sectoral one. For China this could reflect the bias towards the choice of resource-rich foreign locations. Previous work by the authors (Amighini et al., 2011) undertakes such an analysis, highlighting that the pattern of Chinese ODI is indeed sector-specific. The second factor is taking into account the ownership structure of firms investing abroad, distinguishing between state-owned enterprises (SOEs) and private companies. This paper explores the latter feature of Chinese ODI by empirically testing whether the ownership structure of firms investing abroad (SOEs vs. private firms) influences foreign location choices. Despite the reforms of the public sector in the 1990s and more recently the launch of the *Go Global* strategy, which implemented measures aimed at reducing constraints to private investors (Luo et al., 2010; Voss et al., 2011), the composition of Chinese MNEs is still biased towards SOEs or state-controlled enterprises, accounting for about 70 per cent of total stock of FDI in 2009 (Song et al., 2011). The extant literature suggests that SOEs are more likely to invest abroad since they can exploit their monopolistic position at home. Furthermore, they enjoy privileged access to strategic resources such as political support and capital from state-

owned banks (Song et al., 2011). Capital is instead a major constraint for private firms, which often have to recourse to "round tripping" and tax havens for overcoming such disadvantage (Sutherland and Ning, 2011). Moreover, it is often assumed that SOEs might not necessarily look for profit maximization only when investing abroad, but also pursue government objectives.

The first research objective of this paper is to map Chinese ODI according to the ownership of investing firms. Although SOEs are often supposed to outnumber independent firms investing abroad, a detailed description of the sector and geographic distribution of Chinese ODI by type of investing firms can refine our knowledge of the patterns of outward expansion for different types of firms. The second research objective is to explore whether the countries chosen as a location for ODI by Chinese SOEs have different characteristics from those chosen by private Chinese enterprises.

Our analysis is based on a newly constructed variable describing ownership of Chinese firms that have invested abroad since 2003 up to 2008. Our results show that indeed the pattern of Chinese ODI differs between SOEs and private firms. The latter follow a pattern of investments that is consistent with the results from the theory of foreign location choices, being attracted by large markets and host-country strategic assets and averse to economically and politically unstable countries; the former follow the strategic needs of their home country and invest more in natural resource sectors, while being indifferent to the political and economic conditions in the host countries.

The paper is organized as follows. Section 2 reviews the literature on the determinants of Chinese ODI and presents the research hypotheses. Section 3 provides a detailed description of the data and describes the methodology. Section 4 discusses the empirical findings. Section 5 contains the concluding remarks.

2. The determinants of Chinese ODI

2.1. Background literature

Extant studies on the foreign expansion of Chinese firms stress the peculiarity of Chinese MNE, which are predominantly state-owned enterprises and whose investment decisions may reflect political objectives that are not necessarily consistent with the profit-maximizing strategies of private companies (Child and Rodrigues, 2005). This implies that their determinants may be different from those of any other country (Morck et al., 2008; Yeung and Liu, 2008). Moreover, Chinese ODI might follow a different pattern compared to FDI from developed countries because of the peculiarity of China's institutional environment, which may represent a competitive advantage for Chinese companies investing in developing countries (Quer et al., 2011).

So far, empirical studies of the determinants of Chinese ODI have provided support for market-seeking motivations that attract Chinese firms to invest especially in OECD countries (Buckley et al., 2007; Cheung and Qian, 2008; Hurst, 2011; Kolstad and Wiig, 2012) and for resource-seeking motivations in non-OECD countries (Buckley et al., 2007; Pradhan, 2009; Sanfilippo, 2010; Hurst, 2011; Kolstad and Wiig, 2012)[2]. Other studies find results that would seem to be peculiar to the case of China. Special attention has been paid to the fact that Chinese investors seem less risk averse compared to their counterparts from developed countries (Sanfilippo, 2010; Amighini et al., 2011; Quer et al., 2011; Kolstad and Wiig, 2012; Li and Liang, 2012) as well as to the emphasis on the exploitation of relational assets to reduce the psychic distance with institutionally different countries (Buckley et al., 2007; Cheng and Ma, 2008; Hurst, 2011). Finally, some work has highlighted the search for strategic assets in technologically advanced countries and in specific sectors (Amighini et al., 2011).

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[2] Similar results are also reached by the analyses on the determinants of China's economic cooperation flows, as a proxy of State's efforts to promote the entry of Chinese firms via FDI (Bhaumik and Yap Co, 2011; Sanfilippo, 2010).

Very recently, a few studies have investigated the link between corporate ownership and Chinese ODI. They provide important contributions to earlier literature by exploring the characteristics of host countries chosen by different types of firms. Each of these studies relies on a different dataset including diverse subsets of Chinese firms investing abroad, so the results are difficult to compare and overall the findings are not clear-cut.

With a Poisson count data model, Ramasamy et al. (2012) test the international location decisions made by 63 public listed Chinese firms (of which 17 are private and 46 state-owned or state-controlled) during the period 2006-2008, using data from MOFCOM and finding that state-controlled firms are more attracted to countries with large endowments of natural resources and risky political environments, a hypothesis also partially supported by Duanmu (2012). Moreover, they find that countries with abundant natural resources are also attractive to private firms; following their state-owned counterparts investing in natural resource rich countries to provide them related products and services.

The puzzling result suggesting that Chinese ODI tends to go to countries with high political risks has been recently investigated by Li and Liang (2012), who have considered the role of international relations in Chinese ODI and found that Chinese investors are attracted towards risky environments, not because of their risk preferences but rather because of the risk-reduction effect of good political relations. Although the latter study does not explicitly distinguish between private and state-controlled firms, it provides an important contribution to the previous literature that largely ignored the importance of political relationships between home and host economies.

An interesting difference between private and state-owned or state-controlled firms regards the strategic asset seeking motivation, which finds more support among SOEs, whereas technical superiority does not seem to attract private firms (Ramasamy et al., 2012).

Duanmu's (2012) empirical investigation adds that SOEs are more likely to invest abroad as a consequence of an appreciation of the Renminbi compared to private companies, given their

easier access to capital and foreign reserves granted by the government - a fact that is confirmed also in a descriptive analysis on SOEs by Song et al. (2011).

Private firms are driven by market motives (Ramasamy et al., 2012), a result confirmed by Lu et al. (2011), emphasizing also that this is especially true for exporting companies. Other studies, based on surveys on the internationalization of private Chinese MNEs, show that they invest abroad in a more traditional way, exploiting their firms' specific advantages in terms of organizational capacities (Liang et al., 2011) and technology based competitive advantages (Lu et al., 2011).

In addition, the literature points out that private companies are pushed to invest overseas by the need to escape from an unfavorable domestic environment, and especially due to the difficulties of raising capital (Luo and Tung 2007). The work by Sutherland and Ning (2011), surveying 51 Chinese private firms that have invested abroad through a tax haven for the purpose of getting access to capital, shows that such financially weak companies invest abroad mainly to support their trade activities or to enter into global production networks rather than to get access to strategic assets.

Finally, results are still ambiguous on whether the presence of Chinese population in the host countries represents an attraction factor for either or both categories of firms under scrutiny. Ramasamy et al. (2012) find that the size of the Chinese population in host countries is a relevant attraction factor in location decisions among SOEs, as they rely more on the international *guanxi* among the Chinese Diaspora, but the same does not hold true for private firms. Conversely, Gu (2009) and Song (2011) – both using survey data – emphasize how local networks of Chinese living overseas are among the major sources of information and factors of attraction for Chinese private companies in a psychically distant market, such as that of Sub-Saharan Africa.

2.2   *Explanatory variables*

In our model, we include variables identified on the basis of the above-mentioned literature as being relevant factors for foreign location choices.

GDP is included as a measure of the host country market size and per capita GDP (**GDP_PC**) as a measure of market affluence. There is a large body of evidence confirming that Chinese ODI are driven by market-seeking motivations, especially when the investment is directed to OECD markets (Buckley et al., 2007; Cheung and Qian, 2008; Cheng and Ma, 2008; Kolstad and Wiig 2012), a result that is consistent with traditional FDI theory. When distinguishing firms by corporate ownership, the literature has so far provided mixed results about the importance of market size and the level of per capita income of the host country, with some studies suggesting that the former is one of the more relevant motivations for private firms compared to state-owned enterprises and that the latter has relatively less importance (Lu et al., 2011; Ramasamy et al., 2012).

Distance (**DIST**) from the home country is included as a proxy for trade costs. The standard theory of FDI suggests that firms are more likely to invest in more distant markets in order to save on export costs (Buckley and Casson, 1981; Barba Navaretti and Venables, 2004). However, studies based on the gravity model predict that the relationship between FDI and distance could also be negative, as the cost of investing increases with distance (Pradhan, 2009; Kolstad and Wiig, 2012). For such reason, we also include a dummy often present in gravity models indicating whether a country has no access to the sea (**LANDLOCKED**), a further control to consider whether the remoteness of the recipient country discourages investments. Consistent with the latter explanation, Ramasamy et al. (2012) find that the coefficient for distance has a negative impact on Chinese private firms while it is not relevant for SOEs, possibly reflecting also a bias in the size of the company.

As a proxy for natural resources, we include two variables: the share of fuels (**FUELS_GDP**) and the share of ores and metals (**ORES_GDP**) in the GDP of the host economy. With regard to the resource-seeking motivation, several empirical studies show that Chinese investments,

especially to developing countries, are attracted by the resource endowments of the host economies and these investments are mainly undertaken by SOEs (Buckley et al., 2007; Cheung and Qian, 2008; Pradhan, 2009; Sanfilippo, 2010; Kolstad and Wiig, 2012).

In relation to the strategic asset-seeking motivation, studies on Chinese ODI at the aggregate level have so far provided mixed results (Buckley et al., 2007; Kolstad and Wiig, 2012). Taking into account the ownership structure of the investors, Ramasamy et al. (2012) find that state companies are relatively more asset seeking than private firms (they are more likely to invest in countries with a higher share of hi-tech exports), while Lu et al. (2011) show that private companies in technology-intensive industries are more likely to engage in asset-seeking FDI to get access to advanced technologies and human capital. In the present paper, we use two different measures to capture this dimension. The first is the gross secondary school enrolment rate (**SEC_ENR**) as a proxy for the level of human capital and the second is the share of R&D on GDP (**R&D_GDP**). Given that findings on the asset-seeking motivation might be affected by the high number of investments in resources and in trade-related activities, we also include among our explanatory variables an interaction between the share of R&D and GDP (**RD_GDP*MAN**).

Besides these traditional motivations, we also explore the propensity to invest in contexts with poor governance. In conventional theory, poor governance is associated with low levels of attraction for FDI (Chakrabarti, 2001), given that it often poses a threat to the protection of property rights and contract enforcement (Dixit, 2012). The empirical literature on foreign location choices by emerging MNEs suggests that these firms are relatively indifferent to the institutional conditions in host countries and this has been so far considered as a sort of competitive advantage due to their domestic experience in coping with poor governance (Cuervo-Cazurra and Genc, 2008; Dixit, 2012). China seems to make no exception as documented by the growing empirical evidence showing that Chinese ODI are relatively more attracted to countries with weak governance and bad institutions (Quer et al., 2011), especially in

their quest for natural resources in developing countries (Sanfilippo, 2010; Kolstad and Wiig, 2012). Anecdotic evidence, supported by empirical results by Ramasamy et al. (2012), confirms that SOEs mainly drive this trend, whereas the same does not hold true for private investors. In order to convey this dimension, we include in our analysis a variable taken by the World Governance Indicators measuring the political stability and absence of violence in a given country[3] (**POL_STAB**) (Kaufmann et al., 2009) as well as an interaction of this variable with a dummy identifying the investments in natural resource sectors (**POL_STAB*RES**).

As a standard indicator of economic stability we include inflation (**INFL**). In the case of China, it has been found that this does not deter investors that view uncertain economic conditions as an opportunity to get high returns from their investments rather than a constraint (Buckley et al., 2007). Again, this prediction is more likely to apply to state companies than private ones, whose investment pattern is less risk averse (Ramasamy et al., 2012).

As a further control variable, we include the presence of bilateral investment treaties *(**BIT***) between China and host economies. BITs are seen as a way of guaranteeing firms against the risk of investments (Dixit, 2012) and in the Chinese case may represent an incentive for private more than for state-owned firms.

Finally, we include the number of Chinese residents (**CH_MIGR**) in the host economies to account for the possibility that different types of firms rely differently on relationships with nationals residing abroad as a means of information and knowledge exchange about the business environment and the opportunities in the host economies.

3. Data and methodology

3.1 Data on Chinese ODI

Our sample is based on data on FDI coming from *fDi Markets*, a database maintained by *fDi*

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[3] The variable, scoring from -2.5 to 2.5 (the lower representing the worst performance), is defined as measuring the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.

Intelligence, a specialist division of the *Financial Times* group, which monitors cross-border greenfield investments, covering all sectors and countries worldwide since 2003. Only projects creating new jobs and investments (no minimum investment required) are included: mergers and acquisitions (M&A) and other equity investments are not.[4] Therefore, our database covers the number of investments made by Chinese companies in each country and each industry from 2003 to 2008. In the database each entry is an investment project, and the database is carefully validated and updated each year in order to check if projects have been actually completed or not, and, in case, they are deleted from the database. The database provides also information about the value of the investment, but in many cases it is an estimate rather than an actual value. Therefore, in order to avoid misspecifications due to a significant divergence between the estimated and the actual value, in the empirical analysis the dependent variable is the number of investments.

The advantage of this dataset with respect to MOFCOM and UNCTAD data is the availability of a sector classification for each investment project, which can be matched with the International Standard Industrial Classification of all economic activities (ISIC). Based on the World Bank classification for 2006, host countries are aggregated in three groups according to their income level: (a) high-income OECD countries; (b) middle-income countries (including those in the upper-middle income group only); (c) lower income countries (including lower-middle income and low-income countries). As for industry classification, we have aggregated data into three major sectors: manufacturing, resource intensive and services.

915 Chinese greenfield investment projects are registered in the period 2003-2008, classified according to the ownership structure of the investing company. The classification of firms has been made by the authors cross checking information on company names with publicly available resources and in specialized databases. For a small number of firms no or insufficient information was available and therefore they have not been classified as SOEs or private but they have been included in the overall sample. Although there are different typologies of state-

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[4] This is an important difference from the FDI data provided by MOFCOM, which does include M&A and equity investments.

controlled companies (including for instance those affiliated to the central or to local governments), each characterized by different typologies of actors and presumably also by different motivations to go abroad (Chen et al., 2009), we have drawn a simplified distinction between SOEs (including all the above-mentioned forms) and private firms (as in Duanmo, 2012).

3.2 A descriptive analysis of Chinese ODI

Figure 1 shows the annual distribution of Chinese ODI by state-owned firms and private investors. It can be observed that the rapid expansion of Chinese firms abroad between 2003 and 2008 has a similar pattern for SOEs and private enterprises. This can be explained by the large wave of reforms introduced by the Government in 2003 with the objective of simplifying approval for accessing foreign exchange and especially providing support for credit in some key FDI projects, aimed at accessing resources and technology and improving firm competitiveness (see Luo et al., 2010 for more details). In addition, it is worth emphasizing the reform implemented by MOFCOM in February 2006 whose specific objective is to encourage and support the *go-global* strategy of private companies.

Table 1 shows the geographical distribution of Chinese ODI by firm type. Chinese private firms preferably invest in high-income countries (especially within the OECD), followed by lower and middle-income countries. By contrast, SOEs are mostly attracted to lower income, and secondly by high-income countries.

As regards the disaggregation by sector of FDI, Table 2 shows that many of the top-ranking sectors are common to the two groups and these are: financial services, communication, automotive, consumer electronics and industrial machinery. However, FDI by SOEs are much more concentrated in a few sectors: the top 5 sectors account for around 62 per cent of the total number of FDI, with 28 per cent of FDI in resource-intensive sectors (Metals, Coal, Oil and

Natural Gas) and 25 per cent in service sectors. On the other hand, FDI by private firms are less

concentrated and mainly in manufacturing capital-intensive sectors.

Figure 1 *Number of Chinese ODI by firm type, 2003-2008*
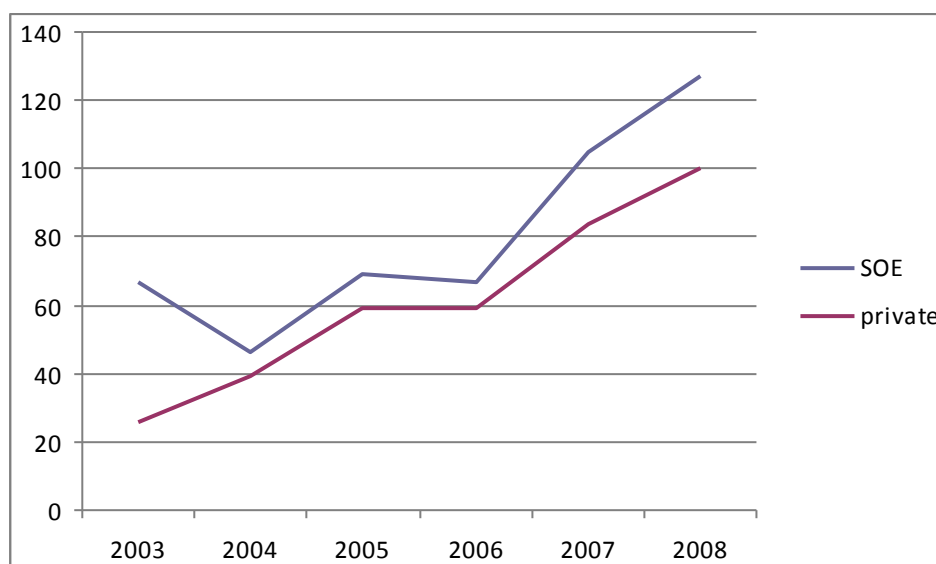
Table 1 *Geographical distribution of Chinese ODI flows, 2003-2008*

Host country income*	SOE	private	All
High (OECD and non)	41.79%	53.95%	47,37%
Upper-Middle	11.85%	16.89%	13,89%
Low and Lower-Middle	46,15%	29.16%	38,74%
	100%	100%	100%

*Countries are classified according to the World Bank definition for the year 2006.

Table 2 *Top 10 sectors in Chinese ODI (2003-2008)*

Sector	SOEs (%)	Sector	Private (%)	All Firms
Metals	16.84	Communications	15.26%	
Financial Services	12.89	Business Machines & E	10.35%	
Communications	12.27	Software & IT service	8.17%	
Coal, Oil and Natural	11.64	Electronic Components	7.36%	
Automotive OEM	8.52	Consumer Electronics	7.08%	
Consumer Electronics	6.24	Automotive OEM	5.99%	
Industrial Machinery,	5.20	Industrial Machinery,	5.72%	
Transportation	2.70	Textiles	5.72%	
Alternative/Renewable	2.49	Metals	4.36%	
Chemicals	2.29	Business Services	3.81%	
Manufacturing	65.28		69,71	69.71
Natural Resources	23.70		24.04	23.63
Services	11.02		0.82	6.67

Table 3 reports a cross-classification of FDI by host country and sector. Distinguishing by firm ownership, two interesting qualifications emerge. Firstly, manufacturing and services FDI by private investors go mainly to high-income countries, and especially to those belonging to the OECD, while resource-sector FDI are predominantly located in lower income countries. Second, manufacturing FDI by SOEs go mostly to lower income countries, while higher income countries are mainly targeted for investments in services.

Table 3 *Chinese ODI by main sector and income level of host country (2003-2008)*

	SOE (%)			Private (%)		
	Manufacturing	**Services**	**Natural Resources**	**Manufacturing**	**Services**	**Natural Resources**
High (OECD and non)	40.76	58.77	11.32	50.18	67.05	-
Upper Middle	13.69	8.77	7.55	17.45	14.77	33.33
Low and Lower Middle	45.54	32.46	81.13	32.36	18.18	66.67

Source: Authors' computations on *FDIMarkets.com*

3.3   Methodology

Our dataset includes the number of investment projects undertaken by Chinese companies in 109 countries. We have computed the frequency counts of Chinese investments for each pair of destination country and sector over the period 2003-2008.[5]

Our dependent variable, $INV_{i,j,t}$, measures the number of FDI originating from China and directed to country *i* in sector *j* at time *t*. Furthermore, as the aim of our paper is to take into account differences arising from the ownership structure of firms investing abroad, we have created two additional dependent variables, $INV\_SOE_{i,j,t}$ and $INV\_private_{i,j,t}$, measuring the number of investments by Chinese state-owned and private companies respectively and directed to country *i* in sector *j* at time *t*.

As for the methodology, the econometric literature suggests, in the presence of count data as a quantitative measure with a discrete nature of the response function (Greene, 2003; Cameron and Trivedi, 2009), the adoption of a Poisson or of a negative binomial regression model, which are

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[5] Based on this information, we have built a balanced panel dataset to avoid the issue of truncation by considering all the theoretically possible alternatives in terms of destination countries and sectors for each year included in our sample (as in Altomonte and Guagliano, 2003).

more efficient compared to discrete or linear models. Nonetheless, count models face two main weaknesses (a) the existence of heteroskedasticity in the model; and especially (b) the over-dispersion of data (Wooldridge, 2002). In order to reduce the risk of heteroskedasticity, the literature suggests modifying the model to take into account the exposure of the observations to its grouping structure (Greene, 2003), represented in our case by the combinations of countries and sectors. Conversely, in order to take into account for the over-dispersion, one approach is to keep the conditional mean assumption, making the Poisson model consistent (although relaxing the assumption of having a robust estimation of the variance-covariance matrix) or to adopt the negative binomial model, which takes specifically into account the over-dispersion of the data (Cameron and Trivedi, 2009). Considering the overall robustness of a Poisson model compared to a negative binomial one (Wooldridge, 2002; Ramasamy et al., 2012), we have opted for the former.

We fit a random-effect panel Poisson model via maximum likelihood, keeping the panel structure of our dataset, based on the principle that each observation y (our dependent variable) is drawn from a Poisson population μ, which is the expected rate of occurrence over the time considered (Greene, 2003):

$$\text{Pr}(Y_{i,j,t}) = \frac{e^{-\mu_{i,j}} \mu_{i,j}^{y_{i,j}}}{y!}$$

Where $\mu_{i,j} = \exp(\alpha + X_i\beta)$, X_i representing the vector of independent variables, and y! is a factorial.

The final formulation of the model, including our independent variables is the following:

$Pr(Y_{i,j,t} = y_{i,j,t} | x_{i,t}) = f(GDP_{i,t}; \; GDP\_PC_{i,t}; \; DIST_i; \; LANDLOCKED_i; \; INFL_{i,t}; \; BIT_{i,t}; \; POL\_STAB_{i,t}; \; FUEL\_GDP_{i,t}; \; ORES\_GDP_{i,\,t}; \; RD\_GDP_{i,t}; \; SEC\_EDU_{i,t}; \; CH\_MIGR_i)$

The independent variables and summary statistics are provided in Tables 4 and 5 respectively and Table A1 in Appendix presents the correlation matrix.

Table 4 *Variable list and description*

Variable	Description	Source
INV	N. of investments by Chinese firms	*FDIMarkets.com*
INV_SOE	N. of investments by Chinese SOEs	*FDIMarkets.com*
INV_private	N. of investments by Chinese private firms	*FDIMarkets.com*
GDP	Log of host country GDP	International Monetary Fund
GDP_pc	Log of host country per capita GDP	International Monetary Fund
DIST	Log of simple distance (most populated cities, in Km)	CEPII
LANDLOCKED	Dummy, 1 if country has an access to the sea	CEPII
INFL	Inflation, % consumer price index	World Development Indicators
BIT	Bilateral Investment Treaties, dummy (1 yes, 0 no)	UNCTAD
POL_STAB	Political Stability	World Governance Indicators
FUEL_GDP	Share of fuels on GDP	UNCTAD
ORES_GDP	Share of ores and metals on GDP	UNCTAD
R&D_GDP	R&D expenditures on GDP	UNESCO
SEC_EDU	Gross secondary enrolment rate, adult total	UNESCO and World Development Indicators
CH_MIGR	N. of Chinese migrants in the host economy	Global migrant origin database

Table 5 *Summary statistics*

Variable	Obs	Mean	Std. Dev.	Min	Max
INV	19793	0.0582	0.3154	0	8
INV_SOE	19793	0.0304	0.2060	0	5
INV_private	19793	0.0229	0.1766	0	4
GDP	19002	24.8454	2.0713	19.2279	30.2197
GDP_PC	18882	8.2718	1.7114	4.6938	11.5541
DIST	19065	8.8466	0.6118	6.6965	9.8677
LANDLOCKED	19425	0.2133	0.4096	0	1
INFL	18432	49.8088	984.9275	-8.9747	24411.0300
BIT	19793	0.5822	0.4932	0	1
POL_STAB	19605	-0.1577	0.9830	-2.6383	1.6572
FUEL_GDP	16661	8.7880	14.4538	0	64.1921
ORES_GDP	16872	2.7153	5.0677	0	33.6007
RD_GDP	13467	0.9943	0.9815	0	4.5402
SEC_EDU	19605	76.0176	30.4513	6	160.3465
CH_MIGR	19605	55706.8	244746.5	0	2193425

4. Estimation results

The results of our empirical analysis are presented in Table 6 for the whole group of recipient countries, while the results by income level of host countries are presented in Tables A2 to A4 in the Appendix. Test statistics are also reported in Table 6. The Wald tests on the joint significance of the parameters show that the model is statistically significant, while the likelihood-ratio test suggests that a random-effect panel structure is to be preferred to a pooled Poisson estimator.

We find that the market-seeking hypothesis holds for the whole sample, as well as for all income groups, meaning that larger markets not only tend to attract Chinese ODI compared to smaller ones, but they are also those where the largest number of investments are concentrated. Taking

into account the magnitude of the coefficients, they are consistently larger for private investors compared to SOEs, confirming previous findings (Lu et al., 2011; Sutherland and Ning, 2011; Ramasamy et al., 2012). Besides, we find that Chinese investors, and especially SOEs, tend go relatively less to developed countries, as represented by the negative and significant coefficient of per capita GDP. However, when disaggregating by income level of the host country, we find that this relation is confirmed only for the group including lower income economies, meaning that the poorest within the group are the most attractive. Interestingly enough in the OECD group, we find that Chinese private firms invest more in the richer countries, somehow confirming their market-oriented behavior.

Considering the coefficients of distance and host country's remoteness, these are not significant, with the exception of the distance positively affecting Chinese FDI by SOEs to middle-income countries. This suggests that the intent to invest in emerging markets as strategic destinations for market exploitation or access to key resources (often distant from home, as in Latin America or in Africa) overcomes the higher costs of investing in more distant locations.

Overall, our results confirm that SOEs are definitely more resource-seekers than private firms. When distinguishing host economies by income level and natural resources between fuels and metals, it emerges that SOEs are attracted by fuel abundance when investing in lower income countries and by metal abundance when investing in OECD countries (the latter is also true, to a lesser extent, for private firms). In this respect, and in line with the findings by Kolstad and Wiig (2012), we find that when investing in natural-resource abundant developing countries, it is not poor governance *per se* that attracts SOEs, but rather it is the availability of resources that positively correlates with politically unstable environments.

An interesting finding is related to the strategic asset-seeking motives. We find that human capital positively affects Chinese investment, and especially SOEs, both in the overall sample and within the group of lower income countries, suggesting that the higher levels of education in richer countries do not allow enough variations within the other two income groups. Even more

interestingly, countries with larger shares of spending on R&D are attractive for both types of companies only for FDI in the manufacturing sector. This result suggests that the search for strategic assets is not only confined to state-controlled companies – as suggested by Ramasamy et al. (2012) – but it is possibly even stronger for investments by private companies, especially in OECD countries.

Table 6 *Estimation results for the whole sample*

	INV	INV_SOE	INV_private	INV	INV_SOE	INV_private
GDP	0.763***	0.751***	0.871***	0.779***	0.767***	0.873***
	(0.0672)	(0.0881)	(0.100)	(0.0674)	(0.0883)	(0.1000)
GDP_PC	-0.649***	-0.892***	-0.253	-0.675***	-0.931***	-0.251
	(0.125)	(0.166)	(0.187)	(0.125)	(0.165)	(0.186)
DIST	0.182	0.283	-0.173	0.104	0.248	-0.295
	(0.144)	(0.178)	(0.212)	(0.144)	(0.178)	(0.215)
LANDLOCKED	0.346	-0.0215	0.486	0.337	-0.0255	0.481
	(0.250)	(0.335)	(0.375)	(0.249)	(0.334)	(0.377)
INFL	0.0136	0.0197	-0.00365	0.0144	0.0204	-0.00377
	(0.0115)	(0.0135)	(0.0229)	(0.0114)	(0.0134)	(0.0229)
BIT	0.321**	0.218	0.342*	0.304**	0.191	0.355*
	(0.131)	(0.176)	(0.183)	(0.130)	(0.176)	(0.184)
POL_STAB	0.121	0.177	0.176	0.211	0.289	0.205
	(0.130)	(0.171)	(0.208)	(0.133)	(0.177)	(0.207)
POL_STAB*RES				-0.797***	-0.860**	-0.229
				(0.306)	(0.345)	(0.548)
FUEL_GDP	0.0260***	0.0433***	-0.00859	0.0250***	0.0427***	-0.00918
	(0.00797)	(0.00979)	(0.0118)	(0.00787)	(0.00970)	(0.0118)
ORES_GDP	0.0273**	0.0571***	-0.0381	0.0285**	0.0583***	-0.0362
	(0.0135)	(0.0160)	(0.0313)	(0.0134)	(0.0160)	(0.0313)
RD_GDP	0.103	0.243	-0.353**	-0.149	0.0792	-0.667***
	(0.117)	(0.155)	(0.179)	(0.132)	(0.173)	(0.195)
RD_GDP*MAN				0.397***	0.266**	0.508***
				(0.0958)	(0.123)	(0.131)
SEC_EDU	0.0147***	0.0191***	0.00417	0.0150***	0.0198***	0.00377
	(0.00387)	(0.00483)	(0.00707)	(0.00390)	(0.00489)	(0.00706)
CH_MIGR	1.47e-06***	1.45e-06***	1.25e-06***	1.45e-06***	1.43e-06***	1.24e-06***
	(2.35e-07)	(3.05e-07)	(3.09e-07)	(2.30e-07)	(3.00e-07)	(3.06e-07)
CONS	1.453***	1.905***	1.599***	1.396***	1.856***	-29.58***
	(0.0947)	(0.119)	(2.794)	(0.0953)	(0.121)	(2.778)
Observations	11,829	11,829	11,829	11,829	11,829	11,829
Wald Test	217.15	136.93	140.95	237.22	147.13	148.74
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
LR test (alpha=0)	1174.28	666.33	414.74	1141.08	644.28	410.55
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Interesting considerations arise for institutionally related variables. Chinese residents in the host economies are an attraction factor for Chinese firms, regardless of ownership. This result holds true for the whole group of Chinese ODI and specifically for investments in middle-income

countries, showing that relying on the networks of Chinese overseas can foster business opportunities and reduce transaction costs. Moreover, Chinese residents in OECD countries seem to act as a deterrent for Chinese FDI. This result can imply that FDI are considered as a way to enter into rich markets, which are relatively less familiar to Chinese firms. Related to this result is the positive influence of FDI bilateral investment treaties for private firms in the whole sample and in OECD countries. In a sense, given that BITs can be understood as a way of reducing risks and uncertainties linked to overseas investments, this result confirms the view that private companies follow a more conventional approach to FDI and that they are less risk averse compared to SOEs, possibly because they are unlikely to benefit from Government support as SOEs are in their international activities.

5. Concluding remarks

The literature on the rise of FDI from emerging economies – and especially from China – has often pointed out their unconventional nature, supported by large anecdotic evidence and by few empirical analyses mostly at the aggregate level. Foreign location choices of Chinese firms present both conventional and distinctive features. This paper provides a novel contribution to this stream of literature by investigating if some of these features may be explained by differences in the ownership structure of Chinese companies investing abroad.

We find that most of the distinctive features of Chinese ODI previously suggested by the literature – namely the importance of strategic motivations compared to more conventional explanations of firms international expansion, are undoubtedly characterizing the internationalization of state-owned and state-controlled firms. First, SOEs are not so attracted by affluent markets, which are otherwise the largest recipient of FDI worldwide, confirming that they may indeed be motivated by other objectives than pure market seeking reasons. This is even clearer considering that, among the group of lower-income countries, SOEs prefer the poorest

ones. By contrast, Chinese private firms are more attracted to large and affluent markets, following a more conventional location strategy,

Moreover, SOEs are definitely more resource-seekers than private firms and it is not poor governance *per se* that attracts SOEs' ODI in natural-resource abundant developing countries, but rather it is the availability of resources that positively correlates with politically unstable environments. The resource seeking motive confirms that SOEs venture abroad, often distant from home, as in Latin America or in Africa, in order to secure access to valuable resources for their home country development and that their foreign expansion may not follow merely corporate strategies, but rather broader national strategic priorities.

As a whole, the disaggregation between State-owned enterprises (SOEs) and privately owned firms does provide novel insights about Chinese ODI. Further research is needed to explore how the different levels of state control may influence the internationalization strategies of different types of Chinese firms.

For a broader understanding of the determinants of different Chinese firms investing abroad, the results in this paper should be complemented by an analysis of Chinese foreign investment through M&As.

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Table A1. *Correlation Matrix*

	inv	inv_SOE	inv_pr~e	lgdp	lgdp_pc	ldist	landlo~d	infl	bit	pol_stab	FUEL_GDP	ORES_GDP	rd_gdp	sec_edu	ch_migr
inv	1														
inv_SOE	0.7735	1													
inv_private	0.7257	0.1957	1												
lgdp	0.1791	0.1143	0.1532	1											
lgdp_pc	0.0811	0.0328	0.0882	0.6962	1										
ldist	-0.0668	-0.0592	-0.0488	0.013	0.0327	1									
landlocked	-0.0711	-0.0498	-0.0567	-0.4185	-0.2359	-0.1547	1								
infl	-0.0308	-0.0044	-0.0463	-0.3259	-0.453	0.0271	0.1898	1							
bit	-0.039	-0.027	-0.0321	-0.1181	-0.0661	-0.0956	0.0301	0.0641	1						
pol_stab	0.022	-0.004	0.0378	0.2708	0.7182	-0.0114	0.0233	-0.3347	-0.0285	1					
FUEL_GDP	-0.0261	-0.0057	-0.0357	-0.06	-0.0344	-0.0986	0.0595	0.1766	0.1178	-0.2142	1				
ORES_GDP	-0.0053	0.0145	-0.0187	-0.2762	-0.1707	-0.0739	0.2627	0.084	0.0636	0.1167	-0.0767	1			
rd_gdp	0.0694	0.0322	0.0678	0.5741	0.6933	-0.1481	-0.1149	-0.3782	-0.1966	0.4576	-0.2025	-0.1823	1		
sec_edu	0.0257	0.0052	0.0296	0.4523	0.7393	0.0038	-0.1319	-0.2575	0.1307	0.5493	-0.0026	-0.0665	0.4273	1	
ch_migr	0.1906	0.1301	0.1728	0.2238	0.2145	-0.2886	-0.1306	-0.1644	-0.1969	0.1682	-0.0716	0.0582	0.1096	0.0022	1

Table A2. *Estimation results for host-OECD countries*

	INV	INV_SOE	INV_private	INV	INV_SOE	INV_private
GDP	0.868***	1.092***	1.180***	0.860***	1.092***	1.173***
	(0.171)	(0.250)	(0.243)	(0.171)	(0.250)	(0.244)
GDP_PC	0.423	-1.137	2.048**	0.407	-1.163	2.091**
	(0.596)	(0.904)	(0.856)	(0.596)	(0.906)	(0.856)
DIST	0.304	0.560	-0.456	0.167	0.505	-0.589
	(0.317)	(0.426)	(0.435)	(0.321)	(0.428)	(0.442)
LANDLOCKED	-0.601	-0.643	0.451	-0.528	-0.589	0.484
	(0.637)	(0.966)	(0.871)	(0.635)	(0.966)	(0.871)
INFL	0.220***	0.0642	0.334***	0.217***	0.0644	0.327***
	(0.0790)	(0.108)	(0.118)	(0.0786)	(0.107)	(0.117)
BIT	0.789***	0.449	0.599*	0.804***	0.458	0.621**
	(0.236)	(0.335)	(0.313)	(0.236)	(0.336)	(0.314)
POL_STAB	-0.479	-0.409	-0.187	-0.447	-0.394	-0.149
	(0.350)	(0.524)	(0.505)	(0.350)	(0.525)	(0.506)
POL_STAB*RES				-0.543	-0.0649	-16.96
				(0.684)	(0.719)	(27.13)
FUEL_GDP	-0.110**	-0.0966	-0.109*	-0.113**	-0.0958	-0.112*
	(0.0458)	(0.0735)	(0.0589)	(0.0458)	(0.0733)	(0.0588)
ORES_GDP	0.743***	1.019***	0.361	0.773***	1.034***	0.358
	(0.154)	(0.202)	(0.274)	(0.154)	(0.202)	(0.274)
RD_GDP	0.336	0.349	-0.0977	0.163	0.255	-0.284
	(0.256)	(0.352)	(0.357)	(0.265)	(0.361)	(0.374)
RD_GDP*MAN				0.239**	0.136	0.255**
				(0.102)	(0.121)	(0.129)
SEC_EDU	-0.00491	-0.00109	0.0223	-0.00479	-0.00112	0.0224
	(0.00822)	(0.0109)	(0.0170)	(0.00827)	(0.0110)	(0.0170)
CH_MIGR	-1.37e-06**	-1.87e-06**	-1.55e-06*	-1.25e-06*	-1.81e-06**	-1.43e-06*
	(6.54e-07)	(8.05e-07)	(8.04e-07)	(6.48e-07)	(8.04e-07)	(8.03e-07)
CONS	1.211***	-35.14***	1.405***	1.162***	1.346***	-63.09***
	(0.159)	(6.353)	(0.224)	(0.162)	(0.216)	(8.414)
Observations	3,551	3,551	3,551	3,551	3,551	3,551

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3. *Estimation results for host upper-middle income countries*

	INV	INV_SOE	INV_private	INV	INV_SOE	INV_private
GDP	0.731***	0.682*	0.731**	0.724***	0.668*	0.729**
	(0.252)	(0.405)	(0.351)	(0.250)	(0.400)	(0.351)
GDP_PC	-0.451	-0.0454	0.00214	-0.475	-0.0534	-0.0226
	(0.433)	(0.681)	(0.670)	(0.433)	(0.680)	(0.672)
DIST	0.776	2.088**	0.325	0.705	1.924**	0.342
	(0.530)	(0.839)	(0.757)	(0.525)	(0.825)	(0.754)
LANDLOCKED	0.934	1.254	0.917	0.889	1.224	0.910
	(0.596)	(1.003)	(0.785)	(0.593)	(0.992)	(0.787)
INFL	0.0459	0.0790*	-0.0219	0.0475	0.0811*	-0.0208
	(0.0307)	(0.0429)	(0.0546)	(0.0305)	(0.0427)	(0.0544)
BIT	-0.543	-0.583	-0.332	-0.540	-0.543	-0.329
	(0.386)	(0.578)	(0.542)	(0.384)	(0.574)	(0.542)
POL_STAB	0.358	-0.115	0.0281	0.406	-0.102	0.0570
	(0.515)	(0.805)	(0.756)	(0.515)	(0.805)	(0.756)
POL_STAB*RES				-0.870	0.196	-0.901
				(1.097)	(1.775)	(1.406)
FUEL_GDP	0.0411	0.0444	0.0370	0.0481	0.0529	0.0386
	(0.0452)	(0.0653)	(0.0659)	(0.0454)	(0.0655)	(0.0661)
ORES_GDP	0.0154	0.0222	-0.0264	0.0205	0.0303	-0.0231
	(0.0405)	(0.0490)	(0.0839)	(0.0404)	(0.0488)	(0.0828)
RD_GDP	0.572	1.407	0.138	-0.418	0.116	-0.845
	(0.709)	(1.067)	(0.920)	(0.774)	(1.165)	(1.019)
RD_GDP*MAN				1.310***	1.538***	1.356***
				(0.372)	(0.542)	(0.494)
SEC_EDU	0.0192	0.0286	0.0503	0.0180	0.0270	0.0504
	(0.0263)	(0.0398)	(0.0424)	(0.0263)	(0.0397)	(0.0424)
CH_MIGR	8.18e-06*	1.31e-05**	1.06e-05	8.09e-06*	1.24e-05*	1.11e-05*
	(4.41e-06)	(6.55e-06)	(6.52e-06)	(4.40e-06)	(6.50e-06)	(6.53e-06)
CONS	-35.38***	1.635***	1.113***	0.839***	-50.13***	-38.11***
	(7.949)	(12.54)	(11.72)	(0.275)	(12.31)	(11.68)
Observations	2,803	2,803	2,803	2,803	2,803	2,803

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4. *Estimation results for host lower-income countries*

	INV	INV_SOE	INV_private	INV	INV_SOE	INV_private
GDP	0.796***	0.794***	0.948***	0.817***	0.822***	0.960***
	(0.117)	(0.144)	(0.187)	(0.115)	(0.142)	(0.185)
GDP_PC	-0.759***	-0.928***	0.311	-0.801***	-0.999***	0.270
	(0.259)	(0.329)	(0.408)	(0.255)	(0.326)	(0.397)
DIST	0.0291	0.159	-1.017*	0.0285	0.171	-1.047*
	(0.276)	(0.335)	(0.589)	(0.276)	(0.336)	(0.581)
LANDLOCKED	-0.0169	-0.469	-0.171	-0.0315	-0.498	-0.217
	(0.459)	(0.551)	(1.274)	(0.454)	(0.546)	(1.292)
INFL	0.00377	0.0129	0.00291	0.00456	0.0139	0.00146
	(0.0145)	(0.0161)	(0.0363)	(0.0144)	(0.0158)	(0.0363)
BIT	-0.232	-0.227	-0.489	-0.260	-0.261	-0.496
	(0.218)	(0.272)	(0.394)	(0.217)	(0.272)	(0.395)
POL_STAB	0.234	0.378	0.0787	0.351*	0.556**	0.0360
	(0.201)	(0.247)	(0.371)	(0.204)	(0.255)	(0.367)
POL_STAB*RES				-0.973***	-1.142***	3.433
				(0.340)	(0.391)	(3.297)
FUEL_GDP	0.0332**	0.0484***	-0.0799*	0.0332**	0.0483***	-0.0805*
	(0.0142)	(0.0166)	(0.0476)	(0.0141)	(0.0166)	(0.0477)
ORES_GDP	0.0131	0.0304	-0.0691	0.0130	0.0299	-0.0716
	(0.0226)	(0.0263)	(0.0812)	(0.0224)	(0.0261)	(0.0813)
RD_GDP	-0.606	-0.932	-0.540	-1.730***	-1.719**	-2.357**
	(0.600)	(0.738)	(0.982)	(0.662)	(0.798)	(1.164)
RD_GDP*MAN				1.605***	1.100*	2.304***
				(0.477)	(0.594)	(0.696)
SEC_EDU	0.0247***	0.0226***	0.0110	0.0252***	0.0241***	0.0109
	(0.00699)	(0.00864)	(0.0151)	(0.00695)	(0.00865)	(0.0150)
CH_MIGR	7.21e-07	9.50e-07	-4.26e-06	4.79e-07	3.74e-07	-4.48e-06
	(2.77e-06)	(3.36e-06)	(5.22e-06)	(2.73e-06)	(3.35e-06)	(5.20e-06)
CONS	-26.28***	-26.26***	0.739*	1.199***	-26.53***	-28.28***
	(3.241)	(3.844)	(6.909)	(0.192)	(3.882)	(0.451)
Observations	4,730	4,730	4,730	4,730	4,730	4,730

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1