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A Critical Revision of the Empirical Literature on Chinese Outward Investment: A New Proposal

Summary: Research on China's role in the globalisation of economic activity focuses mainly on its involvement in trade and on its competitiveness as a manufacturing location for foreign investors. However, since the mid-1990s China's outward foreign direct investment (OFDI) has become an important part of its integration into the global economy. This dimension is poorly understood, and few empirical studies about the drivers behind Chinese OFDI have been published thus far. After reviewing critically the empirical literature, which provides ambiguous results about the explanatory power of some of the large list of determinants put forward, we aim to provide a more accurate description of the motives behind Chinese OFDI. Using a panel data approach for the period 1995 to 2009 and for a large host country sample, we identify some key drivers. We find that host market size, natural resources and FDI openness are of paramount relevance. However, the asset seeking hypothesis is not confirmed.

Key words: China, Outward foreign direct investment, Multinational enterprises.

JEL: F15, F23.

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Despite Chinese outward foreign direct investment (OFDI) flows being low in absolute terms, this issue has attracted increasing attention from researchers, especially in the area of international business (Ziyi Wei 2010). Their rapid expansion raises fears and hopes about their effects and, more to the point of our research, the unique internationalisation behaviour of Chinese OFDI challenges conventional wisdom about the causes of this expansion. Anyway, the empirical evidence on Chinese OFDI determinants is limited and mixed so far. Hence, we think that this research may shed some light on this phenomenon.

Mainstream theory on multinational enterprises (MNEs), namely the OLI paradigm or the KCM model, considers that firm (ownership)-specific advantages generate the economies of scale at the firm level that provide the incentive to become multinationals and compensate for the liability of foreignness. The OLI paradigm of John H. Dunning (1977, 1981) refers to a theory in which the firm becomes an MNE when three advantages are satisfied, namely Ownership, Location and Internalisation. On the other side, this theory has been formalised and tested in the so-called Knowledge Capital Model by James R. Markusen (2002), and Petr Mariel, Susan Orbe, and Carlos Rodríguez (2009). However, Chinese MNEs are considered to be latecomers

that lack firm-specific advantages to exploit internationally. Furthermore, at the macro-level, the investment development path (IDP) model suggests that Chinese OFDI has reached an amount above what its level of development predicts (Dunning 1986; Dunning and Rajneesh Narula 1996).

Some scholars have found a way to reconcile traditional FDI theory with the emergence of emerging MNEs in general. However, in order to do so, special insights nested within the general OLI paradigm are needed as well. In this sense, it may be considered simply that the expansion of MNEs presents a more prevalent case of asset seeking FDI, a motive for FDI already explained by the OLI paradigm (Dunning 2006). Beyond more common market, resource and efficiency seeking FDI, asset seeking FDI strategies are developed by firms that may not possess ownership advantages but invest abroad to acquire them through M&As. Furthermore, broadening the scope of the OLI paradigm even more, some studies state that MNEs from developing or emerging countries possess certain unique advantages that allow them to operate more efficiently in certain industries compared with local firms from developed countries (Dunning 2006; United Nations Conference on Trade and Development - UNCTAD 2006; Peter J. Buckley et al. 2007).

In this sense, in contrast to MNEs from developed countries whose firm-specific advantages are internally generated, the firm-specific advantages of Chinese MNEs are mainly home country-driven. In this regard, the literature mentions its large and low cost labour endowments that translate in low manufacturing costs and a cost advantage in simple products. The home country still serves as the manufacturing centre of certain inputs for its worldwide operations and is used as a "springboard" (Yadong Luo and Rosalie L. Tung 2007) to acquire foreign assets to overcome its technological and marketing disadvantages and to leverage its competitive advantage by transferring foreign technologies and trademarks to its home production centres. However, low cost production at home is not the only competitive advantage to expand abroad; China has other advantages as well (UNCTAD 2006; Alan M. Rugman 2010). These advantages include applicable technology and niche market inventions (Ming Zeng and Peter J. Williamson 2007), clusters of knowledge, cheap products and services adapted for developing country markets, access to cheap funds and government support (Luo, Qiuzhi Xue, and Binjie Han 2010), relational assets referring to personal relationships and business, ethnic and family networks (Chinese Diaspora), an capability to cope with a weak institutional environment abroad (Adam R. Cross et al. 2007; Buckley et al. 2008a) and a desire to escape from home country institutional constraints such as weak intellectual property rights or a light rule of law that may discourage Chinese firms from pursuing R&D in China (John Child and Suzana B. Rodrigues 2005; Huaichuan Rui and George S. Yip 2008; Ping Deng 2009).

To sum up, the majority view is that mainstream theory (OLI) can explain Chinese OFDI (and more generally emerging MNEs). But broadening the paradigm further by including a fourth home country leg ("H"), as explained above, is the main driver of the competitive advantages held by Chinese multinationals. In this vein, the main point to be addressed in this paper is to develop an empirical model to test Chi-

nese OFDI determinants in OECD countries. For this purpose, we develop an econometric model in which several determinants based on the theory are tested.

The paper is organised as follows. After this introduction to the main issue of the paper, in Section 1 we describe some stylised facts about Chinese OFDI. We then in Section 2 discuss the variables that significantly influence FDI flows. In Section 3, we specify the model used to test the main hypothesis and explain the results. The last section closes the paper by discussing the main conclusions.

1. Main Patterns of Recent Chinese OFDI

An overview of Chinese OFDI allows extracting the main temporal patterns about its evolution. UNCTAD's OFDI data distinguishes three periods that follow key stages of Chinese policy on OFDI (Buckley et al. 2008a).

The first period starts in 1980 and finishes around 1991. During this period, a cautious expansion took place via the first steps of the "open door" policy by the Chinese government, who started to liberalise restrictive policies on OFDI. As can be seen in Figure 1, OFDI stock reached in 1991 a very low level. Chinese OFDI increased year on year but it never exceeded one billion US dollars annually, a very low level in terms of China's economic size. During this period, despite the open door policy regime a restrictive investment policy remained in place. Firms had limited access to foreign currency and their competitiveness was still low. Throughout this first period, outward investors were mostly state-owned enterprises (SOEs).

OFDI started to grow at a higher rate until 2003. From 1991 to 2003, a friendlier institutional framework for OFDI was established, laying the platform for the boost in subsequent years. This period was characterised by the adoption of the so-called "go global" strategy, accession to the WTO and promotion by the government of OFDI projects for SOEs and private firms.

However, it was mainly during the last period (2003–2009) that OFDI started to increase at a much higher rate, once private Chinese firms had begun to be officially allowed to invest abroad. This rapid growth was reflected in a number of indicators. As can be seen in Figure 1, the average annual growth of OFDI stock reached 30%. Moreover, even during 2008 – in the middle of the great recession – when global FDI declined 14%, Chinese OFDI stock grew by more than 15%. Although the Chinese share of world OFDI remains at a low level in terms of GDP, it already compares favourably to a number of developed economies. Finally, in terms of its per capita income, OFDI is above what the IDP had predicted, and the number of parent corporations located in mainland China was already considerable in 2007 (approximately 3,500; UNCTAD 2009).

In order to assess the geographical distribution of Chinese OFDI and to analyse the general determinants of this phenomenon in an empirical model, since UNCTAD does not provide bilateral OFDI data, we turned to what OECD countries declared as FDI inflows from China. We also created a country sample from Latin America and Asia, which was not included in the OECD database. Furthermore, there are serious doubts about the accurateness of OFDI data provided by official Chinese sources. Therefore, we built a country database that includes 36 host coun-

tries[1]. As can be seen in Figure 2, although total OFDI is lower than UNCTAD's figures, the growth rate is similar. This difference is mainly because we excluded Hong Kong SAR as well as some major tax havens for Chinese OFDI (Virgin Islands and Cayman Islands). Their positions as financial centres and pathways for investing elsewhere diminish considerably their importance as a major location for true Chinese OFDI projects. Overall, we consider our country sample to be sufficiently representative of the geographical distribution of Chinese OFDI flows.

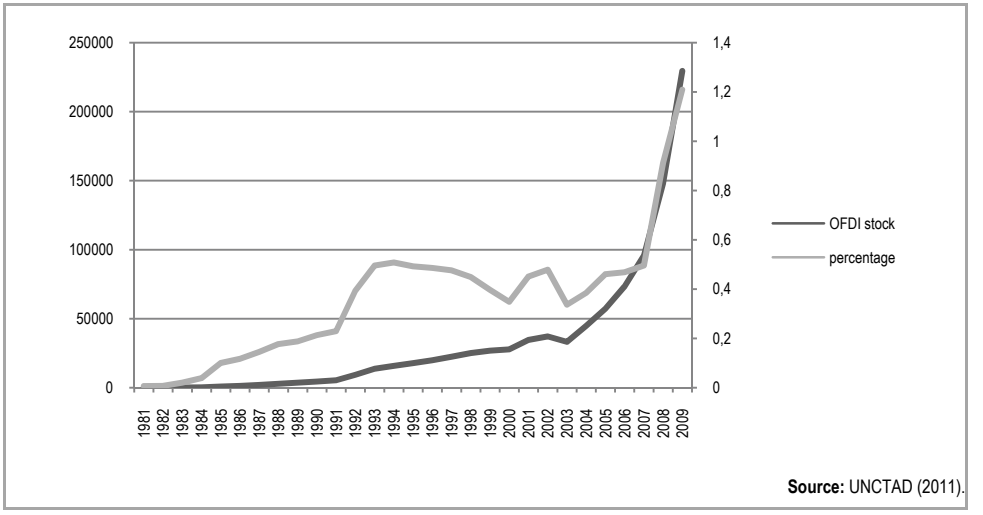

Figure 1 Chinese OFDI Stock (Mill. $ and Percentage of Worldwide Total)

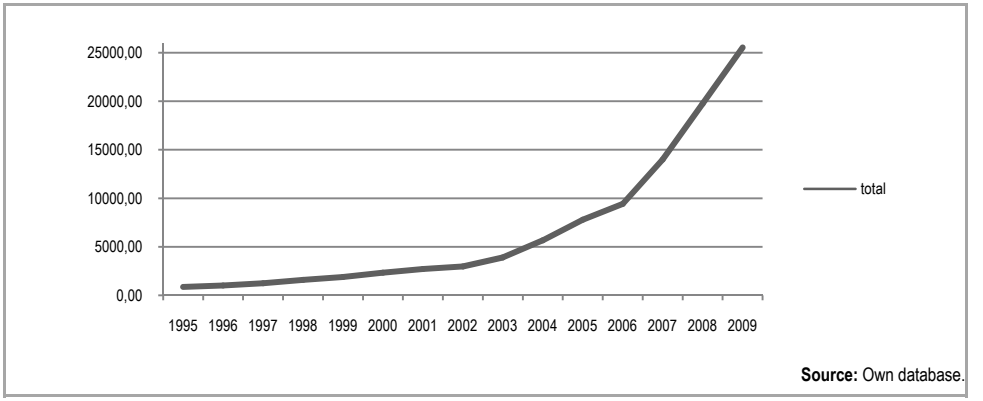

Figure 2 Chinese OFDI Stock Country Sample (Mill. $)

[1] List of countries: Australia, Austria, Brazil, Canada, Chile, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, Great Britain, Greece, Hungary, Indonesia, Ireland, Italy, Japan, Cambodia, Korea, Laos, Mexico, Myanmar, Malaysia, the Netherlands, New Zealand, the Philippines, Poland, Portugal, Singapore, Slovakia, Sweden, Thailand, United States and Vietnam.

As Buckley et al. (2008a) comment, China started its international expansion in North America, investing a high amount of resources in the US and Canadian markets. In fact, as can be seen in Table 1, Canada remains the country with the highest OFDI stock. Besides the importance of its market size and proximity to the US, Canada has a large endowment of natural resources. This destination may be an example of Chinese natural resource seeking investments[2]. However, in recent years a redirection of OFDI has taken place towards emerging and developing countries in South East Asia, Australia and New Zealand as well as in Latin American countries. The Asia-Pacific region account for almost half of total OFDI stock, with Korea, Australia and Singapore the leading countries. This is unsurprising because of their geographical proximity and interest in building a more integrated market among Asia-Pacific countries. Latin America is a relatively new destination, which is increasingly used by Chinese firms to access the US market by crowding out the Mexican *maquila*. However, it remains of secondary importance for Chinese investors with around 3% of total OFDI stock. Regarding European countries, their share is an important one but well below that of the Asia-Pacific region. Europe is a relevant host region for market seeking investments and asset seeking purposes. Eastern European countries are clearly not of primary consideration for Chinese investments.

Table 1 Host Country Chinese OFDI Stock for the Country Sample (Mill. $ and Country Share)

Country/region	Average	Percentage
Laos	27.08	0.37
Myanmar	75.48	1.03
Japan	96.69	1.32
Cambodia	97.68	1.34
Thailand	152.17	2.08
Malaysia	186.39	2.55
New Zealand	217.10	2.97
Vietnam	229.98	3.15
Philippines	269.63	3.69
Indonesia	363.97	4.98
Korea	523.66	7.17
Australia	555.76	7.61
Singapore	639.63	8.76
Asia-Pacific	**3435.22**	**47.04**
United States	582.30	7.97
Canada	1357.63	18.59
North America	**1939.93**	**26.56**
Estonia	3.05	0.04
Slovakia	5.09	0.07
Greece	6.12	0.08
Portugal	13.45	0.18
Czech Republic	28.80	0.39
Spain	31.79	0.44
Austria	31.91	0.44

[2] The share of Canada for Chinese OFDI seems to be an outlier. However, we run the model excluding this country and found almost no significant differences in the parameters estimated.

Finland	45.08	0.62
Sweden	48.05	0.66
Italy	54.69	0.75
Netherlands	59.58	0.82
Poland	66.33	0.91
Hungary	70.54	0.97
France	186.16	2.55
Ireland	217.90	2.98
Great Britain	246.92	3.38
Denmark	294.85	4.04
Germany	296.85	4.07
Europe	**1707.18**	**23.38**
Mexico	53.27	0.73
Chile	81.29	1.11
Brazil	85.79	1.17
Latin America	**220.34**	**3.02**

Source: Own database.

2. Literature Review: Theoretical and Empirical Hypotheses

A specific issue raised by previous research on Chinese OFDI is that the pattern of firm internationalisation is institutionally embedded in and driven by the home country. In this sense, the business strategies of Chinese MNEs overlap with political goals (Child and Rodriguez 2005; Rui and Yip 2008; Ivar Kolstad and Arne Wiig 2009). Until the mid-1990s, the literature asserted that Chinese OFDI was mainly driven by government decisions such as supporting exports by SOEs, securing the supply of natural resources and gathering information about operating in foreign countries. These influenced SOEs decisions directly or indirectly by a large range of instruments hindering or promoting OFDI. More recently, since the accession of China to the WTO and the so-called "go global" policy, which have been major institutional changes towards a more liberal market economy, OFDI seems to be more relaxed from state influence. Nevertheless, the presumption held by some researchers is that the Chinese authorities at different levels still exert substantial influence over Chinese OFDI in various ways. Positively by government financial support (Rui and Yip 2008) backed by foreign reserves accumulation, information provided by the government about investment opportunities (Min H. Nie 2000) and BIT and DTT agreements with almost all countries to reduce investment risks and improve locational attractiveness. However, the government still imposes approval restrictions on investment projects, which are used as a discriminatory policy tool against certain industries and ownership forms (Buckley et al. 2007; Hinrich Voss, Buckley, and Cross 2009).

The empirical studies based on the econometric estimation of Chinese OFDI determinants, which include some of the abovementioned home country characteristics related to institutional factors, do not reveal robust results. Buckley et al. (2007), which was one of the first attempts to formally model Chinese OFDI, analyses the effect of major institutional change in 1992 when Deng Xiaoping started significant domestic market reform that liberalised OFDI by Chinese firms. It splits the full sample into two periods (1984 to 1991 and 1992 to 2001) including a time dummy

variable for the second period in 1992. They find that the results for both periods contrast sharply, revealing a significant change in OFDI behaviour over time, from market seeking to resource seeking (raw materials), partly because of the variable policy regimes.

Another paper by Cross et al. (2007), for the period 1990 to 2003, captures the effect of the "go global" policy change. The authors include a time dummy variable in 1999. However, in this case they do not split the sample into two periods. The results for this time trend parameter reveal that it is significant and positive for the whole country sample and for the non-OECD sample, but not for OECD countries. This is simply interpreted as evidence to support that changes in Chinese policy from 1999 provoked an increase in Chinese OFDI.

A more recent paper by this same group of researchers (Buckley et al. 2008b) includes many more variables related to home country institutional changes. Again, for the period 1991–2003 they include in the regression a new dummy to capture the impact of the liberalisation of foreign exchange controls in 1994. To account for the "go global" policy implemented in 1999, they also impose a structural break by splitting the full sample into two periods (1991–1998 and 1999–2003). They also include dummy variables to assess the effects of BITs and DTTs on Chinese OFDI to host countries together with the sum of the accumulated number of BITs and DTTs by China from 1980 onwards. Finally, they include a WTO dummy membership variable (2002). Curiously, the imposed structural break does not improve the robustness of the model. From the 16 explanatory variables included, only four change significance between both periods. Moreover, in the model for the second period only three variables remain significant (GDP, Exports and Raw Materials). In the same sense, the dummy for 1994 is significant but negative, contrary to the expected result. Regarding the results for BITs and DTTs, it is worth mentioning that none of them is significant in the regressions. Finally, the WTO dummy is only significant and positive for one of the nine models regressed. These three papers used pooled OLS and random effects for the panel data, disregarding a fixed effects estimator because the model includes dummy variables that are time-invariant for the countries concerned.

Another paper by Yin-Wong Cheung and Xingwan Qian (2009) for the period 1991–2005 tries to examine the effect of Chinese OFDI determinants because of two notable policy changes during this period: one that took place after the Asian financial crisis in 1998 and the other in 2002, again when the "go global" strategy was launched. In this paper, the authors opt to include these policy changes using a time trend dummy variable for the whole period. Beyond the fact that they delay the "go global" policy change until 2002, the time trend dummies are positive and significant for the whole country sample and the developing countries, but not for developed ones. In contrast to the above papers, this one uses host country fixed effects by disregarding random effects after computing the Hausman test. The paper by Cheung and Qian (2009) tries to test the effect of foreign reserves accumulation on OFDI by including the stock of foreign reserves as an explanatory variable. The sign is positive but not always significant, confirming partially the presumption that the high amount of foreign reserves held by the country has facilitated the financing of Chinese firms' expansion.

Summarising, the literature on Chinese OFDI, despite paying special attention to home country institutional changes as an important factor explaining OFDI determinants, does not seem to reach a consensus on which ones of the many possible different policy changes are the most relevant. Beyond this fundamental question, they use different techniques to capture them, thereby providing not robust results. Over all, the lack of robust empirical evidence and the fact that institutional changes are difficult to adjust temporarily pushed us to exclude these kinds of explanatory variables from our model and to concentrate on those that may be more clearly supported by theory and empirics.

In this regard, assuming that Chinese MNEs have ownership advantages, or more in general competitive advantages that are embedded in the home country, we proceed to discuss the host country determinants of Chinese OFDI identified by the empirical literature and put forward the hypothesis to test.

The basic starting point regarding "traditional" determinants is that they are more or less relevant depending on the economic development reached by host countries. That's why most authors split the country sample into two broad categories between developed and developing countries. However, this is a broad category that is increasingly blurred as emerging economies catch up with developed ones. We consider it problematic to split any country sample because the results may be biased depending on what variable and threshold is used for this purpose. Moreover, the results obtained by the abovementioned literature do not reveal a clear-cut difference between the drivers of Chinese OFDI to one or the other subsample of countries in general. Therefore, we decided to keep one explanatory model for the whole country sample.

Regarding market seeking investments, the fundamental question is the market size of the host country. However, in the Chinese case the presumption that OFDI will be directed towards rich countries to supply market demand is doubtful because its competitive advantages are mainly low production costs derived from its low labour costs at home, which cannot be transferred abroad. However, there may be export supporting market seeking investments in rich countries. In the case of developing economies, the market seeking motive may be more relevant since labour production costs are similar to those of China. In any case, this question must be empirically tested, and in this sense the papers used different variables to capture this main determinant. Buckley et al. (2007) test three hypotheses: that Chinese OFDI is positively associated with absolute host market size, GDP per capita and market growth. However, in the regression model they include only absolute market size, i.e. host country GDP. They get a positive result but only one that is only significant for the total and OECD country subsample. Cross et al. (2007) include the three variables above in their regression model. They are cynical about the expected signs, but the results reveal that absolute market size (GDP) is positive and GDP per capita negative, although only significant for some models. The result that Chinese OFDI goes mainly to large and relatively poor economies seems to be in line with the starting presumption.

However, GDP per capita may not capture the purchasing power of consumers but rather labour costs, which are closely correlated. In that case, GDP per capita

should not be considered as a variable to capture market seeking motives, but efficiency ones, unless a wage variable is also included in the model. Buckley et al. (2008b) hypothesised that the relative market size of the host country is negatively associated with Chinese OFDI. They use GDP per capita for relative market size and the results confirm their hypothesis, getting a negative coefficient for the full host country sample and for the non-OECD subsample, but losing significance in the case of OECD countries. Again, the criticism may be the same: GDP per capita may capture relative labour costs but not the purchasing power of consumers.

The paper of Cheung and Qian (2009) is the only one addressing this question. Besides including GDP, GDP per capita and GDP growth, it also features the ratio of host country wages to China. For the whole county sample of several developed and developing countries, the regression model renders a positive sign for absolute market size and a negative one for GDP per capita and GDP growth, but insignificant in the latter case. As for the wage ratio, the sign is negative and significant. Being the only paper that includes explicitly a variable for labour costs, it seems that the negative sign of GDP per capita of the host country reveals that Chinese MNEs are seeking large and low purchasing power markets. This may be explained by their competitive advantages in low end manufacturing. Finally, the working paper of Kolstad and Wiig (2009), for the period 2003–2006, gets a positive result for GDP for OECD and non-OECD countries.

Overall, taking into account all these results and the received outcomes of the well-supported gravity models, we are believe that the best way to analyse the market seeking motive is to account for the size of the host market by including GDP per capita ("LRealGDPpc") and population ("LPopulation"). In line with the gravity models, we expect a positive sign for population but the sign for GDP per capita is unclear.

As for efficiency seeking investments that occur when outward investors seek lower cost locations for their production activities, especially in low skilled manufacturing, most of the papers did not test this possibility because it is likely to be of little importance in the case of China. However, Buckley et al. (2008b) note that in the future this kind of motive may become more relevant. Cheung and Qian (2009), as already mentioned, include the ratio of host country wages to China, yielding a significant and negative coefficient, especially for the developing countries subsample. This reveals that seeking low labour costs is an important variable for Chinese OFDI to poorer countries and cites a survey conducted on Chinese enterprises where 22.5% of respondents consider that cheap labour in developing countries is one of the most attractive factors for investing abroad. It would be interesting to test if low host country wages are already a motive for Chinese OFDI, but because we do not split the country sample the wage variable may render spurious results. That's why we decided to drop this variable from the econometric specification.

Regarding natural resources, all papers expect to find a positive result between a proper measure of host country natural resource endowments and Chinese OFDI. The literature refers to the limited resources in China, the rapid economic growth and the high commodity prices as drivers of natural resource seeking investments and comments on well-known examples hotly debated because they have been state-

initiated. This kind of FDI has been directed mostly towards resource-rich locations in developing countries in Africa, the Middle East or Latin America; but even developed countries such as Canada and Australia have been major receiving countries of resource seeking investments. Buckley et al. (2007), for the ratio of ore and metal exports to total merchandise exports of the host countries, find only a positive relationship in case of the model for the full country sample and the more recent period 1992–2001, but in all other models for earlier periods and country subsamples the coefficient is not significant. They interpret these results by stating that in during recent years, natural resource seeking investments have been a more imperative motive.

Cross et al. (2007), for the period 1990–2003, find that the "raw" variable (oil plus gas exports in tones) is positive and significant curiously only for the OECD subsample and justify this result because of OFDI going towards the US, Canada and Australia. In the same vein, Buckley et al. (2008b) find a positive and significant coefficient for their natural resources proxy in the model for the OECD subsample and for the last period 1999–2003. They explain this result by saying that natural resource seeking investments are more important in recent times and that they are being increasingly directed towards industrialised countries.

By contrast, Cheung and Qian (2009), in their almost 20 regression models in which they interact the natural resource variables with dummies for 1998 and 2002, find a negative coefficient for the last period (dummy 2002) for the full country sample. However, in the model for this last period but for the OECD countries subsample they get a positive sign, a result in line with the other two abovementioned studies. To sum up, this group of papers seems to detect that resource seeking FDI is increasing over time, but contrary to expectations, this kind of FDI is more prevalent in rich countries than it is in developing countries. Nevertheless, Kolstad and Wiig (2009) find a positive sign for their variable "natural resources", but only for non-OECD countries and insignificant for OECD ones. They also interact it with a proxy for institutions in the host country (rule of law) to detect if it also depends on the quality of institutions in the host country. In this respect, they find that Chinese firms invest more in non-OECD countries with more natural endowments the worse the institutional environment is. Sumon Kumar Bhaumik and Catherine Yap Co (2011), in order to test the effect of natural resources endowments over Chinese Foreign Cooperation Investment (obviously solely located in developing countries), employ two variables: the percentage of energy ("fuel") and non-energy minerals ("minerals") in exports of the host country. The regression results unveil that the "fuel" explanatory variable loses statistical significance over time, being significant with a positive sign at 1% in the 1998–2000 sample, significant at 10% in the 2001–2003 sample and non-significant in the last sample (2004–2006). Just the opposite happens to the effect exerted by the "mineral" explanatory variable whose positive statistical significance rises to 5% in the 2004–2006 sample. This is explained by the recent increasing relative importance of African host countries with high mineral endowments. Bhaumik and Co (2011) also use an interaction term combining fuel and mineral variables with corruption and political rights, but they do not obtain statistically significant results. In fact, much has been discussed about the poor institutional and po-

litical environment of Chinese OFDI but without reaching consistent results. Consequently, we include in our model host country rents of natural resources ("LNaturalResource") as a percentage of GDP as an explanatory variable expecting a positive sign.

As mentioned in the introduction, one of the most accepted reasons for the increase in emerging countries' OFDI in general and Chinese in particular is the strategic asset seeking investment motive. There are firms that have few ownership advantages, and these try to acquire those advantages through FDI. The literature on the OFDI of emerging countries has insisted on identifying asset seeking as one of its key drivers (Christopher A. Bartlett and Sumantra Ghoshal 2000; Shige Makino Chung-Ming Lau and Rhy-Song Leh 2002). Moreover, there is evidence of its relevance arising from particular examples of Chinese OFDI (Lenovo and IBM). However, despite the theoretical relevance of this issue, the empirical evidence is scarce and far from clear in the Chinese case. Buckley et al. (2007) include the number of patents in the host country as a proxy for countries' endowments of ownership assets. The results show a positive parameter for this variable, which is not significant in any of the proposed regression models. The authors mention that perhaps the result is related to the fact that Chinese firms have only decided to acquire assets through FDI in recent years. Buckley et al. (2008b) also use the number of patents of the host country. The significant and positive sign obtained seems to prove that Chinese firms have been attracted to countries with a high level of technological stock, but curiously only for the earlier period (1991–1998) and referring to OFDI into OECD countries. This is partly contradictory to the general wisdom shown in their previous research, namely that when the "go global" strategy became fully implemented, Chinese firms acquired ownership assets in foreign markets through OFDI. We hypothesise that a positive sign for the technological level of the host country also exists in our sample by using the total number of patents granted as a proxy for asset abundance ("LPatents").

All the papers mentioned so far include control variables, which are an ample set of conventional variables from standard theory that are used to specify more correctly the model. However, the variables included vary considerably, and it is not clear what criteria are used to dismiss or include all potential control variables.

Some of them relate to the macroeconomic stability of the host country, assuming that the more stable it is the more attractive it is to foreign investors in general. For this purpose, inflation rate can be used, expecting a negative relationship. However, in some cases (Buckley et al. 2007) a positive and significant sign has been obtained. This may be the case when no countries in the sample show a high inflation rate during the period. A positive relationship may indicate that higher inflation rates are correlated with higher economic growth, thus leading to more OFDI. However, in our sample we do not observe a high correlation between inflation rates and GDP growth. Therefore, we still hypothesise a negative sign for the rate of inflation measured by the price deflator ("LPriceDeflator").

Another control variable that is frequently used in the FDI literature is the host country institutional framework. As for economic growth, it is expected that a better institutional setting is more attractive for foreign investors. However, in the Chinese

case there is a twist to this general reasoning. Because Chinese investors are used to operating in a home country in which the institutional framework is weaker, they may have acquired an ownership advantage in investing in more turbulent institutions. In such a case, there may be a positive relationship (Buckley et al. 2007). Therefore, we include the host country institutional framework proxied by a governance indicator with no a priori clear sign ("LGovernance").

Exchange rate is also included as a control variable because an overvalued exchange rate makes foreign currency denominated assets become cheaper, thus encouraging OFDI (Guy V. G. Stevens 1993). As the home country exchange rate appreciates, more profitable opportunities for OFDI occur. In the case of China, the Yuan was pegged to the US dollar at a constant nominal level allowing for a revaluation of it against other currencies. In line with Cross et al. (2007) and Buckley et al. (2007), we test the hypothesis of whether a relative depreciation of the host country's currency ("LExchangeRate") leads to an increase in Chinese OFDI.

We include host country openness to Chinese trade and FDI. As is usually the case, it is supposed that FDI substitutes for exports in the case of market seeking FDI. However, a positive relationship may be apparent as well if FDI is a complement of exports. This seems to be the case for China, where most Chinese OFDI during the 1990s took place to provide a local support function for domestic Chinese exporters and to help them increase their hard currency earnings (Friedrich Wu and Yeo Han Sia 2002). Therefore, we include host country bilateral imports from China to test which kind of relationship is more prevalent ("LBilatMports").

As for Chinese imports from the host country, the literature seems to favour a positive relationship ("LBilatXports"). Intra-firm trade, especially the import of parts and components from foreign affiliates to the parent firm, is relevant as a means to internalise strategic flows using OFDI as the key mechanism. In fact, most papers (Cross et al. 2007; Buckley et al. 2007; Buckley et al. 2008b) find a positive relationship between trade (bilateral exports and imports) and OFDI.

Finally, openness to FDI of the host country and distance are also included in the model. Regarding openness to FDI, the more open a country is to FDI the more attractive it is for foreign investors. The agglomeration effect of FDI flows is well documented. First, because if the host country receives FDI it is a signal for other foreign investors that the country welcomes them and second because many FDI projects are incremental and once a firm makes a first step investing in a concrete host country, subsequent investments will follow thereafter. In sum, we include inward FDI stock as a percentage of GDP ("LIFDIinGDP"), expecting a positive sign.

As far as distance is concerned, gravity models for international trade and FDI flows always include this variable ("LDistance"). The relationship in the case of FDI may be positive or negative depending on what type of FDI strategy is followed by foreign investors. Geographical distance is a barrier to trade and this encourages FDI as a way to gain better access to the host country. By contrast, if FDI is looking for efficiency gains and imports from the foreign affiliate back to the parent plant, distance becomes a barrier to such FDI. Besides this reason, managing a foreign affiliate at large distances may be more difficult. However, most empirical studies reveal a negative sign for distance.

3. Data, Model Specification and Results

Table 2 provides a summary of all the variables included in the regression model of equation 1 and Table 3 shows the descriptive statistics. We used OFDI stock data as the dependent variable because annual flows are volatile. Data are in constant millions of US dollars using the US price deflator (base 2000). Among other statistical sources, most of the data are from the WDI (World Investment Report). The bilateral exchange rate of the Reminbi is the nominal annual average amount of the host country currency against the Reminbi. Consequently, it must be interpreted that a rise in the variable means an appreciation of the Reminbi. Regarding the variable used for governance ("LGovernance"), it is worth mentioning that it has been built as an average of the following six estimations: Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence or Terrorism, Regulatory Quality, Rule of Law and Voice and Accountability from the WDI database. The indexes can reach a value of –2.5 (the worst institutional setting) to +2.5 but in order to apply logarithms to all the variables we reformulated this as from 0 to 5.

Table 2 Employed Variables and Hypotheses Summary

Name	Variable	Proxy	Unit of measure	Source	Theoretical justification	Expected sign
"LOFDI"	FDI stocks (dependent variable)		Constant US dollars (millions)	OECD. national and ASEAN		
"LRealGDPpc"	Host country market size	Host country GDP per capita	Constant US dollars	WDI	Market seeking	?
"LPopulation"	Host country population	Population	Millions	WDI	Market seeking	+
"LNaturalResource"	Host country natural resources	Total natural resources rents	Natural resources rents over GDP (%)	WDI	Natural resource seeking	+
"LPatents"	Host country technological level	Patents	Total annual patents grants (resident + non residents)	WDI	Asset seeking	+
"LBilatXports"	Bilateral exports from China to host country	Bilateral exports from China	Constant US dollars (millions)	COMTRADE	Control variable	+
"LBilatMports"	Bilateral imports from host country to China	Bilateral imports from host country to China	Constant US dollars (millions)	COMTRADE	Control variable	+
"LIFDIinGDP"	Host country openness to FDI	Inward FDI stocks over GDP	Inward FDI stocks over GDP (%)	UNCTAD	Institutional push factor	+
"LGovernance"	Host country institutional framework	Five different measures	Index -2.5 2.5	WDI	Institutional push factor	?
"LDistance"	Geographical distance to host country	Distance between capitals	Kilometres	CEPII	Control variable	?
"LExchangeRate"	Bilateral exchange rate	Price competitiveness	Index	WDI	Control variable	+
"LPriceDeflator"	Price deflator	Macroeconomic stability	Index	WDI	Control variable	-

Source: Prepared by the authors.

Equation (1):

$$LOFDI_{ijt} = \beta_1 LRealGDPpc_{jt} + \beta_2 LPopulation_{jt} + \beta_3 LNatural\,Resource_{jt} + \beta_4 LPatents_{jt} + \beta_5 LBilatXports_{ijt} + \beta_6 LBilatMports_{ijt} + \beta_7 LIFDIinGDP_{jt} + \beta_8 LGovernance_{jt} + \beta_9 LDistance_{ijt} + \beta_{10} LExchangeRate_{ijt} + \beta_{11} LPriceDeflator_{jt} + \alpha_j + u_{ijt} \quad (1)$$

Table 3 Descriptive Statistics

Variable	Mean	Median	Min.	Max.	Standard deviation
OFDI	214,35	76,86	0,10	8460,58	550,81
RealGDPpc	18057,60	15688,60	129,91	62438,30	14878,50
Population	49,62	21,10	1,34	314,66	63,84
Distance	7331,47	7442,31	955,65	19079,90	3840,34
ExchangeRate	1200,66	1,07	0,05	68809,70	6537,33
PriceDeflator	93,53	92,12	48,87	185,46	22,96
BilatXports	10035,30	2149,08	6,91	252844,00	25539,80
BilatMports	8268,45	1908,84	0,32	150600,00	18862,80
NatResource	2,76	1,03	0,01	23,04	3,92
Patents	31275,40	3651,50	2,00	456321,00	86648,30
IFDIinGDP	36,27	29,81	0,64	200,72	30,37
Governance	3,29	3,50	0,61	4,40	0,89

Source: Authors' calculations.

In order to test the abovementioned hypotheses, a panel data model was built, employing bilateral data of OFDI stocks between China and the 36 host countries over 15 years (1995–2009). Data were measured in constant US dollars. A gravity model specification was used; considering that gravity equations do not have a linear form, all variables were transformed into logarithms in order to build a correct linear specification. As a consequence, the obtained coefficients must be interpreted as elasticities in their relationship with the endogenous variable.

Overall, the specified model seems to render reasonable results with a quite high adjusted R^2. Both fixed effects and random effects models were computed. Since a sample of selected countries was chosen, the random effects model was more appropriate. However, a fixed effects (corresponding to host countries) model was also calculated to gain robustness. Almost every host country effect showed a statistical significant parameter in the fixed effects estimation. Anyway, overall results were similar for both models, thereby confirming the decision. Moreover, the Hausman test confirmed the validity of the obtained coefficients.

The heteroskedasticity of residuals, which is one of the main problems in applying OLS in panel data models, was softened because the variables were in logarithms. The Breusch and Pagan and Wald tests revealed that dependant variable error variance is not heteroskedastic. Table 4 shows the results obtained.

In relation to the market seeking hypothesis, the positive and statistically significant coefficients of per capita GDP and the population of the host country prove that Chinese firms look for large markets with high purchasing power as a destination for their FDI. This result differs from those obtained by previous research and shows that Chinese OFDI behaves similar to more mature MNEs.

Nevertheless, the institutional quality of host countries ("LGovernance") does not seem to attract Chinese OFDI because the coefficient was negative and not statistically significant in the fixed effects specification. This confirms the results of the previous literature, which either does not find any relationship between institutional quality and OFDI or finds a negative one. As a consequence, Chinese firms are seemingly well prepared to cope with adverse foreign institutional environments.

Table 4 Panel Data Regression of Chinese OFDI Bilateral Stocks (1995–2009)

	Pooled OLS	Fixed effects	Random effects
Constant	-1.058	78.056***	.316
L_Real_GDPpc	.414**	4.672***	1.674***
L_Population	-.018	5.917***	.756***
L_Distance	-.043	-14.089***	-.973**
L_Exchange_Rate	.037	-.037	-.049
L_Price_Deflator	-.727**	-3.939***	-1.355***
L_Bilateral_Xports	.273**	.085	.491***
L_Bilat_Mports	.439***	-.380***	-.125
L_Natural_Resource	.160***	.244**	.244**
L_Patents	-.009	-.340***	-.144
L_IFDI_in_GDP	.506***	.880***	.805***
L_Governance	-1.767***	-.990	-3.469***
Host country: AUS	--	12.156***	--
Host country: AUT	--	10.314**	--
Host country: BRA	--	15.895***	--
Host country: CAN	--	11.924***	--
Host country: CHL	--	28.308***	--
Host country: CZE	--	12.813***	--
Host country: DEU	--	3.187*	--
Host country: DNK	--	13.054**	--
Host country: ESP	--	6.762**	--
Host country: EST	--	18.576**	--
Host country: FIN	--	11.720**	--
Host country: FRA	--	3.946*	--
Host country: GBR	--	2.901	--
Host country: GRC	--	9.084*	--
Host country: HUN	--	13.372***	--
Host country: IDN	--	4.735***	--
Host country: IRL	--	15.676**	--
Host country: ITA	--	3.507	--
Host country: JPN	--	15.943***	--
Host country: KHM	--	12.317***	--
Host country: KOR	--	18.128***	--
Host country: LAO	--	14.467***	--
Host country: MEX	--	10.786***	--
Host country: MMR	--	8.658***	--
Host country: MYS	--	7.262**	--
Host country: NLD	--	7.181*	--
Host country: NZL	--	23.659***	--
Host country: PHL	--	2.204***	--
Host country: POL	--	7.740***	--
Host country: PRT	--	14.285***	--
Host country: SGP	--	12.201**	--
Host country: SVK	--	15.482***	--
Host country: SWE	--	8.722*	--
Host country: THA	--	.120	--
Adjusted R^2	.539	.796	.756
F Test	50.959***	41.671***	1.23***
White/Breusch and Pagan/Wald Test	202.91***	6645.46***	334.20***
Hausman Test	--	--	116.138***
N	470	470	470

Notes: * significant at 0.01; ** significant at 0.05; *** significant at 0.001.

Source: Authors' calculations.

Just the opposite is observed when examining host countries' relative openness to FDI inflows ("LIFDIinGDP"): there is a positive and statistically significant coefficient, which points out that Chinese OFDI tends to be located in destinations where FDI is already high, thus indicating a friendly environment for foreign investors.

Perhaps one of the most interesting issues to be discussed in this paper is whether Chinese OFDI looks for property assets or whether it is more worried about accessing natural resources abroad. Our results confirm that the natural resource purpose is more important, showing a positive and statistically significant coefficient in all specifications. On the contrary, our measure of the asset seeking purpose ("Patents") shows either no significance or even a negative and statistically significant coefficient in the fixed effects procedure. This result favours the resource seeking hypothesis and tends to neglect the asset seeking hypothesis, reinforcing the traditional eclectic paradigm interpretation.

In relation to our set of control variables, most values and signs are the expected ones: first, OFDI seems to be discouraged by geographical distance (negative and statistically significant coefficient for both random and fixed effects procedures). Regarding exchange rate influence, this does not show statistical significance and besides the sign is different in the fixed and random specifications. However, OFDI seems to be deterred by high price deflators, as suggested by the negative and significant coefficient of this variable for all specifications. This suggests that Chinese investors seek macroeconomic stability in order to secure investment returns.

Moreover, the signs corresponding to bilateral trade flow variables are shared by all specifications and these reveal a rather good statistical significance. The bilateral exports (from China to host countries) coefficient is positive and significant for all specifications and, consequently, this seems to support the market seeking hypothesis of Chinese OFDI flows.

However, the negative sign of bilateral imports into China weakens the possibility of interpreting OFDI flows as a means of building stronger trade links with host countries, since there is a negative relationship between OFDI and Chinese imports. This phenomenon might be explained considering that Chinese firms could have managed to substitute imports by national production after absorbing foreign firms through OFDI. Therefore, OFDI will tend to absorb industrial activities that were previously located in foreign countries and could have reduced Chinese imports from OFDI host countries.

4. Conclusions

This paper attempts to formally model Chinese OFDI in order to shed further light on an underexplored issue. The empirical literature on Chinese OFDI has tried to reconcile Chinese firms' foreign expansion with the main theoretical paradigms of business economics, in particular with Dunning's eclectic paradigm and IDP theory. Nevertheless, the search for the factors behind the recent upsurge in Chinese OFDI has created some pieces of research too worried with including as many relevant elements as possible, sometimes losing the capacity to distinguish significance among the key factors that explain Chinese OFDI.

Our focus has been on a smaller set of exogenous variables with enough explanatory power to provide a reasonable identification of the key determinants of this phenomenon. In this sense, the fewer determinants included in our model are nearly all significant and provide clearer conclusions about the nature of Chinese OFDI.

In general, it seems that it does not differ much from that of developed countries, except for the relevance of natural resources endowments of host countries. As for a discussion on the asset seeking hypothesis, our paper confirms that this motive is less important, even in the case of a country sample that includes a majority of developed economies. In line with previous research, our model supports the idea that Chinese OFDI is not hindered by a "low quality" institutional framework. Nevertheless, some general macroeconomic stability in terms of low inflation rate seems to play a positive role in the locational decisions among Chinese investors. As for the role that the Reminbi undervaluation may play in explaining OFDI, the results do not support the view that an undervalued currency diminishes the appetite for foreign investments. In this sense, a future revaluation of the Chinese currency compared with those of major industrialised countries would not have a positive clear effect on OFDI, easing the way to rebalance global disequilibria.

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