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CHINA'S OUTWARD DIRECT INVESTMENT IN AFRICA

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Abstract

We examine the empirical determinants of China's outward direct investment (ODI) in Africa using an officially approved ODI dataset and a relatively new OECD-IMF format ODI dataset. China's ODI is found responding to the canonical economic determinants that include the market seeking motive, the risk factor, and the resources seeking motive. It is also affected by the intensity of trade ties and the presence of China's contracted projects. A host country's natural resources have an impact on China's decision on how much to invest in the country rather than on whether to invest in the country or not. China's drive for Africa's natural resources is mainly a recent phenomenon and, probably, became prominent after the "Going Global" policy adopted in 2002.

Keywords: Market Seeking, Resources Seeking, Risk, Trade Relationship, Contracted Projects, Going Global Policy, Energy Procurement

JEL Classification: F21, F36, O53

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1.   Introduction

Against the backdrop of its three decades of miracle-type economic growth, the economic policies of the People's Republic of China (henceforth, China) have attracted growing interest from academics and policymakers. There is a plethora of studies on China's economic growth, its international trade, its ability to attract foreign direct investment (FDI), and its skyrocketing international reserves.[1] Further, issues that are associated with China's on-going process of opening up its economy and its increasing role in the global economy arena are intensively scrutinized. These, for example, include the global payments imbalances and the valuation of the Chinese currency, renminbi.

With its ballooning trade surplus and stockpile of international reserves, China is emerging as a global capital provider. China does not only provide capital to the industrialized world via, say, its $844 billion investment in the US treasury bills as of June 2010, it is also a major investor in the developing world; particularly in areas – including Africa – that are traditionally considered to be risky and not usually favored by Western investors.

Figure 1 shows that the stock of China's outward direct investment (ODI) has experienced noticeable growth since the 1990s. The increase is quite phenomenal in the new millennium; especially after 2002 when China initiated its "Going Global" policy to promote its overseas investment activity. Between 2003 and 2009, China's ODI rose almost seven times, from $33 billion to $230 billion.

The absolute amount of China's ODI is quite small and it accounted for only 1.2% of the world's total FDI in 2009. However, as a share of FDI from developing countries, China's ODI has increased steadily since the 1990s and reached the 9% level in 2003 and 17% in 2009. It is perceived that China's overseas investment activity has reached a level that could challenge international investment norms and affect international relations (Rosen and Hanemann, 2009). Indeed, the 2010 United Nations survey reported that China is ranked as the second most promising global investor (UNCTAD, 2010a).

The geographical composition of China's global investments has evolved over time. China's investments in Africa have gone up quite substantially both in absolute terms and as a share of its total ODI. In fact, Africa has become the third largest recipient of China's ODI in recent years (Besada *et al.* 2008). According to the 2009 *China Commerce Yearbook*, China's ODI in Africa relative to its total ODI increased from 2.6% in 2003 to 9.8% in 2008 (Figure 2). Indeed, the 2007 United Nations report (UNCTAD, 2007) points out that China is one of the major capital providers for developing countries in Africa.

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[1]   Aizenman and Lee (2010), Brandt and Rawski (2008), Cheng and Kwan (2000), Cheung and Qian (2009a), Cheung *et al.* (2007, 2010), Feenstra and Wei (2009), and Frankel (2009).

The substantial increase of China's ODI in Africa in the last few years has led to some debate. While some commentators laud China's growing engagement in Africa, others question the motives underlying these investment activities and their implications for Africa's political and economic development (Brookes, 2007; Wang and Bio-Tchané, 2008). For instance, worries have been raised that Chinese investment could crowd out the African manufacturing industry, causing unemployment. Such a hollowing effect could adversely affect Africa's medium- and long-term development prospects and its ability to service debts. The number of high-quality jobs created by Chinese investment is perceived to be quite limited since Chinese firms tend to bring along their own workers. Some other concerns include the possible negative impact of China's ODI on the environment, governance, and political reforms in Africa.

Yet, the benefits that China's ODI brings to Africa may be enormous (International Monetary Fund, 2010; UNECA, 2010; UNCTAD, 2010b). The African continent is historically underinvested and underserved by international investors. Chinese capital offers a valuable alternative source of financing to develop the African economy. Arguably, China has played a positive role in improving infrastructures, increasing productivity, boosting exports, and raising the living standards of millions of Africans. Sometimes, China's ODI is credited for diversifying economic activity and creating jobs in manufacturing, mining, processing trade, and construction.

Although China's activities in Africa have received attention in policy and academic publications (Besada *et al.*, 2008; Broadman, 2007; Cheung and Qian, 2009b; Goldstein *et al.*, 2006; Li, 2007, and Wang, 2007), formal econometric analyses of the factors that drive China's ODI in Africa are lacking. In the current exercise, we investigate the determinants of China's ODI in Africa and shed some light on their implications.

In addition to some canonical determinants, including the market seeking motive and risk factor, we incorporate some China-specific determinants such as China's trade with Africa, China's contracted engineering projects in Africa, and the well-known "Going Global" policy. In view of the hyped discussion about China's quest for African natural resources, we also investigate the resources seeking motive using African data on energy and minerals output (Brookes, 2007; Downs, 2007; Frynas and Paulo, 2006).

We consider two sets of China's ODI data. The first one contains data on China's outward overseas direct investment approved by the Chinese authorities. The sample period is from 1991 to 2005. The end of the sample period is dictated by the availability of officially approved ODI data. The sample starts in 1991 because host country-specific ODI data are only available for the period after 1991. The second dataset comprises ODI data (2003 – 2007) compiled by the Ministry of Commerce of China using the OECD-IMF standard.

Since the ODI data are "censored" at zero and below, we first use the Tobit model to study their behavior. Then the Heckman (1979) method, which allows us to separate the investment decision process into two

stages, is considered. First, a decision is taken whether to invest in a host country. If this is the case, the second decision is how much to invest in the country concerned.

To anticipate the results, our empirical evidence suggests that China's investment in Africa is driven by the common determinants considered in the literature on foreign investment. Specifically, there is evidence of the market seeking motive, the risk factor, and the resources seeking motive. The economic links with China that are captured by trade relations and contracted projects also affect China's investment decision. Interestingly, a host country's natural resources do not appear to affect its probability of receiving China's investment. However, once an investment decision is made, China tends to invest more in oil producing African countries. The effects of natural resources on China's investment decision are especially visible after the adoption of the "Going Global" policy in 2002.

The remainder of the paper is organized as follows. Section 2 briefly describes the evolution of China-Africa relations. Section 3 presents empirical findings, while Section 4 offers some concluding remarks.

2.   China-Africa Relations

The ties between modern China and Africa can be traced back to the Bandung Conference in Indonesia – the first large-scale Asian–African Conference held in 1955. On May 30, 1956, China established the first formal diplomatic relationship in Africa, with Egypt. Ever since, China has been cultivating and maintaining ties by spreading revolutionary ideology and offering economic and military support to its "Third World" African friends. However, China changed course in the1980s. After adopting the open door policy, China has played down the role of political and ideological considerations, increased the weight on economic co-operation and development, and emphasized the principles of peaceful coexistence. By 2010, China has established a formal diplomatic relationship with 49 of the 54 countries on the African continent and has direct investments in 48 of these 49 countries.[2]

The China-Africa economic tie has experienced a "great leap forward" after the first Tri-annual Forum on China-Africa Cooperation (FOCAC) – a Ministerial Conference that was held in Beijing, China, in 2000; see the Forum official website http://www.focac.org/eng/ and the news release http://www.mfa.gov.cn/eng/wjdt/2649/t15775.htm. The general theme of the Forum was economic cooperation between China and Africa. In 2006, China issued a comprehensive policy statement "*China's African Policy*" (http://www.focac.org/eng/zfgx/dfzc/t481748.htm), which elucidates the principles and scope of its policy in Africa. It emphasizes China's usual non-interference policy and the Five Principles of

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[2]   Information on diplomatic relationship is found on http://www.fmprc.gov.cn/chn/pds/ziliao/2193/. The Republic of Guinea-Bissau has diplomatic relationship with China but receives no investment from China.

Peaceful Coexistence.[3] Since then, China has provided (additional) preferential loans and credits, instituted a development fund, and offered debt relief and cancellation to Africa.[4]

One policy action that has followed from these forums is the establishment of special economic zones in Africa. For China, special economic zones play a crucial role in its recent astonishing economic performance. Conceived to be an effective policy to promote the manufacturing sector and employment in Africa, China has assisted some African countries in developing their own special economic zones and encouraged Chinese companies to invest in them. The first special economic zone established under this initiative is in the Chambishi copper belt region in Zambia. Despite its potential benefits to the African economies, China's involvement in these African special economic zones is not without critics.[5]

China's investment in Africa has also positively been affected by the "Going Global" or "Stepping Out" strategy adopted by the Chinese authorities in the new millennium.[6] This policy represents China's concerted efforts to encourage investments in overseas markets to support economic development and sustain economic reform in China. As a consequence, China's overseas investment plays up the procurement of natural resources to meet its domestic demand induced by its strong economic growth.

China's recent investment in Africa is generally perceived to follow the state-driven strategy of giving infrastructure and taking natural resources. Foster *et al.* (2008), for example, list some Chinese-financed infrastructure projects in Africa that are paid for by natural resources between 2001 and 2007. Nonetheless, it is worth noting that China's infrastructure assistance is nothing new. Even in the 1970s, infrastructure building was a common form of assistance China offered to Africa. A reason noted by, for example, Corkin *et al.* (2008, p.2) for the apparent link between infrastructure assistance and resources rich countries is that "it is often the most resources rich states that are in dire need of infrastructure development and support." Also, Brautigam (2009) argues that China's investment in Africa is not purely driven by the natural resources possessed by African countries.

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[3]   The Five Principles are: mutual respect for sovereignty and territorial integrity, mutual non-aggression, non-interference in each other's internal affairs, equality and mutual benefit, and peaceful coexistence. They were results of negotiations between China and India and formally included in the "Agreement Between the People's Republic of China and the Republic of India on Trade and Intercourse Between the Tibet Region of China and India" in 1956. See, for example, http://www.fmprc.gov.cn/eng/topics/seminaronfiveprinciples/t140777.htm.

[4]   For example, in the third Forum, China provided $3 billion preferential loans and $2 billion preferential buyer credits and instituted the $5 billion China-Africa Development Fund to facilitate investment in Africa. In the fourth Forum, China provided a $10 billion preferential loan to Africa to support infrastructure and social development projects, and another $1 billion to the China-Africa Development Fund. In the first and second Forum, China cancelled two $1.3 billion debts. In the third Forum, China canceled all debts relating to interest-free government loans that matured at the end of 2005 for the most indebted and least-developed African countries with diplomatic relations to China. Similar debt cancellations were announced in the fourth Forum.

[5]   See, for example, UNCTAD (2010b) for a detailed discussion on China's role in Africa's development and related issues. Trofimov (2007) reports on the resentments towards Chinese economic activities in Chambishi, Zambia.

[6]   For example, the 2002 issue of the *Almanac of China's Foreign Economic Relations and Trade* discusses the effort to implement vigorously the "Going Global" policy. Sometimes, the "Going Global" policy is referred to as the "Go Global" policy.

The Chinese government employs two policy banks – the China Export & Import Bank and the China Development Bank – to facilitate its economic activity in Africa. The China Export & Import Bank provides trade credits and investment loans for long-term infrastructure, energy, and mining projects in Africa. The China Development Bank, on the other hand, establishes the China-Africa Development Fund to finance China's ODI in Africa (Wang, 2007).

China also has intense trade ties with Africa. As shown in Figure 3, there is a substantial increase in China-Africa trade in the 2000s. China's trade (exports plus imports) with Africa increased steadily, albeit at a slow pace, in the 1990s.[7] It took off quite fast and surged from $9.5 billion in 2000, to $36.3 billion in 2005, and to $79.8 billion in 2009. During the course of trade expansion, China maintains a relatively small imbalance with Africa. Recall in Figure 2 that China's ODI flow to Africa also experiences a substantial growth in the same period.

In addition to ODI and trade, contracted projects are another important channel through which China interacts with Africa.[8] These contracted projects include building of highways and roads, bridges, schools, shopping centers, housing and office buildings, water conservancy, dams, and power plants. These contracted project arrangements have been in existence since the 1970s. The amount of contracted projects has increased steadily over time. It displayed a significant jump in the 2000s after the first Forum on China-Africa Cooperation (Figure 4). Recently, Africa has become China's second largest engineering contract market. The dollar value of China's contracted projects dwarfs its ODI in Africa.

In sum, the economic relation between China and Africa was initially dictated by ideology and political issues. Subsequently, it shifted course and tilted towards economic considerations and development needs in China and Africa. Undeniably, China's engagement in Africa is not a sudden and recent event. In fact, China has engaged with Africa since the 1950s. The eye-catching event is the fast and large expansion of economic ties that has occurred in the past few years. It is happening so quickly that the rest of the world is scrambling to deal with the fact that for Africa China is now a major economic partner that provides capital, debt relief, and a large exports market.

The strong Chinese engagement coincides with Africa's noticeable improvement in economic performance in the new millennium. China's activity in Africa, however, is not without its critics, both in and outside Africa. The most controversial aspect springs from China's proclaimed non-interference policy, which separates business from politics. As stated in *China's African Policy (*2006), China's aid to and investment in Africa are typically unconditional – they do not tie to, say, political, economic, and

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[7]   In the 1980s, the average annual trade between China and Africa is about 0.9 billion.

[8]   A typical contracted project is not classified as an ODI activity. It is an agreement between a foreign firm and a host government that assigns the firm the responsibility to complete a project and to secure the required capital. In return, the firm is granted the management rights and the resulting profits for a pre-determined period before transferring the rights to the host government.

governance reforms. In contrast, aid and investment from Western countries and international organizations usually come with certain conditionalities.

It is argued that the money offered by China to Africa without reform conditions could undermine the rest of the world's effort in using economic incentives to revamp the undesirable political and economic conditions in Africa. Some critics consider China's policy troubling as it tolerates, and passively exacerbates, authoritarian regimes and human right violations (Brookes, 2007; Obiorah, 2008). In the name of disconnecting politics and business, China goes after economic benefits at the expense of democracy and human rights. Often cited examples include China's dealings with Angola, Sudan and Zimbabwe.

Some commentators are more sympathetic. They refer to China's experiences with outside influences and its skepticisms about the one-size-fits-all Western style democracy and human rights principles. There are instances in which China plays a role in mediating the negotiations, say, between Sudan and the United Nations. The adverse economic conditions are perceived to be one of the major root causes of the dismal situations in Africa. The imminent policy issue is, thus, how to bring Africa comprehensive and sustainable economic growth and the onus for improving and enhancing the political and societal institutions rests with Africa itself. According to Sautman and Yan (2007), compared with the Western world, China may be the lesser of two evils for Africa in terms of support for Africa's development and respect for African nations.

3.   Data and Empirical Results

In this section, we study the empirical determinants of China's ODI to Africa. What are the roles of canonical determinants of direct investment? Are natural resources a key driver behind China's investment in Africa? What are the implications of China's "Going Global" policy? Before addressing these questions, it is imperative to understand the data on China's ODI.

3.1   China's ODI Data

Despite the increasing interest in China's ODI behavior, there are only a few formal econometric analyses including Buckley *et al.* (2007), Cheng and Ma (2009), and Cheung and Qian (2009b).[9] These studies examine China's ODI in general and do not focus on its involvement in Africa. The paucity of quality Chinese ODI data is perhaps a major hurdle for formal econometric analyses.

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[9]   Sung (1996) and Wall (1997) are two early studies on China's ODI. Most studies on China's ODI are policy-oriented or descriptive in nature. A partial list of these studies includes UNCTAD (2003, 2007), Wang and Bio-Tchané (2008), Wong and Chan (2003) and Wu and Chen (2001). Asia Pacific Foundation of Canada (2005, 2006) offered some insights on China's ODI behavior from the perspective of Chinese enterprises.

Between 1991 and 2005, China published overseas investment data that are host-country specific. These data are investments in foreign countries approved by the Chinese authorities. Admittedly, these approved data have their limitations in describing China's overseas investment activity and are perceived to underestimate the actual volume of China's ODI. Despite their shortcomings, these officially approved data have an interesting attribute – they reflect the policy stance on deploying capital in overseas territories. Even though foreign investment decisions are increasingly driven by economic considerations, government policies still play an essential role in directing and allocating capital in overseas markets. After all, according to the 2008 *Statistical Bulletin of China's Outward Foreign Direct Investment*, state-owned enterprises account for approximately 70% of China's total ODI. The use of approved data, thus, captures the mix of policy inclination and commercial factors in determining overseas investment.

These approved data also offer a relatively long historical ODI series for individual host countries and thus allow us to examine the evolution of China's overseas investment behavior over time and across a wide spectrum of countries.

In addition to the officially approved data, we consider another dataset that is only available for a short sample period. In the 2004 to 2008 issues of *The Statistical Bulletin of China's Outward Foreign Direct Investment*, China published its ODI data in a format that is consistent with the OECD-IMF standard. In 2009, the definition of these ODI was modified to include financial ODI data. [10] The re-defined data were published in *The 2009 Commerce Yearbook.* With a one-year publication time lag, these data are available from 2003 to 2008. The change in data definition makes the 2003 to 2007 data, which are derived from non-financial ODI information, incompatible with the 2008 data. In the subsequent analyses, we therefore use the 2003 to 2007 data.

3.2   Results Based on Approved ODI Data

In this subsection, we first present results using the Tobit regression technique. Then we use the Heckman two-stage method to study China's ODI behavior.

Tobit regressions are used to account for the fact that China does not approve investment in each and every African country every year. For instance, China did not approve any investment in Algeria between 1991 and 1999. That is, the observations of ODI in Algeria from 1991 to 1999 assume the value of zero. Of course, the non-approval could be due to the absence of an application for investment in a specific country. Indeed, 51% of total observations on China's approved ODI in Africa in our sample are zeros.

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[10]   Financial ODI includes China's direct investment in banking, insurance, securities, and other financial institutions.

Technically speaking, the approved ODI data are censored at zero and below. The use of, say, the least squares technique could lead to biased estimation results. Thus, we adopt the Tobit regression framework to accommodate the censored nature of the data.

It is conceivable that China's decision on investing in overseas territories involves a two-step process. First, China decides whether to invest in a specific country or not. Second, if it decides to invest, it then decides on the amount to be invested. The Heckman two-stage approach offers a convenient setting to model this two-step decision process. In the first stage, we study the factors determining the invest-or-not-to-invest decision. In the second stage, we examine the factors determining the amount to be invested.

3.2.1   Tobit Specification

China's ODI behavior is examined using the following Tobit censored regression specification:

$$ODI_{it}^* = \alpha + \beta_1 MKT_{it-1} + \beta_2 ECI_{it-1} + \beta_3 RISK_{it} + \beta_4 NTR_{it-1} + \varepsilon_{it} \tag{1}$$

where ODI_{it}^* = ODI_{it} if $ODI_{it} > 0$ and ODI_{it}^* = 0 if $ODI_{it} \leq 0$. The variable, ODI_{it}, is the observed ODI flow from China to a host-country i at time t. It is normalized by the host-country's population to facilitate comparison across countries of different sizes.

MKT_{it-1} is a vector containing three market seeking factors - *GDP*, *RGDPpc*, and *RGDPG*. *GDP* is the host-country's gross domestic product, measured in current US dollars in logs and represents market size (Frankel and Wei, 1996; Kravis and Lipsey, 1982; Wheeler and Mody, 1992). *RGDPpc* is the host-country's real *per capita* income and is a commonly used indicator of market opportunities (Eaton and Tamura, 1994, 1996; Kinoshita and Campos, 2004; Lane, 2000; Lipsey, 1999). *RGDPG* is the host-country's real income growth rate. It is a measure of market growth potential (Billington, 1999; Lee, 2000; Lipsey, 1999). The market seeking motive implies that these three variables have a positive coefficient. Data on these variables were drawn from the *World Development Indicators* database provided by the World Bank. Appendix 1 gives the definitions and sources of these and other variables used in the study and their correlation coefficients.

ECI_{t-1} is a vector that comprises two variables, *XM* and *Proj*, which measure China's economic interactions with the host countries. The first element, *XM,* measures a host country's trade intensity with China and is expressed as the ratio between the host country's trade with China and its total trade. The second element, *Proj*, is the amount of China's contracted projects in a host country normalized by the host-country's population. Contracted project, as discussed in Section 2, is an important channel through which China interacts with Africa. Conceivably, contracted projects required endorsements by local

authorities. Thus, the amount of contracted projects is indicative of the existing economic ties between China and the host country. It is normalized by the host-country's population to facilitate comparison across countries of different sizes. We expect both elements to have a positive impact on China's ODI.[11]

The incentive to invest could be adversely affected by the presence of risk factors. Traditionally, many African countries are considered very risky, both economically and politically. This explains why Africa receives a relatively small portion of capital from Western investors. We include $RISK$, a vector that includes six different risk indexes to assess the effect of a host country's risk characteristics on China's investment activity. The six risk indexes are the economic condition risk index (*Econ*), the political system risk index (*Polt*), the conflict risk index (*Cnfl*), the social tension risk index (*Scnt*), the corruption risk index (*Crpt*), and the law and order risk index (*Law*). A higher value of an index indicates a lower level of risk. The six risk indexes are constructed from the 12 country risk indexes from the *International Country Risk Guide* (ICRG). For instance, the *Econ* variable is the sum of the socioeconomic condition index and the investment profile index. See Appendix 1 for the construction of the other risk indexes.

In recent years, China's economic engagement in Africa is perceived to be driven by its demand for natural resources. To investigate the resources seeking motive, the vector NTR that includes the variables *Engy* and *Minl* is included in equation (1). *Engy* is a proxy energy output that includes crude oil, natural gas, and coal output. Note that *Engy* is a composite variable capturing the role of a host country's energy output in general. The specific role of crude oil production will be highlighted in the subsequent subsections. *Minl* is the mineral output that includes bauxite, copper, iron, and gold. Both *Engy* and *Minl* are normalized by the host country's gross national income. The significance of these variables should shed some insight on China's drive for natural resources and its ODI in Africa.[12]

To facilitate interpretation and avoid endogeneity issues, the lagged values of the factors discussed above are used in the following regression analyses. An exception is the vector of risk indexes. We anticipate that China's ODI does not affect an African country's risk characteristics because of its proclaimed principle of non-interference in each other's internal affairs. It is also noted that the absolute amount of China's investment in Africa is relatively small compared with the total FDI in Africa. Thus, the contemporaneous political variables could be considered exogenous.[13]

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[11]   We anticipate China's aid could have a positive implication for its ODI in an African country. Nevertheless, China does not publish its foreign aid to individual African countries. When we included these countries' total foreign aid in the regression, the foreign aid variable was not significant.

[12]   There are data on total energy exports to total merchandise exports from the *World Development Indicators* database. However, these data are not available for all the countries in our sample.

[13]   To guide against the endogeneity of political risk (Arezki and Brückner, 2009), we also considered lagged political risk variables. The results, which are not reported for brevity, are similar to those reported in the text.

3.2.2   Censored Regression Results

Table 1 presents the maximum likelihood estimates obtained from the panel data censored regression with the random effect specification under the heading "Tobit-1."[14] Because data on some explanatory variables, especially the risk variables, are not available for all African countries in our sample, these regression estimates are derived from data on 31 African countries from 1991 to 2005. For brevity, in this and subsequent tables, we only included estimates that are significant with a p-value of 20% or less.

With the exception of the corruption variable, the signs of significant estimates are largely consistent with theoretical predictions. Among the three market seeking factors, only the market size variable, *GDP*, is marginally significant with a positive sign. The result is in line with the view that ODI goes with the market size of a host country. Indeed, according to a 2005 survey, 45% of the surveyed Chinese firms plan to invest in the manufacturing sector in Africa (Battat, 2006; MIGA- FIAS, 2007). These overseas investment activities could help Chinese firms to expand in the African market and, at the same, get around the relatively high tariffs on manufacturing goods in Africa (UNCTAD, 2005).

Of the two variables that measure China's economic interactions with the host countries, only the contracted project variable (*Proj*) is statistically significant. As anticipated, China's contracted projects in Africa promote its investment in that continent. Conceivably, the presence of contracted projects reflects the close economic and, possibly, ideological ties between China and the host country. These ties could facilitate Chinese investment. Further, the contracted project activity could function as a pioneer investment and offer Chinese investors some first-hand and specific information about the investment environment in these African countries.

Traditionally, risk is believed to be one of the major factors deterring international capital flows to Africa. Among various risk factors, corruption, political instability, policy uncertainty, and weak regulatory framework are viewed as the top concerns that adversely affect FDI in Africa (World Business Environment Survey, 1999/2000; World Development Report Survey, 1996/97; UNCTAD World Investment Report Survey, 1999/2000). As a consequence, most African countries receive minute amounts of FDI, with the exception of some natural resources rich countries including Angola, Nigeria, and South Africa.[15] The observed increase in FDI in Africa in the new millennium is usually attributed to improvements in Africa's business climate, legal system, corruption profile, and political stability (UNECA, 2010).

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[14]   The fixed effect specification would generate biased estimates (Greene, 2004a, 2004b).

[15]   According to Asiedu (2006), from 2000 to 2002, these three countries accounted for about 65 percent of the FDI flow to Sub-Saharan Africa.

Chinese investors have concerns about risk. According to the MIGA-FIAS (2007) survey, 94% of the surveyed Chinese firms perceived Africa as the riskiest region in terms of political risk. Ironically, according to the same survey, about 60% of the firms investing in Africa viewed the policy environment in Africa as "good." These assessments suggest that Chinese firms might perceive and handle risk in Africa differently from other investors.

Indeed, our estimation results show that, among the six risk variables, only the economic risk variable (*Econ*) that comprises the socioeconomic condition and investment profile indexes and the corruption variable (*Crpt*) that comprises the corruption and bureaucracy quality indexes, have significant effects on China's ODI. The political system risk, conflict risk, social tension, and law and order indexes are found to be insignificant.

The positive coefficient of the economic risk variable (*Econ*) suggests that better socioeconomic conditions and investment profiles draw more ODI from China. The finding is in line with conventional wisdom.

Corruption is commonly perceived to deter FDI because it represents an extra tax and increases investment costs (Bardhan, 1997; Abed and Davoodi, 2000 and Wei, 2000, Seldadyo and de Haan, forthcoming). However, empirical evidence on the deterrent effect of corruption is not definitive. For instance, some studies found no significant corruption effect (Wheeler and Mody, 1992) and some found corruption may positively affect investment and economic growth (Swaleheen and Stansel, 2007). According to our estimation results, Chinese investment in Africa is not adversely affected by corruption.[16] The negative coefficient of the corruption variable (*Crpt*) suggests that an African country with a worse level of corruption receives more ODI from China.[17]

Our result that for the period under consideration China has a preference for investing in countries that are corrupt are in line with the findings of Cuervo-Cazurra (2006). Cuervo-Cazurra (2006) argues that investors who have been exposed to bribery at home will not be deterred by corruption abroad, but instead seek countries where corruption is prevalent. The similarities in the conditions of the institutional environment induce these investors to focus their FDI there.

The corruption effect may be related to the investment situation faced by China. Even though China has engaged with Africa since the 1950s, it is a latecomer in the area of overseas investment. So far, China's investment relative to total FDI in Africa is relatively small. On the other hand, some Western countries (including the US) do not allow their corporations to engage in bribery activity in overseas markets and

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[16]   Using data from 1984 to 2000, Asiedu (2006) identifies the adverse corruption effect on foreign investment in sub-Saharan countries.

[17]   The use of the ICRG corruption index gives qualitatively similar "corruption" effects.

thus create an investment vacuum in these corruption-loaded countries. China, as a latecomer in the game, could find it relatively easy to place its capital in these countries.

Quite unexpectedly, neither natural resources variable is statistically significant under the Tobit censored regression specification. So neither the energy variable *Engy* nor the mineral variable *MinI* is listed under Tobit-1 in Table 1.[18]

As noted in Section 2, the "Going Global" policy signifies a change in China's overseas investment strategy and, possibly, its natural resources procurement strategy. To investigate the policy's implications for the role of natural resources in determining China's ODI behavior, we consider two dummy variables *GG* and *Oil*. The "Going Global" dummy variable *GG* captures the policy effect and is given by the indicator function $I(t>=2002)$. The African oil producing countries are presented by the zero-one *Oil* dummy variable. The implications of *GG* and *Oil* for the natural resources variables *Engy* and *MinI* are assessed using the interaction variables *GG*Oil*, *GG*Engy(-1)*, *GG*MinI(-1)*, *Oil*Engy(-1)*, and *GG*Oil*Engy(-1)*.

The results of including these dummy and interaction variables are summarized under "Tobit-2" in Table 1. It is noted that, with the exception of GDP, the effects of the variables listed under "Tobit-1" are qualitatively similar to the corresponding ones under "Tobit-2."

Among these dummy and interaction variables, the interaction variable *GG*Oil* is the only one that is statistically significant. Its coefficient estimate is suggestive of a preference for oil producing African countries. That is, after the launch of the "Going Global" policy, China's overseas investment tends to go to African countries that produce oil. The policy, nonetheless, does not have a significant implication for the role of the two natural resources variables *Engy* and *MinI.* Apparently, the policy effect is mostly related to oil procurement from these African countries.

Is China's investment in Africa mainly driven by natural resources conditions? The result based on "Tobit-2" offers a qualified confirmation of the usual perception that China's ODI has a focus on oil. The results from "Tobit-1" and "Tobit-2," however, suggest that oil has only played a role in recent years. During the earlier part of the sample period, investment behavior was not substantially affected by a host country's natural resources. One way to interpret the results is that, in the 2000s, China has been playing catch-up and makes oil procurement one of the factors for determining investment in Africa.

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[18]   We also explored various corruption and natural resource interaction variables in our regression analysis. Only one interaction variable is significant with a very small coefficient estimate in one of all the trials. Other trials gave very small and insignificant estimates. Kolstad and Wiig (forthcoming) reported a significant institutions and natural resources interaction variable based on 2003-6 data.

3.2.3   The Heckman Two-Stage Method

In this subsection, we present empirical results derived from the Heckman two-step procedure. Compared with the censored model used in the previous subsection, the two-step procedure offers a framework to sequentially analyze the decision making process. The first decision is to invest or not. If the first decision is positive, then the amount of investment has to be determined. The decision to invest or not is studied using the regression specification

$$D_{it} = \alpha + \beta_1 MKT_{it-1} + \beta_2 ECI_{it-1} + \beta_3 RISK_{it} + \beta_4 NTR_{it-1} + \mu_{it} \qquad (2)$$

where D_{it} = 1 if $ODI_{it} > 0$ and is zero otherwise.

In essence, we postulate that the likelihood of China to invest in an African country is determined by the factors used in the censored regression. The technical issue of zero-censored data – selection bias problem is controlled for using the inverse Mills ratio (also known as the hazard rate). The ratio that contains information about the unobserved factors that determine China's ODI in an African country is retrieved from equation (2) and will be included in the second stage of the Heckman regression. The significance of the inverse Mills ratio reflects the importance of selection bias.[19]

Given our cross-sectional time series data, we adopted the Wooldrige (1995) procedure that extends the Heckman procedure to panel data. Specifically, the panel data Probit regression with random effects is used to estimate (2) with both zero and positive ODI observations.

The estimation results are reported under the heading "First Stage" of "Heckman-1" in Table 2. Again, for brevity, only estimates with a p value less than 20% are presented.

The likelihood to invest is positively affected by the host country's GDP, trade with China, and economic potential, and negatively by corruption. The results are comparable to but not the same as those of the Tobit regression. Note that the trade variable *XM* is only marginally significant with the expected sign under the Heckman specification. The *Proj* variable does not have a significant coefficient estimate and is therefore not reported. That is, the amount of existing contracted projects does not affect China's decision to invest or not.

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[19]   The inverse Mills ratio is given by the probability density function over the cumulative distribution function estimated in the first stage, which includes both zero and non-zero observations. Intuitively, the ratio captures the effect of truncating the sample and is included to control for selection biases in the second stage regression, which uses only positive (but not "zero") ODI observations.

In the second stage of the Heckman procedure, we assess the determinants of China's ODI. The assessment using only positive ODI data is based on the regression equation

$$ODI_{it} = \alpha + \beta_1 MKT_{it-1} + \beta_2 ECI_{it-1} + \beta_3 RISK_{it} + \beta_4 NTR_{it-1} + \rho Mills_{it} + \upsilon_{it} \qquad (3)$$

As mentioned earlier, the inverse Mills ratio, $Mills_{it}$, is based on estimates from the first stage regression (2) and is included to control for possible selection bias on estimating (3). Country-specific and year-specific dummy variables were included in the estimation process though they were not reported for brevity. The estimation results are presented under the heading "Second Stage" of "Heckman-1." It is noted that the inverse Mills ratio is significant – there is evidence that there are unobserved factors in the first stage selecting process that affect the investment decision in the second stage.

Even though we considered the same set of economic variables, the significant determinants in the second stage are not identical to those in the first stage. That is, the economic factors that drive the amount of investment are not necessarily the same as those that determine the invest-or-not-to-invest decision. The two-stage procedure offers an interesting framework to scrutinize China's investment behavior in Africa.

The amount of investment is influenced by the contracted project variable and a few risk factors. The energy variable is only marginally significant with a p value of 17%. The contracted project variable is insignificant in the first stage regression but is significant in the second stage. Recall that the variable is a significant factor in Table 1. The two-stage analysis indicates that contracted projects affect the amount of investment and not so much the invest-or-not-to-invest decision.

By breaking down the investment decision process, the two-stage procedure reveals a complex risk effect. Risk considerations appear quite important in deciding the investment amount. Both economic condition risk and political system risk indexes (*Econ* and *Polt*) play a role in determining the investment amount. Their coefficient estimates indicate that high levels of economic risk and political system risk deter China's ODI in Africa (Asiedu, 2006; Morisset, 2000). On the other hand, the corruption risk index has a negative coefficient estimate – a result that is similar to the one in Table 1.

The results pertaining to the two-stage procedure suggest the possibility that a host country's energy output (*Engy*) could have a positive implication – the level of statistical significance is, however, only 17%. After an investment decision is taken, China tends to deploy more capital to an African country with a higher level of energy output. The result lends weak support to the view that China's investment goes after energy.

To evaluate China's "Going Global" policy effect and the oil factor, we include the policy and oil-producing country dummy variables (*GG* and *Oil*) and the related interaction variables in the two-stage procedure and report the results under the heading "Heckman-2" in Table 2.

Among all these added variables, only the policy interaction variable *GG*Oil* is significant – a finding that is comparable to the censored regression results presented under "Tobit-2" in Table 1. The *GG*Oil* variable has significantly positive estimates in both the first- and second-stage regressions. In addition, the inclusion of *GG*Oil* enhances the statistical significance of the energy output variable (*Engy*) in the second-stage analysis. When we allow for a change in investment behavior before and after the adoption of the "Going Global" policy, we find that, in the later part of the sample, the natural resources consideration plays a significant role in deciding both the location and the amount of China's investment in Africa. The finding is in accordance with the perception that the "Going Global" policy favors overseas investment that promotes and supports economic activity back in China.

Again, evidence indicates that the natural resources seeking motive has not been a consistent driver of China's ODI in the last two decades. Compared with investment from the Western world, China has been playing catch-up in deploying its investment in natural resources rich African countries in the 2000s.

The inclusion of this policy and the related interaction variables does not qualitatively alter the effect of other economic variables – an exception is that the *XM* variable becomes insignificant in both stages.

3.3   Results Based on IMF-OECD-Formatted ODI Data

This subsection presents the empirical results based on China's ODI data that are reported in the *IMF-OECD* format. As stated in subsection 3.1, China has only released ODI data using the *IMF-OECD* standard since 2003. The dataset used in this subsection includes 33 African countries from 2003 to 2007.[20] Despite its relatively short time dimension, the dataset covers the period in which China has experienced a strong growth in its overseas investment activity and an alarming increase in its appetite for natural resources. These data could thus offer us a close look at the link between China's overseas investment and its quest for natural resources during this growth period. Furthermore, the results from these data are comparable to those from other FDI studies based on data using a similar reporting system.

Similar to the empirical strategy adopted in Subsection 3.2, we present the Tobit regression results based on equation (1) and then the Heckman two-stage regression results based on equations (2) and (3).

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[20]   The 2008 data were not included in the analysis because they included financial ODI data and are incompatible with the 2003 – 2007 data.

The Tobit regression results derived from the 2003-2007 dataset are reported in Table 3. Compared with the results pertaining to approved data under "Tobit-1" in Table 1, the *IMF-OECD*-formatted data reveal a few additional statistically significant factors; namely, the risk variable *Law* and the two natural resources variables *Engy* and *Minl*.

Both the *Law* and *Crpt* variables have negative coefficient estimates. For some of these African countries, the correlation between these two risk indexes could be quite high. Thus, their negative coefficient estimates could follow from the negative effect found for the *Crpt* variable effect encountered in the approved data.

The resources seeking motive is quite discernable in the 2003-2007 data. The energy and mineral output variables (*Engy* and *Minl*) are statistically significant at, respectively, the 10% and 1% level. The finding corroborates the anecdotal evidence that, in recent years, China has stepped up its overseas procurement of natural resources.[21]

The determining factors presented in Table 1 are also significant in Table 3. The market seeking motive represented by the *GDP* variable is now quite significant at the 1% level. And the effects of the *Proj*, *Econ*, and *Crpt* variables are qualitatively similar to those in Table 1.

Since the "Going Global" policy was launched before 2003, we could not directly investigate the policy effect. Instead, we examine the role of oil production using the dummy variable *Oil* and the interaction variables formed with *Oil*. It turns out that, among these added variables, only the interaction variable *Oil**Engy is significant – the related regression results are presented under "Tobit-2" in Table 3. The inclusion of the *Oil**Engy turns the *Engy* variable effect negative though not significant at the 10% level, weakens the *Econ* variable effect and leaves other variables - especially the *Minl* variable - essentially unchanged. The evidence is indicative of China's bias toward the oil-component of energy output.

Overall, the Tobit regressions based on the 2003-2007 dataset offer strong evidence on China's quest for natural resources in its African investment activity. We speculate that the stronger resources seeking effect revealed by the 2003-2007 dataset is likely due to the differences between the approved data and the *IMF-OECD*-formatted data.

Arguably, compared with Table 2, the Heckman two-stage results in Table 4 also suggest a stronger role of natural resources. The main difference between the headings "Heckman-1" and "Heckman-2" is that the latter considers the dummy variable *Oil* and the interaction variables formed with *Oil*.

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[21]   For example, the UD\$2.7 billion investment made by the China National Offshore Oil Corporation in the Nigerian National Petroleum Corporation is the second largest deal in Africa completed by a developing country between 2001 and 2009 (UNCTAD, 2010c). See, also, The Economist (2008).

In both cases, the decision to invest or not is driven by the market seeking motive (*GDP*), trade relation (*XM*) and the *Law* risk variable. The *Law* risk variable seems to dominate the *Crpt* variable in the current dataset. Despite its role in the first stage decision process, the *Law* risk variable is insignificant in the second stage regression. Indeed, none of the six risk variables is significant in the second stage regressions reported in Table 4; that is, they do not affect the decision on the amount to be invested.

The other variables that affect the amount of China's overseas investment include market seeking factors (*GDP* and *RGDPG*), trade relation factor (*XM*) and natural resources factors (*Engy*, *Minl*, *Oil*Engy*). The effects of both market seeking and trade factors are in accordance with the usual theoretical predictions – the higher the market potential and the stronger the trade relation, the larger will be the investment flow.

The regression results unambiguously suggest that an African's country's mineral output attracts China's capital. The natural resources variable *Minl* is found to be a significant factor in determining the amount of investment.[22] The energy output effect is a bit intricate. In the absence of *Oil* and its related interaction variables, the energy output variable *Engy* has a negative coefficient estimate even though it is not statistically significant ("Second-Stage," "Heckman-1"). When the *Engy* variable and the interaction variable *Oil*Engy* are included in the regression, the former has a significantly negative coefficient estimate and the latter has a significantly positive one. In determining the amount of investment, China appears to invest more in African countries that produce oil and other energy products. Note that the *Oil* dummy variable itself is not a significant factor.

Results in both Tables 3 and 4 suggest that China's investment in Africa has a preference for countries that have minerals and oil, among other economic factors.

4.   Concluding Remarks

We study the empirical determinants of China's investment activity in Africa. These determinants include market seeking factors, economic ties, risk factors, resources seeking factors, and the Chinese policy factor. Both China's officially approved ODI data and the ODI data reported according to the OECD-IMF standard are used in our empirical exercise.

It is found that China's investment in Africa responds positively to market opportunities and economic ties. For example, China's ODI tends to go to countries with a good market size as measured by GDP and a good growth potential as measured by real GDP growth. Depending on the type of ODI data, there is evidence that African countries that have a strong trade tie or contracted projects with China are likely to receive China's capital.

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[22]   UNCTAD (2010c, p. 10) notes that "…China's outward investment in the non-financial sector continued to expand, driven by a continued search for mineral resources…."

The responses to risk factors are mixed. The corruption risk and law and order risk factors are found to "encourage" Chinese investment, while other risk factors tend to discourage investment. The results pertaining to these risk factors, nevertheless, are not uniformly consistent across datasets and specifications.

Our empirical findings affirm the notion that seeking nature resources is a motivation behind China's overseas investment in Africa. The preferences are for countries with minerals and oil. However, the resources seeking motive only shows up in the 2000s. While the resources seeking motive is quite apparent in the 2003-2007 ODI data, it is only a significant factor for the officially approved data after the adoption of the "Going Global" policy in 2002.

Since its open door policy initiated in 1978, China has been transforming gradually from a centrally planned economy to a market economy. Nonetheless, government policies still play a significant role in directing China's economic activities. Apparently, there is no exception in the ODI arena. The "Going Global" policy promotes the deployment of investments in overseas markets to support economic development at home, and leads to a large volume of China's capital flow to the rest of the world. Our results suggest that the policy could institute resources seeking as one of China's motives, but not the only one, to invest in Africa.

We are, however, reluctant to interpret the empirical results as evidence that China is excessively targeting natural resources in Africa. Our results show that China's investment in Africa responds to the usual economic forces considered in foreign direct investment literature. In fact, our regression exercise indicates that the resources seeking motive became important only recently. The phenomenon is in sharp contrast with the long history of Western investors' involvement in Africa's resource-extractive industries. An alternative way to interpret the empirical results is that China is catching up with other foreign investors in Africa and spreading its investment into the natural resources sector.

China's official stance on its economic engagement in Africa is that it treats Africa as an equal partner and advocates its African investment policy as a win-win strategy. The economic cooperation between China and Africa has been pushed forward since the milestone event – the first Forum on China-Africa Co-operation (FOCAC) – in 2000. China's fast growing exports industries have to find some new markets beyond the developed world. It also requires natural resources to fuel and sustain its economic growth. Africa offers a good complement. It has a potentially huge but underdeveloped consumer market and has abundant natural resources - both energy and minerals. At the same time, Africa is short of capital to develop its economy.

The economic cooperation essentially creates a China-Africa strategic partnership that matches the comparative advantages of these two parties. While our analyses offer some insight into the factors

affecting China's investment behavior, further research is warranted to broaden our understanding of the nature and the implications of the China-Africa economic interactions.

In passing, we note that there are issues related to our ODI data. For instance, the two data sets used in our empirical exercises are compiled according to different methodologies. While the results from these two datasets are broadly in line with each other, there are some differences, too. However, it is beyond the scope of this paper to reconcile the differences between these two datasets. Conceivably, compared with the previously published officially approved data, the recent ODI data reported using the IMF-OECD standard should better reflect China's capital movement. Over time, we should have more and better data to study Chinese overseas investment activity.

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Table 1. China's Outward Direct Investment in Africa – The Approved ODI Data and the Tobit Specification

	Tobit-1	Tobit-2
GDP(-1)	0.153	
	(0.10)	
Proj(-1)	0.016***	0.013**
	(0.01)	(0.01)
Econ	0.273***	0.272***
	(0.07)	(0.07)
Crpt	-0.279***	-0.232***
	(0.07)	(0.06)
GG*Oil		1.162***
		(0.33)
Constant	-4.420**	-1.173***
	(2.19)	(0.43)
Adj. Pseudo R- squared	0.04	0.04
Obs.	462	462

Note: The "Tobit-1" column reports the estimation results from the random effect Tobit panel regression (1) in the text. The "Tobit-2" column presents the results with the interaction variable "*GG*oil*." Robust standard errors are in parentheses. "***", "**" and "*" denote significance at the 1%, 5% and 10% levels, respectively. For brevity, only variables that have a p value less than 20% are presented. "Adj. Pseudo R- squared" gives the adjusted McFadden's R-squared.

Table 2. China's Outward Direct Investment in Africa – The Approved ODI Data and the Heckman Two-Stage Specification

	Heckman-1		Heckman-2	
	First Stage	Second Stage	First Stage	Second Stage
GDP(-1)	0.317***		0.323***	
	(0.11)		(0.11)	
XM(-1)	2.085			
	(1.45)			
Proj(-1)		0.055***		0.016*
		(0.02)		(0.01)
Econ	0.312***	0.436***	0.290***	0.220
	(0.08)	(0.16)	(0.07)	(0.15)
Polt		0.307***		0.313***
		(0.06)		(0.06)
Crpt	-0.334***	-0.845***	-0.275***	-0.487***
	(0.07)	(0.16)	(0.07)	(0.11)
Engy(-1)		0.015		0.019*
		(0.01)		(0.01)
GG*Oil			0.759*	1.229**
			(0.39)	(0.54)
Mills		2.363***		2.005***
		(0.49)		(0.48)
Constant	-7.757***	-4.600***	-7.881***	-4.394***
	(2.53)	(0.93)	(2.54)	(0.94)
R-squared	0.10	0.28	0.11	0.24
Norm.Test	1.20		0.48	
Obs.	427	194	462	217

Note: The table reports the results of estimating equations (2) and (3). Compared with those under "Heckman-1," results under "Heckman-2" allow for the *GG*, *Oil* and related interaction variables. The column "First Stage" gives the results of Heckman first stage regression and the column "Second Stage" gives the results of Heckman second stage regression. Robust standard errors are in parentheses. "***", "**" and "*" denote significance at the 1%, 5% and 10% levels, respectively. For brevity, only variables that have a p value less than 20% are presented. The row labeled "R-squared" reports the adjusted MacFadden's pseudo R-squared for the first stage qualitative response regression and the adjusted R-squared for the second stage regression. The row labeled "Norm.Test" reports the Bera, Jarque, and Lee (1984) normality test statistics - all are insignificant and do not reject null hypothesis of normal distribution. Estimates of the country and year dummy variables have been omitted for brevity.

Table 3. China's Outward Direct Investment in Africa – The OECD-IMF Format ODI Data and the Tobit Specification

	Tobit-1	Tobit-2
GDP(-1)	0.292***	0.389***
	(0.11)	(0.12)
Proj(-1)	0.007*	0.007*
	(0.00)	(0.00)
Econ	0.273**	0.204
	(0.13)	(0.13)
Crpt	-0.490***	-0.491***
	(0.17)	(0.17)
Law	-0.394***	-0.445***
	(0.15)	(0.15)
Engy(-1)	0.016*	-0.042
	(0.01)	(0.04)
Minl(-1)	0.657***	0.647***
	(0.09)	(0.08)
Oil*Engy(-1)		0.014*
		(0.01)
Constant	-5.398**	-6.974***
	(2.39)	(2.56)
Adj. Pseudo R-squared	0.14	0.15
Obs.	131	131

Note: The "Tobit-1" column reports the estimation results from the random effect Tobit panel regression (1) in the text. The "Tobit-2" column presents the results with the interaction variable "*Oil*Engy(-1).*" Robust standard errors are in parentheses. "***", "**" and "*" denote significance at the 1%, 5% and 10% levels, respectively. For brevity, only variables that have a p value less than 20% are presented. "Adj. Pseudo R-squared" gives the adjusted McFadden's R-squared.

Table 4. China's Outward Direct Investment in Africa – The OECD-IMF Format ODI Data and the Heckman Two-Stage Specification

	Heckman-1		Heckman-2	
	First Stage	Second Stage	First Stage	Second Stage
GDP(-1)	0.709**	2.893**	0.823**	3.037**
	(0.29)	(1.29)	(0.34)	(1.38)
RGDPG(-1)		0.040		0.039
		(0.03)		(0.03)
XM(-1)	6.457	1.404***	6.690	1.484***
	(5.13)	(0.40)	(5.45)	(0.46)
Engy(-1)	-0.018	-0.039	-0.108	-0.181*
	(0.03)	(0.05)	(0.09)	(0.11)
MinI(-1)		0.505***		0.514***
		(0.09)		(0.09)
Law	-0.654*		-0.778*	
	(0.35)		(0.40)	
Oil*Engy(-1)			0.088	0.146*
			(0.08)	(0.08)
Mills		0.632		1.220
		(3.91)		(3.62)
Constant	-12.889**	-66.463**	-14.953**	-69.701**
	(6.03)	(30.08)	(6.83)	(31.97)
R-squared	0.08	0.37	0.08	0.37
Norm.Test	0.78		0.95	
Obs.	123	103	123	103

Note: The table reports the results of estimating equations (2) and (3). Compared with those under "Heckman-1," results under "Heckman-2" allow for the *GG*, *Oil* and the related interaction variables. The column "First Stage" gives the results of Heckman first stage regression and the column "Second Stage" gives the results of Heckman second stage regression. Robust standard errors are in parentheses. "***", "**" and "*" denote significance at the 1%, 5% and 10% levels, respectively. For brevity, with the exception of the *Engy* and related variables, only variables that have a p value less than 20% are presented. The row labeled "R-squared" reports the adjusted MacFadden's pseudo R-squared for the first stage qualitative response regression and the adjusted R-squared for the second stage regression. The row labeled "Norm.Test" reports the Bera, Jarque, and Lee (1984) normality test statistics - all are insignificant and do not reject null hypothesis of normal distribution. Estimates of the country and year dummy variables have been omitted for brevity.

Figure 1. China's Outward Direct Investment
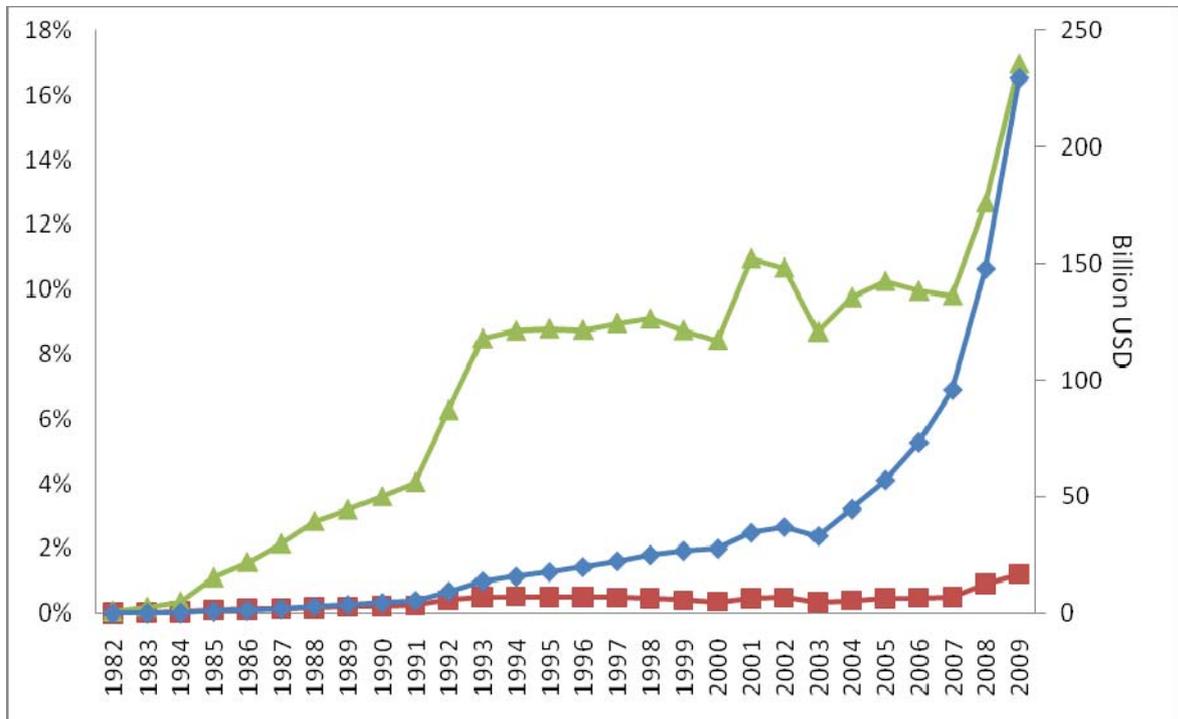
—■— China's ODI as a percentage of Total World FDI (left scale)

—▲— China's ODI as a percentage of total FDI from developing countries (excluding offshore financial centers including British Virgin Islands, Cayman Islands, Hong Kong, and Singapore) (left scale).

—◆— China's ODI stock (right scale)

Data Source: UNCTAD

Figure 2. China's Direct Investment in Africa
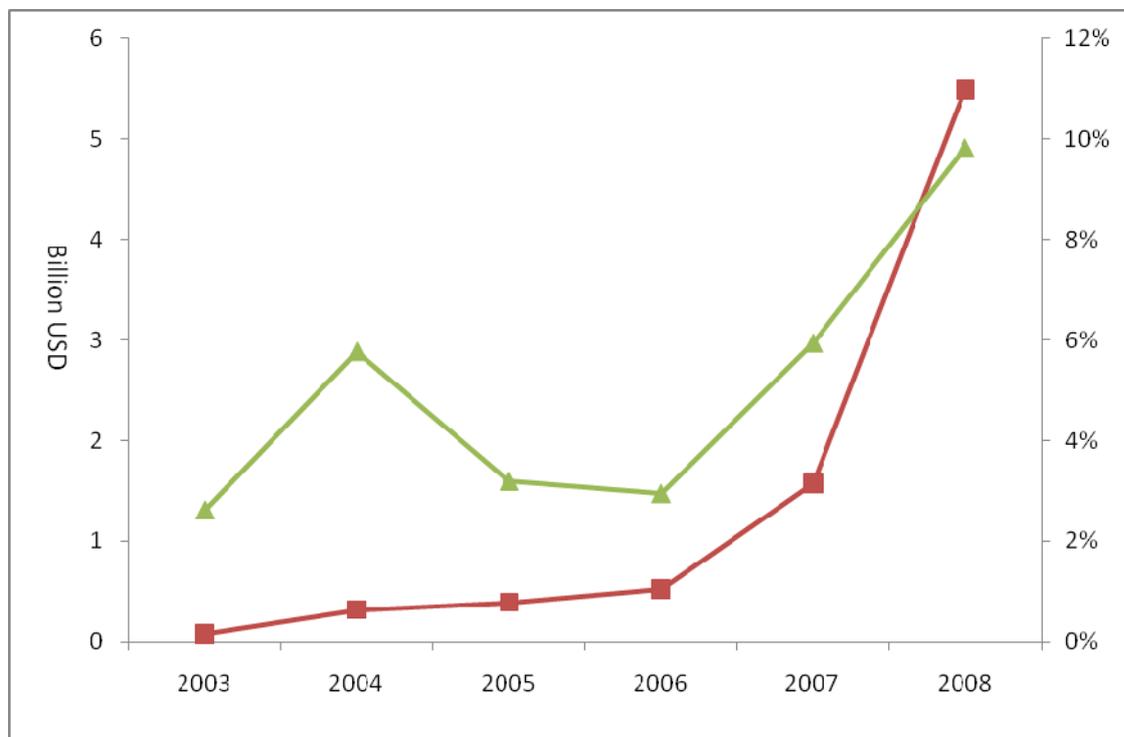
�']'■ China's annual ODI in Africa (left scale)

▲ China's annual ODI in Africa as a percentage of its total ODI (right scale)

Data source: UNCTAD and the 2009 *Commerce Yearbook of China*

Figure 3. China's Trade with Africa

China's annaul export to Africa

China's annual imports from Africa

Trade surplus

Total trade
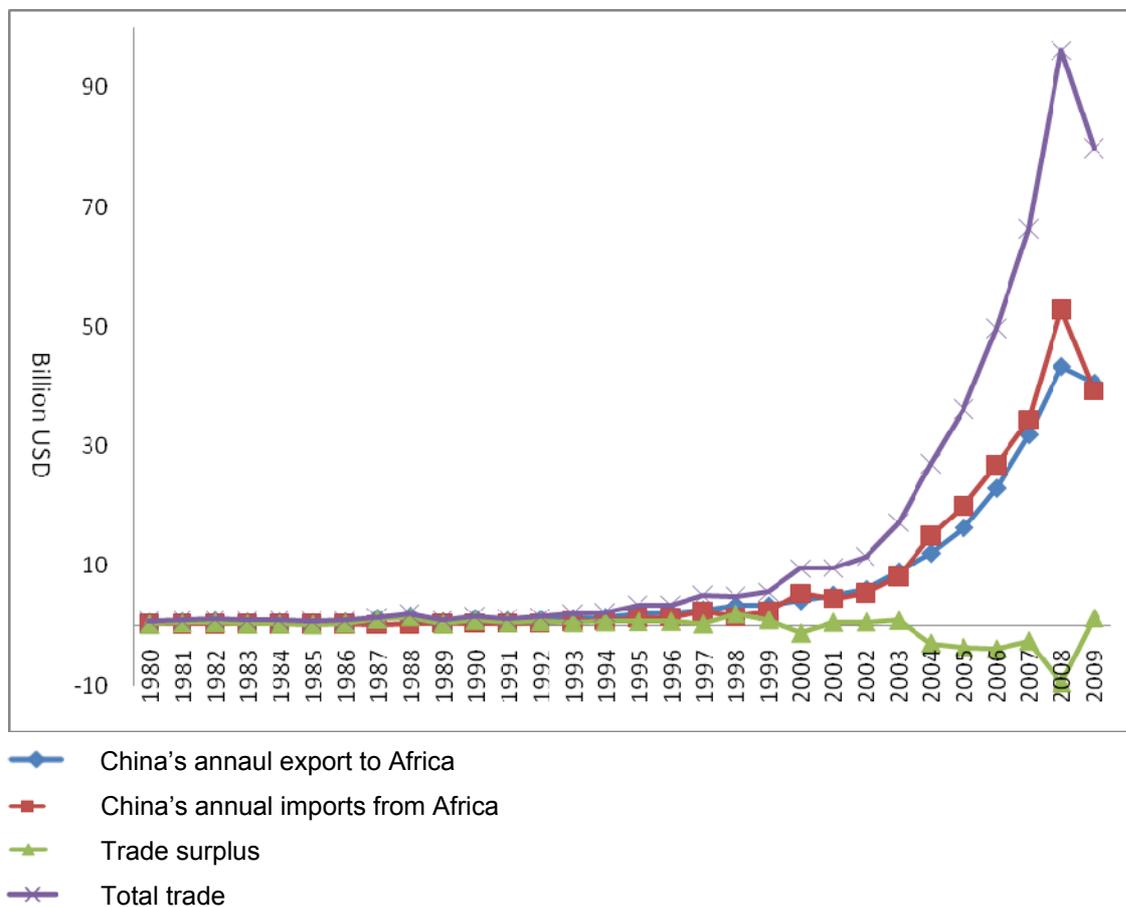
Data source: IMF *Direction of Trade* (DOT)

Figure 4. China's Trade with Africa, and Contracted Projects and Outward Direct Investment in Africa

━■━ China's ODI in Africa (right scale).

━▲━ Trade (left scale)

━◆━ Contracted projects (left scale)
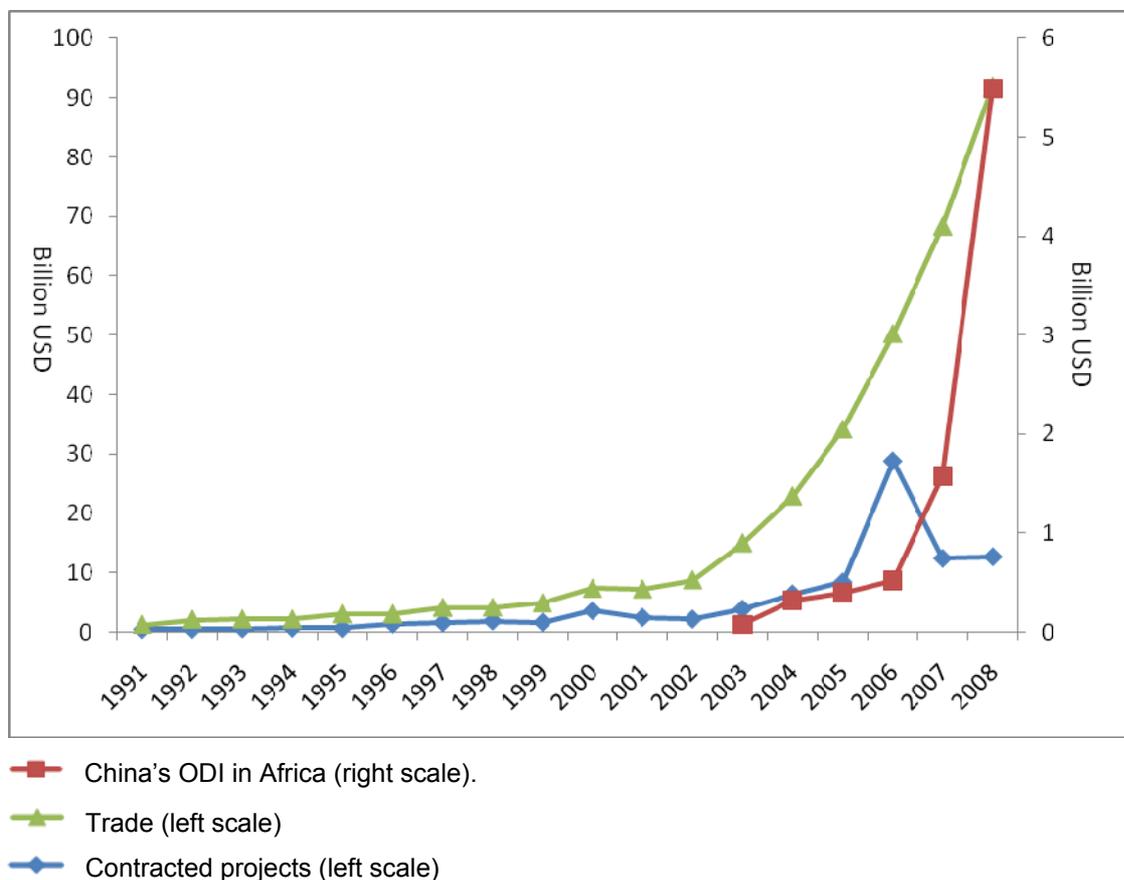
Data Source: IMF *Direction of Trade* (DOT) and the 2009 *Commerce Yearbook of China*

Appendix 1. Data – Definition and Sources

The appendix lists the definitions of the variables used in the study, their sources, and their correlation structure.

A. Definitions and Sources

ODI   China's approved outward direct investment scaled by the host country's population. [Source: Editorial Broad of the Almanac of China's Foreign Economic Relations and Trade (1992-2006)]; China's outward direct investment in the IMF-OECD standard scaled by the host country's population. [Source: *Statistical Bulletin of China's Outward Foreign Direct Investment* and *China Commerce Yearbook*, the Ministry of Commerce, China (2005 – 2009)]

GDP   The host country's nominal GDP in current USD (log value). [Source: *World Development Indicators*, World Bank.]

RGDPpc   The host country's real per capita GDP in constant 2000 USD (log value). [Source: *World Development Indicators*, World Bank.]

RGDPG   Host country's real GDP growth rate. [Source: *World Development Indicators*, World Bank.]

Engy   The energy depletion (% of GNI) is equal to the product of unit resource rents and the physical quantities of energy extracted. It covers crude oil, natural gas, and coal. [Source: *World Development Indicators*, World Bank.]

Minl   The mineral depletion (% of GNI) is equal to the product of unit resource rents and the physical quantities of minerals extracted. It covers bauxite, copper, iron, lead, nickel, phosphate, tin, zinc, gold, and silver. [Source: *World Development Indicators*, World Bank.]

XM   The ratio between an African country's international trade with China and its total trade. [Source: *Direction Of Trade* (DOT), IMF.]

Proj   The amount of contracted projects China has in a host African country in USD *per capita*. [Source: *Editorial Broad of the Almanac of China's Foreign Economic Relations and Trade* (1992-2008)]

Econ   The economic condition risk index which is given by the sum of the ICRG socioeconomic condition index and investment profile index. [Source: *International Country Risk Guide* (ICRG)]

Polt   The political system risk index which is given by the sum of the ICRG government stability, military in politics, and democratic accountability indexes. [Source: *International Country Risk Guide* (ICRG)]

Cnfl   The conflict risk index which is given by the sum of the ICRG internal conflict and external conflict indexes. [Source: *International Country Risk Guide* (ICRG)]

Sctn   The social tension index which is given by the sum of the ICRG religious tensions and ethnic tensions indexes. [Source: *International Country Risk Guide* (ICRG)]

Crpt   The corruption risk index which is given by the sum of the ICRG corruption and bureaucracy quality indexes. [Source: *International Country Risk Guide* (ICRG)]

Law   The ICRG law and order risk index. [Source: *International Country Risk Guide* (ICRG)]

GG   A time dummy variable for China's "going global" policy and is given by I(t>=2002) = 1, and 0 otherwise.

Oil   The oil producing African country zero-one dummy variable that has a value of one for Algeria, Angola, Congo Republic, Egypt, Gabon, Libya, Nigeria, and Sudan.

B. Correlation Table

	GDP	RGDPpc	GDPG	XM	Proj	Engy	Minl	Econ	Cnfl	Polt	Sctn	Crpt	Law
GDP	1.000												
RGDPpc	0.614	1.000											
GDPG	0.047	-0.016	1.000										
XM	-0.119	0.000	0.047	1.000									
Proj	0.071	0.207	0.057	0.363	1.000								
Engy	0.166	0.453	-0.008	0.205	0.212	1.000							
Minl	-0.087	-0.039	0.042	-0.048	-0.019	-0.120	1.000						
Econ	0.370	0.387	0.103	-0.012	0.084	-0.106	-0.082	1.000					
Cnfl	0.172	0.242	0.228	0.028	0.088	-0.026	-0.028	0.517	1.000				
Polt	0.256	0.222	0.196	-0.062	0.061	-0.200	-0.018	0.565	0.635	1.000			
Sctn	-0.099	0.103	0.054	-0.080	-0.041	-0.069	0.044	0.372	0.551	0.456	1.000		
Crpt	0.197	0.238	-0.015	-0.162	-0.135	-0.059	0.126	0.396	0.301	0.271	0.345	1.000	
Law	0.164	0.156	0.146	-0.013	-0.004	-0.203	0.007	0.491	0.488	0.452	0.535	0.257	1.000

Note: The Table presents the sample correlations between the explanatory variables considered in the text. In general, the correlation coefficients are quite low; only a few of them are larger than 0.5.