DETERMINANTS OF CHINESE OUTWARD FOREIGN DIRECT INVESTMENT IN AFRICA

MASTER OF ARTS (ECONOMICS) THESIS

By

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DECLARATION

I, **the undersigned**, hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where the work of other people has been used, acknowledgements have been duly made.

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Date

CERTIFICATE OF APPROVAL

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DEDICATION

To my beloved father Mr E.S Singini, late mom (Martha) and to my grandmother of whom I cherished the most.

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ABSTRACT

This study investigates the determinants of Chinese outward foreign direct investment (OFDI) in Africa. The study covers 37 African countries over a period of six years from 2005 to 2010. The study used a fixed effects model and differenced GMM for empirical estimations. Using the Stock of Chinese investment in Africa, the study found that Chinese investment in Africa is not primarily focused on natural resource seeking. This result is robust even after we isolate oil as a distinct product for resource seeking. The results suggest that Chinese investment is attracted by absolute market size in host countries. The Chinese preferentially seek out larger markets within Africa. However, the study found no evidence that the Chinese are attracted by the purchasing power of the host nations. It was also found that past market growth does not influence Chinese investment decision in Africa. Better infrastructure is found to be essential, precisely telecommunications infrastructure. Chinese investment is found not to be deterred by institutional risk factors in Africa, given that most of their investment is state owned enterprises. This distinctive feature about the Chinese sets them apart from western foreign direct investment which is pre-conditioned on institutional factors such as corruption and accountability. In this regard, Chinese OFDI can be considered as an alternative to conventional FDI. There is also no feedback mechanism between poor institutions and natural resources, suggesting that the Chinese are not natural resource seeking in poor institutional countries.

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LIST OF ABBREVIATIONS

AERC	African Economic Research Consortium
COMESA	Common Market for Eastern and Southern Africa
CPI	Corruption Perception Index
DRC	Democratic Republic of Congo
EAC	East African Community
FDI	Foreign Direct Investment
GDP	Gross domestic Product
GMM	Generalized Method of Moments
ICBC	Industrial and Commercial Bank of China
LM	Lagrange Multiplier
MNE	Multinational Enterprise
MOFCOM	Chinese Ministry of Finance and Commerce
OECD	Organization of Economic Cooperation and Development
OFDI	Outward Foreign Direct Investment
OLS	Ordinary Least Squares
POLS	Pooled Ordinary Least Squares
SADC	Southern African Development Community
SOE	State Owned Enterprises
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
VIF	Variance Inflation Factor

WDI	World Bank Development Indicators
WGI	Worldwide Governance Indicators
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.0 Background

China's outward foreign direct investment (OFDI) has been increasing rapidly since 2005, reaching USD 90 billion in 2013 (Marukawa & Ito, 2014). As such academic interest towards Chinese outward investment has increased. Chinese OFDI to Africa has recently increased from USD 1.6 billion in 2005 to USD 16 billion in 2011 (Breivik, 2014). Chinese OFDI into Africa has grown by 46 per cent per annual over the last decade despite the marginal proportion accounted by Africa to China's totals, for instance in 2009, Africa accounted for approximately 3% of Chinese investments. Compared to other major investment partners such as United States, United Kingdom and France, China is a small actor in relative terms (UNCTAD, 2013). However, the surge in Chinese presence has attracted considerable attention and great debate about the incentive and motives for Chinese investment in Africa.

The growth in Chinese outward foreign direct investment (OFDI) has also been accompanied by enormous expansion of Chinese official economic assistance on infrastructure projects such as schools, hospitals, roads and hotels (Lemble, 2011). To differentiate official assistance from foreign direct investment (FDI), the study adopts the definition of FDI from (UNCTAD, 2014). FDI refers to an investment made to acquire

lasting interest in enterprises operating outside of the economy of the investor where the investor's purpose is to gain effective voice in the management of the enterprise. Some degree of equity ownership is almost always considered to be associated with an effective voice in the management of an enterprise; a threshold of 10 per cent of equity ownership is suggested to qualify an investor as a foreign direct investor. The components of FDI include equity capital, reinvested earnings and other capital. Other capital refers to short or long-term borrowing and lending of funds between the MNC and the affiliate.

In 1996, china accounted for 3.3 per cent of total outward investment from developing countries. By 2006, its share had increased by 10 per cent. This makes China the third largest developing country in terms of FDI after Hong Kong and Brazil, up from seventh position in 1996 (Kolstad & Wiig, 2009). However, china is relative small in global terms, actually China was ranked 17th in terms of outward FDI flows in 2006 (UNCTAD, 2013) and (Kolstad & Wiig, 2009). According to Buckley, et al. (2007), Chinese surge in outward FDI is mainly due to capital market imperfects. First, state-owned enterprises in China had access to capital at low interest rates, in form of soft budget constraints. Second, family owned firms had access to cheap capital from family members. Third, it is argued that internal capital markets impecfections within multinationals effectively subsidised outward FDI.

The surge in Chinese global interest has highly attributed to Beijing's policy decisions and economic strategies, mainly the 'going global' strategy. This strategy was introduced to encourage enterprises with comparative advantages to make investments abroad and

exploit foreign resources. This strategy was supported by simplified border procedures, preferential policies for taxation, imports and exports, and easy access to capital as was the case for state owned enterprises (Lemble, 2011). Chinese investment into Africa has been government to government agreements bundled in form of aid, trade and FDI mainly through Chinese state ownered multinationals.

1.2 Problem Statement

The recent increase in Chinese investment into Africa has been highly debated. The issue is that most publications and media portray Chinese investment as resource seeking and exploitative (Haglund, 2008). It is viewed as resource seeking and exploitative in resource rich and institutional poor countries. However Chinese investment has also been seen as market seeking and infrastructure oriented towards Africa. Empirical evidence on the issue is highly contested with Buckley, et al. (2007) and Zhang & Daly (2011) finding that Chinese investment is primary resource seeking while other scholars such as Cheung & Qian (2009) suggest otherwise. Further, Figure 1 shows clearly how puzzling this is. Given that the broader perspective is that Chinese investment is resource seeking, the sectoral distribution in Figure 1 suggests otherwise since the top sectors are market seeking sectors such as wholesale & retail, banking, and leasing and business. While the main resource seeking sectors such as mining comprised only 15 per cent of total Chinese investment.

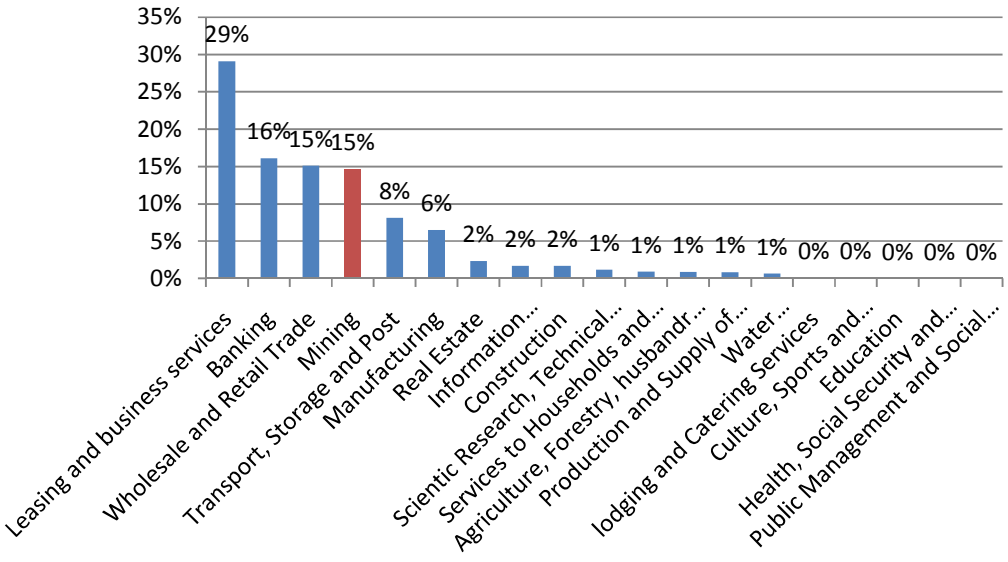

Figure 1: Proportion of Chinese FDI by Sectors (2004-2010)

Source: 2010 statistical Bulletin of China's Outward Foreign Direct Investment.

Kolstad and Wiig (2009) augment our proposition by arguing that in terms of yearly sectoral distribution, in 2006, around 40 per cent of Chinese outward FDI flows were in mining and petroleum sectors, where as 54 per cent was in various service industries such as finance and business & leasing services. Manufacturing only comprised of 4 per cent. However, Kolstad and Wigg (2009) posit that heavy investment in service industries gravitate towards developed countries than developing countries. Such a proposition needs empirical investigation rather than mere speculation about Chinese investment in Africa. This study therefore entails to explore the determinants of Chinese investment in regards to market seeking and natural resource seeking motives and also explore the essence of institutional risk factors in Chinese investment decisions.

Critical literature review suggests that Chinese investment is an alternative to traditional western investment as such the media portrays it as exploitative. Therefore, this study seeks to ascertain the determinants of Chinese Outward Direct Investment in Africa using official data from Chinese Ministry of Finance and Commerce. This study will also address the interactive effect between poor institutions and availability of natural resources determining Chinese investment in Africa.

1.3 Objectives

The main objective of this study is to assess the determinants of Chinese outward direct investment in Africa. The study will aim to determine the extent to which the Chinese are resource seeking and market seeking in Africa. The study will also attempt to assess the extent to which the Chinese target Africa countries given their institutional capacity in regards to factors such as corruption, accountability and rule of law.

Specifically, the study seeks to achieve the following objectives:

1. To determine whether Chinese investment motives are resource seeking in Africa.
2. To determine whether Chinese investment is targeted towards poor institution countries in Africa.
3. To determine whether Chinese investment is market seeking in Africa.
4. To determine the interaction effect between institutions and natural resources.

1.4 Hypothesis

The study seeks to prove the following hypotheses.

1. Chinese OFDI is not resource seeking in Africa
2. Chinese OFDI is not targeted towards poor institution countries in Africa
3. Chinese OFDI is not market seeking in Africa
4. Institutions and natural resources have no interaction effect

1.5 Organization of the Study

The rest of the paper is structured as follows. Chapter two highlights an overview of Chinese Africa relations, chapter three reviews the theoretical and empirical literature to guide the methodological framework outlined in chapter four. Chapter five presents the results and gives critical analysis and interpretation of the findings. Chapter six consist of summary of findings, conclusions and policy recommendations.

CHAPTER TWO

AN OVERVIEW OF CHINESE AFRICA RELATIONSHIP

2.0 Introduction

This section gives a clear overview of relations between China and Africa. It highlights the recent relations and also gives a historical perspective.

2.1 Recent Chinese Africa relations

China has become the second largest economy in the world and is more and more engaged with African affairs (Jianbo & Xiaomin, 2014). China is one of the major capital providers in Africa and this has substantial implications on economic development (Cheung & Qian, 2009). Kaplinsky and Morris (2009) argue that China's immediate objective is to maintain resource security. Given an average economic growth rate of 9.8% between 1980 and 2006, and this creates pressure on demand for inputs. China recently overtook America as the world's largest net importer of oil[1]. As illustrated by Figure 2, the Chinese recognised the need to secure energy sources, in 1993 china transitioned from a net oil exporter to a net oil importer. To support Chinese modernisation and urbanisation, investment in Africa becomes very essential.

[1] www.economist.com (Mar 23rd 2013). More than minerals: Chinese trade with Africa keeps growing; fears of neo-colonialism are overdone

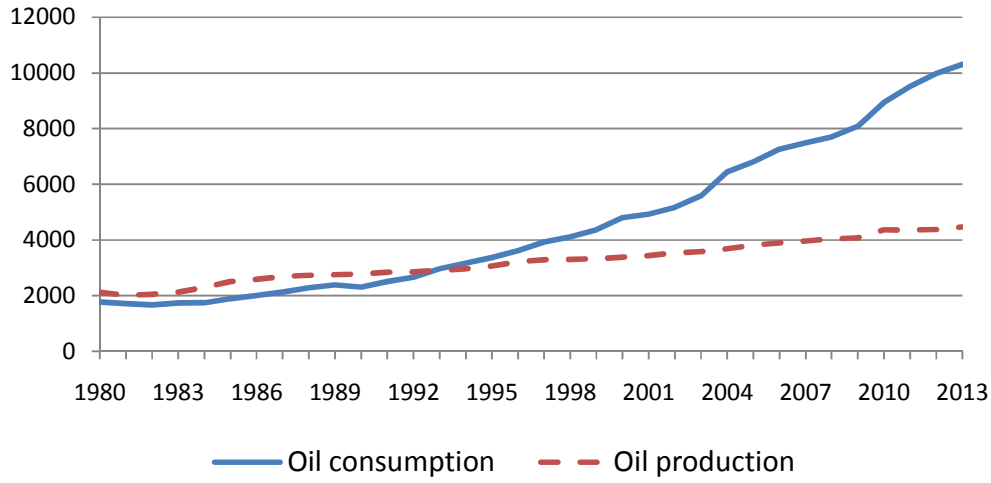

Figure 2: Chinese Oil Consumption and Production (in 1000 bbl/d)
Source: U.S Energy Information Administration

According to Tralac (2013), 79 per cent of Chinese imports from Africa between 2005 and 2011 were mineral products, 10 per cent in metals, 4 per cent in stone/Glass, 2 per cent in wood & wood products, and other products constituent 5 per cent. Africa contributes more than 30 per cent of China's imported oil (Kaplinksy & Morris, 2009). China is Africa's top business partner with trade exceeding USD 166 billion. But it is not all minerals; Chinese businesses are branching out into non-resource sectors such as wholesale & Retail, finance and banking. UNCTAD data suggest that China's investment in Africa as a whole is fairly well distributed across different sectors. Between 1979 and 2000, 46 per cent of Chinese investment was in manufacturing sector, particularly in the clothing industry. This was initially taking advantage of quota access through the Multifibre Agreement and then the AGOA scheme. The AGOA scheme provided Africa with preferential access to US markets (Kaplinksy & Morris, 2009).

From a regional perspective, given China's import composition from Africa, SADC has proved to be making a substantial contribution in this regard. Chinese imports from SADC countries seem to be highly concentrated in resource rich countries, with Democratic Republic of Congo (DRC) and Angola leading the way, see Figure 3. SADC has been the most important regional configuration in terms of China's imports and exports.

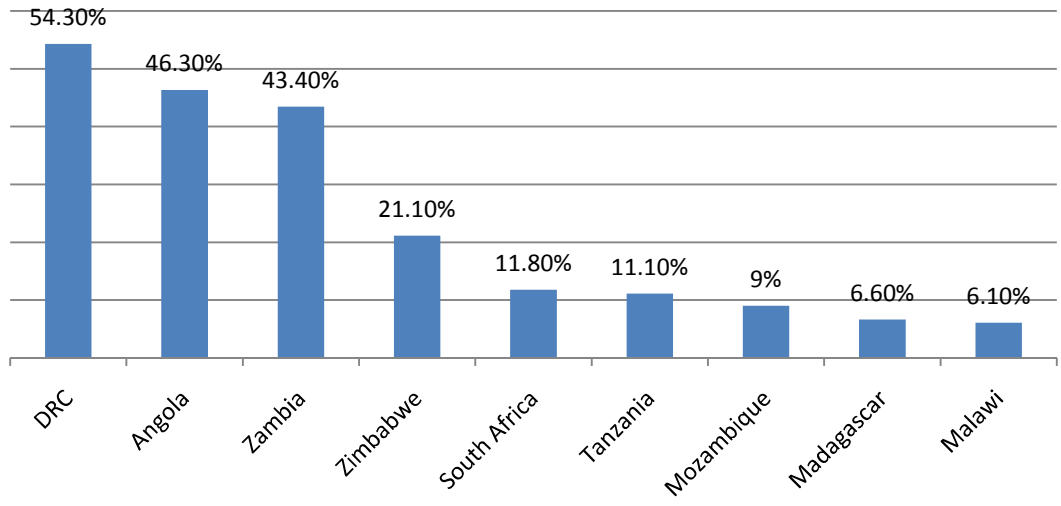

Figure 3: Proportion of Exports from Selected SADC Countries into China (2012)
Source: CIA Fact Book

Chinese imports from SADC, COMESA and the EAC in 2012 were approximately US$ 83 billion, US$ 17 billion and US$ 559 million, respectively. The value of exports to SADC, COMESA and the EAC accounted for 29%, 26% and 6%, respectively of china's total exports to African countries. Further, during the 2011/2012, China's total trade with SADC, EAC and COMESA increase by 31%, 18% and 5% respectively (Tralac, 2013).

Despite the increasing trend in Chinese interest in Africa, overall the region has performed relatively poor with respect to attracting FDI and a high proportion of Chinese

FDI is dominated by a few resource rich countries (Muradzikwa, 2002). In 2010, Africa accounted for 4 per cent of Chinese outward foreign direct investment (OFDI) from an initial 2 per cent in 2002. A higher proportion of the Chinese OFDI stock has been invested within Asia, accounting for over 62 per cent of Chinese OFDI from 2004 to 2010[2]. Latin America happens to be the second largest destination for Chinese FDI. The region accounted for 14 per cent of Chinese OFDI in 2010, see Figure 4. Europe, North America and Oceania accounted for 5%, 2% and 3% in 2010, respectively.

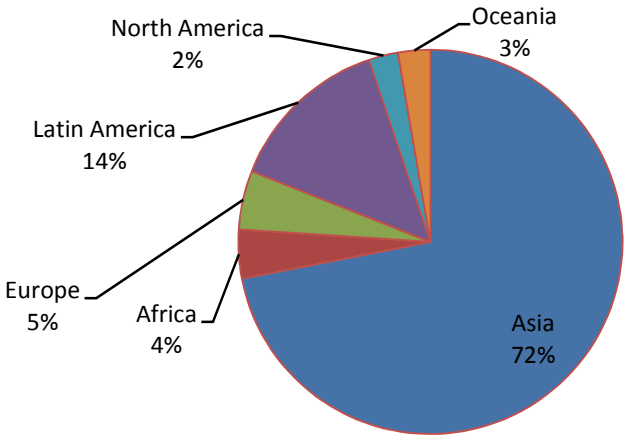

Figure 4: Distribution of Chinese FDI in 2010
Source: 2010 statistical Bulletin of China's Outward Foreign Direct Investment

China's OFDI has increased over the past decade but the volume still remains small in comparison with western traditional investors. As a share of the world total FDI, China's OFDI increase from 0.27 per cent in 1991 to 0.54 per cent in 2005. In 2011, Chinese FDI flow ranked fourth on the list of top 20 investors in Africa, with France, United States,

[2] However, Scissors (2012) stipulates that the high proportion accounted by Asia is because Hong Kong is treated as the final destination for almost two thirds of outward investment, when it is almost entirely a transhipment point.

and Malaysia leading the way. While FDI Chinese FDI stock ranked sixth, with France, United States, United Kingdom, Malaysia and South Africa topping the list (UNCTAD, 2013). Africa has only become an important FDI location for Chinese enterprises only in recent years, see Figure 5. As of 2005, China's FDI stock in Africa had reached US$ 1.6 billion, with increasing outflows to the continent in recent years (UNDP, 2007). By 2005, three Africa countries made the top 20 of China's outward FDI stock: Sudan, Algeria and Zambia which were 9th, 18th and 19th largest recipients respectively of its outward FDI stock (UNDP, 2007).

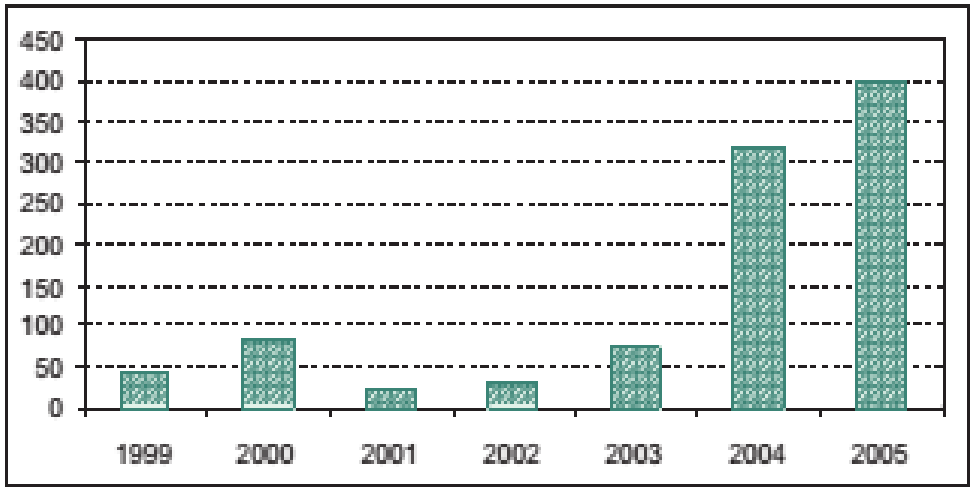

Figure 5: China's FDI outflows to Africa, 1999-2005 (Millions of Dollars)
Source: UNDP (2007)

International sanctions were the door through which China rushed to gain access to Africa and to its mineral wealth. For instance, China went against UN Security Council sanctions by providing oil infrastructure and weapons in Sudan. Roughly 80 per cent of Sudan's oil production of 490,000 barrels per day is concentrated in South Sudan. In

2010, China imported almost half of this output, roughly 250000 barrels per day, which accounts for about 5 per cent of China's oil imports (Yuriko, 2011).

Angola is Africa's second largest oil producer after Sudan. Angola has experienced continued conflict for decades. It was subject to UN sanctions until 2002. Yet during the years of Angola's pariah status, China provided large-scale infrastructure finance in return for oil. In 2006, China also gave Angola USD 2 billion oil backed loan with which infrastructure projects was to be performed by Chinese construction companies. In 2010, China signed a USD 79 million agreement with Angola to supply equipment for the rehabilitation of the Benguela Railway (Xinhua, 2010). China is now the second biggest destination for Angolan oil, the first being the United States of America (Yuriko, 2011). The "Angolan mode" arrangement entails a complex process of compensation implemented by China to better manage risk countries in Africa. It links development aid, trade and investment by Chinese enterprises in host countries. No money is paid directly to African governments, but the Chinese government commissions a public construction firm which usually receives financial support from the Export-Import Bank to achieve infrastructure projects with the approval of African governments. In return for the provision of infrastructure, the African government gives Chinese companies the right to exploit natural resources in the host country (Sumata & Kikouta, 2013).

In South Africa, a large amount of Chinese OFDI has been channelled towards the automobile sector with FAW, a Chinese manufacture investing USD 100 million in April 2012. In 2009, Chinese state owned automobile manufacturer invested USD 80 million to

set up a production facility. However, other sectors such as mining and finance have also made headlines. For instance, in 2007 Minmetals Development Co, Ltd. purchased the rights to explore chromium in Naboom from South African firms, Mission Point and Versatex, for USD 6.5 million[3]. Further, China's state owned Industrial and Commercial Bank of China Ltd. (ICBC) bought a 20 percent stake in South African Standard Bank Group Ltd. for USD 5.6 billion. This transaction is the largest single foreign investment in Africa to date (Lemble, 2011).

Chinese FDI is different from Western FDI. Chinese FDI is packaged with aid and complemented by its geo-strategic trade and political objectives. It mainly originates from state-owned enterprises which can work to long –term commitments. Western FDI is typically from private firms which operate to shorter time frames to maximize profits. The most noteworthy element of Chinese FDI is that it is not given conditionally upon meeting any investor-set performance standards (Pease & Clark, 2007). Therefore Chinese investment becomes an alternative to western FDI but not a substitute.

2.2 Forum on China Africa Cooperation (FOCAC)

China Africa relations have recently been cemented by the Forum on China Africa Cooperation (FOCAC). The FOCAC was formally established during the first Ministerial Conference in Beijing from 10 to 12 October 2000. The forum aimed at strengthening cooperation between China and Africa, and to mutually meet the challenges of globalisation and promote common development with a focus on establishing a just and equitable new international order. The second FOCAC was held in Africa, Addis Ababa

[3] According to data obtained from www.aiddata.org

from 15 to 16 December 2003. The third forum was held in Beijing from November 3 to 5, 2006. China pledged to double aid to Africa by 2009. China announced the creation of a USD 5 billion China-Africa development fund to encourage Chinese firms invest in Africa and further open China's markets to exports from Africa. China also rolled out USD 5 billion worth of concessionary loans to Africa during the summit. China pledged to double the number of Chinese government scholarships given annually to Africans to 4000 and to send 100 senior agricultural experts and 300 youth volunteers to Africa. In January 2006, China developed a China Africa Policy paper which encourages and supports Chinese companies to invest in Africa (Breivik, 2014). The fourth ministerial meeting of the FOCAC was held at Soho-Square, in the Egyptian resort of Sharm el-Sheikh on 8 to 9 November 2009. The forum adopted a Sharm el-Sheikh declaration and an action plan for 2010-2012 which was a roadmap for further China Africa relations. The USD 5 billion loan announced under the 2006 Beijing summit was doubled to USD 10 million. China also announced that it would write off the debt of some of the poorest and most heavily indebted African countries (Jopson & Anderlini, 2009). The fifth ministerial meeting also was held in 2012 in Beijing from 19 to 20 July. The forum reviewed the implementation of follow up activities from the fourth ministerial conference as well as to examine and adopt the "Beijing Declaration" and "Beijing Action Plan 2013-2015 (FOCAC, 2015).

2.3. Historical Perspective

Historically, Chinese relations with Africa are not a new phenomenon. By 15thcentury, China had already established trade relations with Africa. The first large scale Asia Africa Conference, the Bandung Conference, was held in Indonesia in 1955. The platform aimed at promoting Afro-Asian economic and cultural cooperation and to oppose colonialism by imperialistic nations. China established the first formal diplomatic relationship in Africa with Egypt in 1956. By 1965, China entered into diplomatic ties with 14 states in Africa. Following such ties, Africa backed Chinese efforts to obtain a permanent seat on the United Nations Security Council in 1971 (Breivik, 2014).

Following the Cultural Revolution that started in 1966, China Africa relations were damaged. However, China still maintained some visible projects in Africa. After the end of the Cultural Revolution with Mao's death in 1976, China's new economic policy orientation shifted towards capitalist development under the new leader, Deng Xiaoping. China adopted an open door policy initiated in 1978 (Cheung & Qian, 2009). This meant that in such an open economy, Africa became less important as the new Chinese development agenda demanded foreign direct investment, trade and technical assistance from the west. However, in 1989 events on Tiananmen Square resulted in a large crisis in China's relation with the West[4]. The Chinese turned to Africa, establishing diplomatic

[4] The Chinese Government violently suppressed demonstrations in Tiannanmen Square on June 4, 1989. The Chinese Government asserted that injuries exceeded 3,000 and over 200 individuals, including 36 students were killed.

ties and offering aid and financial support. China now has established diplomatic relations with almost all African countries. The renewed relationship is based on three pillars of political, economic and educational cooperation (Breivik, 2014).

2.4 Conclusion

The above overview provides long standing relationship between China and Africa. The trends show that the relations were first more of ideological than economical. However, the recent trend posits more of trade and investment relations mixed with aid and grants towards Africa. China also seeks geo political support from Africa in establishing a new international order.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter looks at the theoretical and the empirical literature with which this study is based. This is essential in determining the appropriate model to be adopted. The literature also provides guidance on the variables to be used in the model.

3.1 Theoretical Literature

This section outlines the theoretical literature on FDI. The eclectic or OLI paradigm sets the stage and then it is complemented by the Knowledge and Capital Model.

3.1.1 Eclectic or OLI paradigm by Dunning

The eclectic or ownership, location, and internalization (OLI) paradigm stipulates the determinants of international production, that is, production financed by FDI and undertaken by multinational enterprises. Dunning and Lundan (2008) posits four types of foreign production: natural resource seeking; market seeking; efficiency seeking; and strategic asset seeking. We shall focus on the first two types of foreign investment since Dunning and Lundan argues that most firms invest to acquire natural resources or to gain new markets while efficiency seeking and strategic seeking motives depend on the degree

of multinationality. This assertion is used in this study given that Chinese OFDI into Africa is a recent phenomenon and that scholars such as Dunning and Lundan have also argued that Chinese investment is mainly resource seeking and market seeking. However, this study still gives a descriptive analysis of what efficiency and strategic seeking entails.

There are three main types of resource seekers. First, physical resource seekers in products such as minerals fuels, metals and agricultural products. Second, there is investment seeking plentiful supplies of cheap and well-motivated unskilled or semi-skilled labour. The third type of resource seeking investment is prompted by the need of firms to acquire technological capability, management and organisational skills. This paper will focus on the notable Chinese resource seeking investment in physical resources, precisely mineral and fuel resources (Dunning & Lundan, 2008). There seem to be little incentive for the Chinese investments to be seeking cheap labour abroad, mainly because China itself has an ample supply of low cost labour supply (Breivik, 2014).

Market-seeking investment is undertaken mainly to sustain or protect existing markets or to exploit or promote new markets. The main factors in market seeking include market size and prospects for market growth. Apart from market size and market growth, Dunning & Lundan states four other reasons for market seeking behaviour. First, firms follow suppliers or customers who have set up foreign producing facilities. Second, products need to be adapted to local tastes, needs, to cultural mores and to indigenous

resources and capabilities. Third, it is argued that setting up production facilities in host countries reduces transaction costs such as transport cost, as such being cost effective. Fourth, it might be imperative for multinationals to have a physical presence in the leading markets served by competitors as part of its global production and marketing strategy. Such strategic market-seeking investments might be undertaken for defensive or aggressive reasons in sectors such as autos, semi-conductors, pharmaceuticals which are dominated by international oligopolists (Dunning & Lundan, 2008).

Efficiency seekers align resource market seeking investment in such a way that they gain from common governance of geographically dispersed activities. It takes advantage of different factor endowments, cultures, institutional arrangements, demand patterns, economic policies and market structures. This type of investment seeking brings to the firm economies of scale and scope, and risk diversification (Dunning & Lundan, 2008). Mostly such FDI occurs once resource based or market seeking investments have become sufficiently numerous. The recent surge in Chinese investment warrants little efficiency seeking in Africa (Breivik, 2014). Similarly, strategic asset seekers aim to capitalise on the benefits of common ownership of diversified activities and capabilities. For instance, strategic asset seekers might buy out a firm producing a complementary range of goods or services so that it can offer its customers a more diversified range of products. However, there is no statistical data on the significance of efficiency seeking or strategic asset acquiring FDI (Dunning & Lundan, 2008). Dunning and Lundan argues that there are other reasons which do not easily fit into the four categories. These are grouped into three, escape investments, support investments and passive investment. Escape

investment entails the type of FDI made to escape restrictive legislation or macroeconomic policies by home governments. “Round tripping” of investment between China and Hong Kong to exploit incentives granted only to foreign investors is a good example of escape investment. Support investments aim at support activities of the rest of the enterprises of which they are part of. For example clothing wholesale and retail outlets in UK and the US such as Wal Mart. Passive investment is mainly undertaken to earn profits or gains from capital appreciation. For example investment in real estate which is mostly undertaken purely in anticipation of an appreciation in land and property prices.

Following the OLI paradigm, it is evident that the motives and incentives for investment cannot be perceived under an all embracing theory with a single explanatory model. As such the OLI paradigm provides an analytical framework which explains various MNE activities and accommodates several theories of MNE.

3.1.2 Knowledge Capital model

We supplement the OLI paradigm with the knowledge capital model developed by Markusen (2002). The knowledge capital model unifies vertical and horizontal FDI. The vertical pattern is explained by factor proportion approach where firms fragment their production process into different stages. Vertical FDI is expected to take place mainly between countries at different stages of economic development. Conversely, horizontal FDI posit that firms produce the same goods in various countries. Given high trade costs, locating production abroad is cheaper than exporting to these markets (Anghel, 2007). To

some extent, Markusen (2002) concurs with Dunning's OLI theory by stipulating that location factors such as factor prices and market sizes determine firm location decisions.

3.2 Empirical Literature

Kolstad & Wiig (2009) used OLS estimation using average of Chinese outward FDI to host countries for the period 2003-2006 and found that poor institutions of resource rich host countries attracted more Chinese FDI. We conform to Kolstad and Wiig by employing interaction effects between institutions and natural resources. Kolstad and Wiig uses actual FDI flows to capture private flows, however we use approved Chinese FDI since Chinese FDI is predominantly State Owned Enterprises. This study further employs panel data estimation procedures such as fixed/random effects estimation as determined by hausman test. The advantage of using panel data in such studies has highly been documented. For instance, panel data controls for individual heterogeneity, it is more informative, more variability, less collinearity among the degrees of freedom and more efficiency (Baltagi, 2005).

Cheung & Qian (2009) did not find substantial evidence that China invests in Africa and oil producing countries for their natural resource. It is argued that China has different motivations in deploying its capital to developing countries. Chinese FDI in resource rich African countries does not appear to be tilted towards natural resources. Chinese enterprises extend beyond resources and the top attractive areas are manufacturing, information technology products and trading. Another endowment related variable employed by Cheung and Qian was wage, to capture the cost advantage in host countries. However due to lack of data this variable was dropped when looking at African countries.

As such, this study also drops this variable for the same reasons. However, Cheung and Qian did not have a representative sample for Africa, they only had 10 countries. This study tends to be more informative given a sample of 37 African countries.

Buckley et al (2007) extended the general theory of multinational firms by including three special explanations (capital market imperfections, special ownership advantages and institutional factors). The study covered the period 1984 to 2001 and used two statistical models; pooled ordinary least squares (POLS) and the random effects. While Buckley et al could not use fixed effects model since they included dummy variable. This study will use the Hausman test to choose between fixed effects and random effects model. After all, fixed effects model is considered by many as the "gold standard" in panel data analysis (Bell & Jones, 2015). Further, Buckley et al did not consider the dynamic nature of foreign direct investment. This study will use lagged variables to capture the dynamic nature of OFDI. Their findings suggest that Chinese FDI was associated with high levels of political risk, cultural proximity, market size and geographic proximity and host natural resources. Buckley et al focused on OECD countries and Non-OECD countries to which most Africa countries were not include and the uniqueness of this region was ignored.

Zhang & Daly (2011) employed unbalanced panel data analysis approach on determinants of Chinese outward FDI covering period between 2003 and 2009. Their findings stipulated that Chinese FDI is positively related to international trade, market size, economic growth, degree of openness, and endowments of natural resources.

Imports, Exchange rate and Inflation rate were insignificant. However, Zhang & Daly did not include institutional variables in their model. This study will employ the institutional variables such as corruption and rule of law as used by Kolstad & Wigg (2009).

Hu (2013) combined the gravity model with Dunning's OLI theory to provide an empirical country level analysis on determinants of Chinese FDI in 34 OECD countries from 2003 to 2010. The findings posit that Chinese FDI is mainly determined by resource endowments. Market seeking motive was insignificant while asset-seeking motive was not supported due to an unexpected negative sign. Our study will divert from Hu's gravity model since the original gravity model is more for trade studies than FDI studies due to transaction costs such as transport cost which might not be the same for FDI since this may entail electronic transfers. Physical distance in trade theories has been questioned over FDI studies and even in trade studies since distance between capital cities is mostly used as a proxy. The argument is that the distance between capital cities might not necessarily be a good indicator of economic distance since countries can have several economic centres, each with distinctive characteristics. Physical distance is also not a good proxy for economic distance. For instance, the physical distance between London and New York in Kilometres is farther than of London and Moscow, yet the economic links between New York and London are much greater (Gao, 2009).

Using data disaggregated by country and industry, Amighini et al (2011) provides an unbalanced probit panel model analysis of host country determinants of Chinese outward FDI for the period 2003 to 2008. FDI directed in manufacturing was found to be market

seeking. Strategic asset seeking motivations were relevant for both manufacturing and services. Resource seeking motive stood out in the resource related sectors which was associated to countries with poor institutions. However, we do not use a probit model due to lack sector data on Chinese investment within African countries. As such we employ a cross country balanced panel analysis. Further, the use of a probit model entails loss of information. Thus instead of having Chinese FDI as a categorical variable, we employ Chinese FDI as a continuous variable.

Lemble (2011) finds that resource seeking and market seeking are the major drivers of Chinese investment in Africa. Lemble used Chinese OFDI data from 2007 to 2009, and OLS estimation was carried out given the small time period. Our study utilizes traditional panel estimation techniques to check the robustness of the results.

This study also utilizes general studies on determinants of FDI. Most empirical studies on determinants of FDI fail to acknowledge endogenous variables such as institutions and natural resources (Asiedu & Lien, 2010). Asiedu and Lien used both system GMM and Differenced GMM to account for endogeneity and dynamics of FDI. This study will adopt the approach by Aseidu and Lien that natural resources and institutions are endogenous. This study also suggests that market performance is also endogenous to investment as argued by (Moudatsou & Kyrkilis, 2009). The argument is based on the assumption that there is growth driven FDI and FDI-led growth. In our model, market performance is measured by real GDP, GDP per capita and GDP growth.

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

The analysis covers 37[5] African countries over the period 2005 to 2010. The time period has been limited mainly due to availability of data on Chinese OFDI. However, this time period captures the most recent Chinese surge in outward investment that has received considerable media attention.

4.1 Model Specification

The following panel model will be estimated following theoretical and empirical determinants of foreign direct investment.

$$\ln CFDI_{it} = \alpha + \alpha_1 \ln Nat_{it-1} + \alpha_2 \ln GDPP_{it-1} + \alpha_3 \ln RGDP_{it-1} + \alpha_4 GDPG_{it-1} + \alpha_5 \inf lation_{it-1} + \alpha_6 \ln open_{it-1} + \alpha_7 cor_{it-1} + \alpha_8 \ln tel + \alpha_9 (Nat^{*}Cor)_{it-1} + u_{it}$$

Where:

lnCFDI	Natural log of Chinese stock of outward FDI as a proportion of GDP
lnNat	Natural log of Natural resources as a proportion of merchandise exports
lnGDPP	Natural log of GDP per capita (PPP) at 2005 constant prices
lnRGDP	Natural log of real GDP at 2005 constant prices
GDPG	GDP annual growth rate

[5] Algeria, Angola, Benin, Botswana, Cameroun, Cape Verde, Congo, Cote D'Ivoir, Egypt, Equatorial Guinea, Eritrea, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

Inflation	Annual inflation rate
lnOpen	Natural log of the ratio of trade to GDP
Cor	Control of Corruption
lntel	Natural log of Telephone lines per 100

The error component u_{it} is decomposed into $u_{it} = \mu_i + v_{it}$, where $\mu_i \sim IID(0, \sigma_u^2)$ and $v_{it} \sim IID(0, \sigma_v^2)$ are independent of each other and among themselves, μ_i represents country specific effects and v_{it} the idiosyncratic error term (Baltagi, 2005).

The explanatory variables are lagged one period to contain the dynamic nature of FDI (Mhlanga, Blalock, & Christy, 2009) and (Cheung & Qian, 2009). This also helps to address endogeneity and reverse causality problems (Cingolani & Crombrugghe, 2012). However, (Reed, 2013) argues that one cannot control reverse causality by lagging dependent variables. Therefore, this study will also carry out GMM estimation to control for endogeniety. All the variables are expressed in logarithmic form except GDP growth rate, inflation and Corruption because these have negative numbers.

4.2 Definition, Measurement and Expected Signs of Variables

4.2.1 Dependent Variable

The dependent variable is Chinese stock of outward foreign direct investment. For estimation purposes this variable is measured as the proportion of total Chinese stock of OFDI to GDP. The data for this variable is obtained from 2006, 2008 and 2010 Chinese Statistical Bulletins. Some of the data cleaning processes involved with these Statistical bulletins to ensure consistency has been outlined in the Appendix.

4.2.2 Independent Variables

Natural Resource Seeking Motive

The natural resource seeking motive in this study is proxied by the proportion of total natural resources to total merchandise exports. The total natural resources include mineral fuels, lubricants and related materials as defined by UNCTAD. As a robust check, this study isolates oil as a proportion of total merchandise export to isolate the significance of oil in Chinese investments. All the data on natural resources is sourced from UNCTAD database. The use of export shares of a set of products to GDP follows from works by Kolstad & Wiig (2009), and Buckley, et al. (2007) . The expectation is that countries with large endowments of natural resources are positively related to Chinese investment (Buckley, et al., 2007). We expect this variable to have a positive sign.

Market Seeking Motive

To measure marketing seeking motive of the Chinese, this study utilises economic performance measures such as real GDP, GDP per capita and GDP growth. Real GDP entails the host absolute market size. GDP per capita entails purchase power of the host nations and GDP growth entails host market growth (Buckley, et al., 2007). Data on real GDP was obtained from World Bank Development Indicators (WDI). Data on GDP per capita was obtained from the Penn World Tables. These are purchasing power parity figures. The study uses annual GDP growth figures as published by the World Bank Development Indicators. We expect a positive relationship between Chinese investment

and economic performance of host nations. This is because a stable and strong economic performance provides good markets for Chinese enterprises.

Institutional factors

This study uses three institutional variables given by the Worldwide Governance Indicators (WGI) published by the World Bank; Control of Corruption; Rule of Law; and Voice and Accountability. The WGI indicators have a greater coverage of countries than other indices such as the Corruption Perception index (CPI) published by PRS group (Kolstad & Wiig, 2009). The main institutional variable in our analysis is Control of Corruption. Control of Corruption reflects the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Rule of law reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Voice and Accountability reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. The index runs from -2.5 to 2.5, with lower numbers signifying poor institutions (World Bank, 2014). Given Chinese investment we expect institutional variable not to be significant in influencing Chinese investment since literature posits that Chinese enterprise are largely state enterprises such that institutional risk factors are partly mitigated. However, general FDI literature puts forward a negative expectation between institutional risks and investment. To capture the argument that Chinese

investment is primarily drawn by poor institutions and resource rich countries, the study introduces interaction terms between institutional variables and natural resource variables. Since the institutional index runs from -2.5 to 2.5, a negative coefficient implies that the more natural resources the more Chinese OFDI attracted by poor institutions. And conversely in countries with good institutions, Chinese investment is discouraged by natural resources (Kolstad & Wiig, 2009). Therefore, we expect the interaction term to have a negative sign.

Control variables

A number of control variables were introduced as stipulated by theory and empirics. The main control variables introduced are openness, infrastructure and inflation. Data for all the control variables was obtained from the World Bank Development Indicators. Openness, also known as trade intensity, is measured as the sum of imports and exports as a percentage of GDP (Kolstad & Wiig, 2009). The more open a country is to international investment, the more attractive it is likely to be as a destination for FDI. We therefore expect a positive relationship between openness and Chinese investment.

The number of telephone lines per 100 people was used as a measure for infrastructure development (Canning, 1998). All else being equal, better physical infrastructure should have a positive effect on FDI (Asiedu & Lien, 2010).

To control for macroeconomic stability, we use annual inflation rate (Asiedu & Lien, 2010). Buckley, et al. (2007) argue that votatile inflation rates in a host country

discourage market-seeking FDI by creating uncertainty and by disrupting long term investment decisions. High rates of inflation also reduces the real value of earnings in local currency for market seeking inward investments. High inflation also discourage export oriented sectors by relatively increasing the cost of locally sourced inputs, making it harder to compete on the global market. Therefore, we expect a negative relationship between Chinese investment and host country inflation.

Table 1 summarises all the variables used, their expected sign and the theoretical justification of why they are important in our model. The table also outlines the data sources used for each variable.

Table 1: The determinants of Chinese OFDI

Variables	Expected Sign	Theoretical Justification	Main or Control Variable	Data Source
CFDI (dependent variable)				MOFCOM
GDP per capita (RGDP)	+	Market seeking	Main	Penn world tables
GDP growth rate (GDP Growth)	+	Market potential	Main	World Bank Development Indicators (WDI)
Real GDP	+	Market size	Main	WDI
Natural resources endowment (NAT)	+	Resource seeking	Main	UNCTAD
Inflation	-	Macroeconomic policy	Control	WDI
Control of Corruption (Cor)	-	Institution factors	Main	World Bank Institute (WBI) Governance Indicators
Openness	+	Investment policy	Control	WDI
Infrastructure development (lntel)	+	Infrastructure development	Control	WDI
Interaction term (Nat*Cor)	-	Institutional reinforcement of resource seeking motives	Main	

Presence of Outliers

The presence of outliers distorts econometric results (Lemble, 2011). Given the complexity of the topic at hand and the limited data availability, Lemble argues that one needs to be aware of the reliability of the regression results. When the data was analysed

one extreme value was found. In 2008, Chinese investment to South Africa amounted to US$ 4.81 billion. Table 2 and

Table 3 shows both stock and flow of Chinese FDI into Africa and how drastic an investment this was in relation to other years and in relation to investments to the African continent in total.

Table 2: FDI Stock Outlier (millions of USD)

	2005	2006	2007	2008	2009	2010
South Africa	112.28	167.62	702.37	3048.62	2306.86	4152.98
Africa	1595.25	2556.82	4461.83	7803.83	9332.27	13042.12
%(South Africa/Africa	7.0384	6.5558	15.7417	39.06569	24.7192	31.84283

Source: Chinese Ministry of Finance and Commence (2010)

Table 3: FDI flow outlier (millions of USD)

	2005	2006	2007	2008	2009	2010
Africa	391.68	519.86	1574.31	5490.55	1438.87	2111.99
South Africa	47.47	40.74	454.41	4807.86	41.59	411.17
%(South Africa/Africa	12.12%	7.84%	28.86%	87.57%	2.89%	19.47%

Source: Lemble (2011) and Chinese Ministry of Finance and Commence (2010)

This enormous peak occurred as the result of the huge investment by the state-owned Industrial and Commercial Bank of China which acquired 20 per cent stake in South's Standard Bank. Preliminary regression found that indeed inclusion of South Africa in the model highly distorted the results on the whole model. The crudest way to deal with the

problem is to simply omit the respective observation (Lemble, 2011). This study fails to use average figures as the FDI stock figures slightly continue with huge figures from 2008 all the way to 2010. Following Lemble (2011), omission of South Africa is our best option, after all use of averages to fit our needs entails data torturing[6].

4.3 Diagnostic Tests

This section outlines the various diagnostic tests used in this study. The study begins by conduct the Breusch Pagan LM test to check whether pooled OLS or random effects model is appropriate. Hausman test was then conducted to decide between a fixed effects model and a random effects model. We also conduct multicollinearity tests by computing the variance inflation factor and the correlation matrix. The modified Wald test for groupwise heteroskedasticity was also conducted to test for heteroskedasticity.

I. Breush Pagan LM Test to check whether Pooled OLS or Random effects

This study will conduct the Breusch-Pagan lagrange multiplier (LM) test to decide between random effects model and a simple pooled ordinary least squares regression. The null hypothesis in the LM test is that variances across entities are zero. In other words, there is no significant difference across units. A value of the LM test that is significantly different from zero means that random effects model is preferable to the pooled ordinary least squares. When the value of the LM test statistic is insignificant, one can estimate using pooled OLS (Reyna, 2010).

[6] Data torturing entails unethical econometric practice of massaging and manipulating the data to obtain the desired results.

II. Hausman Test

The challenge is to decide which model is better between fixed effects model and random effects model. The answer hinges around the assumption one makes about the likely correlation between the individual, or cross-section specific, error component and the regressors. The random effects model may be appropriate if it is assumed that the error component and the regressors are uncorrelated, whereas if the error component and the regressors are correlated, fixed effects model can be utilized (Gujarati, 2004). Verbeek (2004) and Greene (2002) posit that the Hausman test can be used to decide between the two models. The null hypothesis for the Hausman test is that the preferred model is random effects model versus the alternative the fixed effects. Verbeek (2004) argues that the general idea of a Hausman test is that the two estimators are compared: one which is consistent under both the null and alternative hypothesiss and one which is consistent under the null hypothesis only. Therefore, the hausman tests whether the fixed effects and random effects estimators are significantly different.

III. Multicollinearity Test

A review of the literature stipulates that panel data models have less multicollinearity problems (Baltagi, 2005). Further, Statistical packages such as Stata and Eviews do not perform the collinearity tests such as the variance inflation factor (VIF). However, for brevity the study shall conduct a pooled OLS regression of the variables to compute the variance inflation factor and produce the correlation matrix of the variable as used by (Buckley, et al., 2007). The rule of thumb is that if the VIF of a variable exceeds 10, that variable is said to be highly collinear. Therefore the larger the value of the VIF, the more

troublesome or collinear the variable is. Further high pair-wise correlation among regressors signals multicollinearity. Another rule of thumb is that if the pairwise correlation coefficient between two regressors is high, in excess of 0.8, then multicollinearity is a serious problem (Gujarati, 2004).

IV. Heteroskedasticity Test

Standard panel data models assume that the regression disturbances are homoskedastic with the same variance across time and individuals. However, this is a restrictive assumption for panels, where the cross-sectional units (Countries) may be of varying size and as a result may exhibit different variation. The error term in the regression captures such variability. Assuming homoskedastic disturbances when heteroskedasticity is present still results in consistent estimates, but they are not efficient. As such it is important to check and correct for such variability (Baltagi, 2005).

Heteroskedasticity test in random effects model are computationally burdensome, while less complex in fixed effects models (Verbeek, 2004). However, since random effects model uses the generalised least square one can assume the model already corrects for heteroskadasticity. Verbeek continues to argue the tests for fixed effects models can also be applied in the random effects case. As such this study will use the Modified Wald test for groupwise heteroskedasticity which is available in STATA for fixed effects models. The null hypothesis is that there is constant variance or homoskedasticity. Therefore, rejection of the null leads to the conclusion that there is heteroskedasticity. To curb heteroskedascity, the use of robust standard errors will be utilized in both models (Greene, 2002). In short panels, as is our case, inference can be based on panel robust

standard errors to also correct for autocorrelation (Cameron & Trivedi, 2005). Therefore, despite that some scholars, such as (Reyna, 2010), argue that for short panels we need not worry about autocorrelation, we still control for autocorrelation by the use of panel robust standard errors.

V. Endogeneity

Scholarly works such as Asiedu & Lien (2010) have considered institutional factors and natural resources as endogenous in FDI models. We are also very suspicious that economic performance (real GDP, GDP per capita and GDP growth) are also endogenous, since empirical literature such as (Moudatsou & Kyrkilis, 2009) suggest there is growth driven FDI and FDI-led growth. Therefore, we also treat economic performance; real GDP, GDP per capita, and GDP growth, as endogenous. This study will use GMM estimator to treat endogenous variables. GMM estimation is asymptotically efficient and robust to all kinds of heteroskedasticity. We attempt to use both differenced GMM and System GMM. Differenced GMM and system GMM are mainly applied to dynamic panels where the lagged dependent variable is used as a regressor. However, Roodman (2006) provides a procedure on how to estimate differenced and system GMM even if the lagged dependent variable is not a regressor. In STATA, Roodman proposes the program "xtabond2" which implements the Arellano-Bond and Arellano-Bover/Blundell-Bond panel estimators. The Arellano-Bond estimation starts by transforming all regressors by differencing and uses the GMM, thus called "differenced GMM". The Arellano-Bover/Blundell-Bond estimator makes an additional assumption that first differences of endogenous variables are uncorrelated with

the fixed effects. This improves efficiency by allowing for introduction of more instruments. The program also makes the Windmeijer finite sample correction to the reported standard errors in two step estimation, without which those standard errors tend to be severely downward biased.

CHAPTER FIVE

FINDINGS AND INTEPRETATION

5.0 Introduction

Preliminary analysis suggests that scaling of the variables has implications on model execution since some variables are in logarithmic form while others are not. To curb this situation, the inflation variable which was not scaled was dropped because it caused estimation problems. Inflation was insignificant in all preliminary analysis; as such dropping an insignificant variable has limited model implications (Cameron & Trivedi, 2005). Table 4 presents the descriptive summary of all the variables used in this study.

Table 4: Descriptive Summary

Variable	Obs	Mean	Std Dev	Minimum	Maximum
Chinese OFDI	222	0.0617	0.1064	0.0002	0.7268
GDP per capita	222	3529.753	5062.443	275.8446	32241.09
Real GDP	222	1.93e+10	3.22e+10	6.24e+08	1.59e+11
Openness	222	83.2702	33.5243	27.9721	21.6452
Inflation	222	1040584	1.55e+07	-12.919	2.31e+08
GDP Growth	222	4.7763	4.4200	-17.6690	22.5931
Rule of Law (Rol)	222	-0.5461	0.6150	-1.8418	1.0069
Control of Corruption (Cor)	222	-0.4912	0.5558	-01.4176	1.1413
Voice and Accountability (Vol)	222	-0.5583	0.7189	-2.1646	0.9261
Natural resources	222	0.4516	1.4980	7.59e-06	16.8860
Telephone Lines	222	622927.7	1811743	9050	1.19e+07
Oil	222	0.2067	0.2960	7.59e-06	0.9757

The descriptive statistics reveal that indeed the variable inflation can have estimation problems if not scaled give a standard deviation of 1.55e+07 which entails high variability. Since we could not scale inflation figures by expressing them in logarithms, inflation was thus dropped in the final regression analysis.

5.1 Multicollinearity Test

Table 5 and 6 present the variance inflation factor (VIF) and the correlation matrix, respectively. Using the rule of thumb, none of the VIFs exceeds 10 and none of the pairwise correlation exceeds 0.8. As such, the results indicate no general problems with the data.

Table 5: Variance Inflation Factor

Variable	**VIF**	**1/VIF**
Natural resources	2.05	0.4882
GDP per capita	2.57	0.3895
Real GDP	5.00	0.2001
GDP Growth	1.12	0.8930
Openness	1.55	0.6471
Control of Corruption	4.12	0.2426
Telephone Lines	3.80	0.2633
Interaction term (L1. (lnnat*Cor))	2.91	0.3440
Mean VIF	**2.89**	

Table 6: Correlation Matrix

	Chinese FDI	Natural resources	GDP per capita	Real GDP	GDP Growth	Openness	Control of Corruption	Telephone Lines
Chinese FDI	1.000							
Natural resources	0.0725	1.0000						
GDP per capita	-0.5644	0.2050	1.0000					
Real GDP	0.2676	0.4161	0.2517	1.0000				
GDP Growth	-0.1195	0.0959	0.1224	0.1327	1.0000			
Openness	-0.4161	0.0868	0.5437	-0.0435	0.0272	1.0000		
Control of Corruption	-0.4521	-0.4025	0.4183	-0.1838	0.1166	0.1395	1.0000	
Telephone lines	0.1488	0.1325	0.1060	-0.7857	-0.0429	-0.1316	0.0170	1.0000

5.2 Breusch Pagan LM Test

The Breusch- Pagan lagrange multiplier (LM) test chooses the random effects model as the appropriate model over the pooled ordinary least squares (OLS). The test gives us a chi-square statistic of 169.61 with a probability value of 0.000. The null hypothesis in the Breuch-Pagan LM test is that variance across entities is zero. This implies that there are no significant differences across the units. A probability value of 0.0000 is highly significant at 1 per cent level of significant, thus we reject the null and conclude that the random effects model is appropriate.

5.3 Hausman Test

The Hausman test gives us a chi-square statistic of 91.85 at a probability value of 0.0000. As such we reject the null hypothesis that the random effects model is appropriates at 1% level of significance. Therefore, this study will use the fixed effects model in its model estimation. However, as argued by (Verbeek, 2004) it is imperative to understand that the null hypothesis is unlikely to hold. For instance, assume that the error component is not correlated with the regressors, so that the fixed effects estimator is consistent irrespective of the question whether the regressors and the individual effects are uncorrelated, while the random effects estimator is consistent and efficient only if the regressors and the individual effects are not correlated. As such we augment the use of fixed effects by arguments by Gujarati (2004) that a fixed effects model is appropriate if we strongly believe that the units in the sample are not random drawings from a larger sample. Our sample is not entirely random but rather is based upon data availability, even if we had all the data for all African countries, our sample would still not be random given the population size. Therefore, the use of fixed effects in this study seems appropriate and well backed by theory and empirics.

5.4 Heteroskadasticity Test

The Modified Wald test for groupwise heteroskedasticity gives a chi-square statistic of 3424.84 with a probability value of 0.0000. We reject the null hypothesis of homoskedasticity and conclude heteroskedasticity at 1 per cent level of significance. In the presence of heteroskedasticity, this study utilises robust standard errors to ensure consistent and efficient estimates (Baltagi, 2005).

5.5 Model Results and Interpretation

This section presents and interprets the regression results from the fixed effects model. Table 7 reports the regression results in which the total proportion of natural resources is used to capture the resource seeking behaviour.

Table 7: Model Results (Total Natural Resources)

Variable	Model1	Model2	Model3
Natural resources$_{-1}$	0.0119	-0.0021	0.0021
	(0.2562)	(0.0350)	(0.0274)
GDP per capita$_{-1}$	-0.0637	0.0226	0.2711
	(1.6072)	(1.6820)	(1.6406)
Real GDP$_{-1}$	3.0938**	3.1469**	3.0010*
	(1.4733)	(1.4866)	(1.4792)
GDP growth$_{-1}$	-0.0095	-0.0084	-0.0092
	(0.1051)	(0.0108)	(0.0109)
Openness$_{-1}$	-0.1574	-0.0746	-0.1532
	(0.5178)	(0.4892)	(0.5176)
Telephone lines$_{-1}$	0.5486**	0.5286**	0.5190**
	(0.2567)	(0.2589)	(0.2493)
Cor$_{-1}$	0.3504		
	(0.4010)		
Nat*cor)$_{-1}$	0.0111		
	(0.0449)		
Rol$_{-1}$		-0.1258	
		(0.3633)	
(Nat*rol)$_{-1}$		-0.0196	
		(0.0665)	
Vol$_{-1}$			-0.1912
			(0.3081)
(Nat*vol)$_{-1}$			0.010
			(0.0395)
Cons	-79.2441***	--81.4861***	-79.6394***
	(23.52113)	(23.3909)	(23.3623)
N	185	185	185
F	12.8	10.45	10.96
P Value	0.0000	0.0000	0.0000

Note: Standard errors are in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The table gives three model results because we have three variables used to capture institutions. In particular; Model1 uses Control of Corruption (Cor); Model2 uses Rule of

Law (Rol); and Model3 uses Voice and Accountability (Vol) to proxy institutions. In all these models, the stock of Chinese OFDI as a proportion of GDP is the dependent variable.

All the models in Table 7 have a significant F statistic at 1 per cent level of significance. Since the F statistic tests the hypothesis that all the slope coefficients are simultaneously zero; that is all the explanatory values jointly have no impact on the regressand, which is Chinese OFDI in our models (Gujarati, 2004). Therefore, we reject the null hypothesis and conclude that all the models are jointly significant.

Interestingly, the coefficient for natural resource seeking is insignificant in all the three models shown in Table 7. This implies that Chinese OFDI in Africa is not essentially resource seeking. This finding is not consistent with Lemble (2011) who found that Chinese investment is resource seeking in Africa. Kolstad & Wiig (2009) also found that Chinese investment is resource seeking in Non-OECD countries. However, as already argued both of these researchers used OLS regression analysis which is not efficient. In Table 8, we check the robustness of these results if we proxy natural resource seeking by the proportion of oil in total exports rather than using total natural resources. The results in Table 8 are consistent with results in Table 7. This finding is consistent with Buckley, et al. (2007) in their random effects model, that Chinese investment is not primarily targeting natural resources. This leads us to conclude that Chinese Investment is not natural resource seeking.

The coefficient for lagged GDP per capita and GDP growth are insignificant in all models including the alternative models in Table 8. However, the coefficient for lagged real GDP is significant at 5 per cent in model 1 and Model 2. Lagged real GDP is also significant in model 3 at 10 per cent. It should be noted that lagged real GDP is also significant throughout in the alternative models in Table 8.

Table 8: Model Results (Oil Models)

Variable	**Model4**	**Model5**	**Model6**
Oil_{-1}	0.0300	0.0141	0.0246
	(0.0282)	(0.0357)	(0.0277)
GDP per $capita_{-1}$	-0.1464	0.0409	0.2472
	(1.5302)	(1.5672)	(1.6055)
Real GDP_{-1}	3.0994**	3.1300**	3.0066**
	(1.4778)	(1.4573)	(1.4778)
GDP $Growth_{-1}$	-0.0101	-0.0091	-0.0103
	(0.0104)	(0.0100)	(0.0101)
$Openness_{-1}$	-01413	-0.0709	-0.1559
	(0.5145)	(0.4951)	(0.5067)
Telephone $lines_{-1}$	0.5593**	0.5442**	0.5267**
	(0.2640)	(0.0543)	(0.2526)
Cor_{-1}	0.3686		
	(0.4025)		
$(Oil*cor)_{-1}$	-0.0067		
	(0.0463)		
Rol_{-1}		-0.0807	
		(0.3619)	
$(Oil*rol)_{-1}$		-0.0357	
		(0.0543)	
Vol_{-1}			-0.1837
$(Oil*vol)_{-1}$			(0.3163)
Cons	-78.9983***	-81.4912***	-79.6752***
	(23.3555)	(23.0421)	(23.3715)
N	185	185	185
F	12.24	9.93	7.4932
P Value	0.0000	0.0000	0.0000

Note: Standard errors are in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

We interpret the standard model, model1. On average one per cent increase in lagged real GDP leads to a 3.09 per cent increase in Chinese OFDI, all else being equal. This result is as expected that large market size attracts Chinese investment. However, the finding that previous GDP per capita and GDP growth are insignificant in all models entails that host purchasing power and host market growth do not determine Chinese investment in Africa. Buckley, et al.(2007) also found similar results that it was only the absolute market size (real GDP) which was significant in determining Chinese investment. Nevertheless, following the eclectic paradigm, the finding that larger markets attract Chinese investment is a convectional result and captures the market seeking behaviour of the Chinese.

The coefficient for openness is insignificant in all models, including the alternative models in Table 8. Therefore, we find no evidence suggesting that the more open a country is to international investment, the more attractive it is likely to be a destination for Chinese OFDI. This is contrary to theory but the finding seems to be aligned to the findings of (Buckley, et al., 2007) and (Kolstad & Wiig, 2009) who found that trade intensity/openness were insignificant in attracting Chinese FDI.

The coefficient for Telephone lines which captures the level of infrastructure is significant at 5 per cent level of significance in all the models in Table 7 and Table 8. Therefore, we reject the null and conclude that better infrastructure is essential in determining Chinese investment. On average one per cent increase in infrastructure leads to 0.5486 per cent increase in Chinese outward foreign direct investments, all else being

equal. This finding is as expected and the OLI paradigm stipulates that different kinds of foreign investment tend to be associated with different location factors. Following the OLI paradigm, Dunning (2002) posit that location factors such as communication infrastructure determine firm location decision, mostly in cases where investment is in manufacturing and primary products as is the case in Africa. Therefore better infrastructure is essential as a determinant of Chinese investment in Africa.

The coefficient for control of corruption is statistically insignificant at all conventional levels of significance. Therefore, we fail to reject the null hypothesis. We conclude that Chinese OFDI is not deterred by African host countries institutional risk factors. The results are robust even when we use other measures to proxy risk tolerance and poor institutions. The study used the two alternative risk measures, rule of law and voice & accountability, in Model2 and Model3 respectively. Despite that the a priori expectation is that outward foreign direct investment is negatively related to risk factors in host countries. The study concludes that Chinese investment is not deterred by institutional risk factors as posited by the "Angolan model" of investment by the Chinese. In this regard, Chinese investment is an alternative and not a substitute to western investment.

The interaction between resources and institutions is insignificant in our model. These results are consistent using different measures for institutions, as shown in Table 7 and Table 8. Therefore we reject the interactive effect of institutions and natural resources on Chinese investment. Therefore, we conclude that poor institutions do not reinforce the resourcing seeking motive of the Chinese investment. This finding is different from the

findings of Kolstad & Wiig (2009), who found a significant and negative coefficient for the interaction term. The difference can be attributed to the fact that (Kolstad & Wiig, 2009) used OLS estimation while we use fixed effects modelling. This is true since running an OLS model on our data indeed give a significant interaction term. However, fixed effects model is more efficient than OLS in our case.

5.6 Addressing Endogeneity Using GMM

Preliminary analysis showed that results from system GMM failed to satisfy the Sargan/Hansen test for over identification restrictions. As such this section presented results from the differenced GMM. First, the study outlines the diagnostic specifications of the model starting with first and second order autocorrelation tests, Sargan test for over identification and then Hansen test for over identification. Given that there are two tests for over identification, Roodman (2006) suggests that the Hansen test should take precedence over the Sargan test since the Hansen test is consistent even if non sphericity is suspected in the errors.

5.6.1 Testing for autocorrelation

The output for differenced GMM comes with results for Arellano-Bond test for first and second order autocorrelation. The null hypothesis is that there is no autocorrelation of order 1. The Arellano Bond test for AR(1) gives a Z statistic of -0.78 with a probability value of 0.435, in the standard model. Therefore, we fail to reject the null hypothesis of no autocorrelation. This finding is consistent with all the models presented in Table 9. In Conclusion, our models do not have a problem with first order autocorrelation.

The Arellano Bond test for AR(2) gives a Z statistic of 0.48, with a probability value of 0.631. Since the null hypothesis is that there is no second order autocorrelation in the model. We fail to reject the null hypothesis and conclude that our model does not suffer from second order autocorrelation.

5.6.2 Sargan test of over identification

Since the null hypothesis being tested with the Sargan test is that the instrumental variables are uncorrelated with some set of residuals, and therefore they are acceptable, healthy instruments. The Sargan test gives a chi-square statistic of 20.16 with a probability value of 0.064 in the Standard model. The study reject the null and concludes that the instrumental variables are unacceptable. However, the Hansen J statistic below suggests otherwise.

5.6.3 Hansen test of over identification

The null hypothesis in the Hansen J statistic is that the instruments are valid. A significant statistic indicates that one or more of our instruments are not valid (StataCorp, 2013). From Table 9 the Hansen J statistic has a Chi square value of 10.56 with a probability value of 0.567, in the standard model. The Hansen J statistic is not significant at all conventional levels of significance. Therefore, we the model is correctly specified. This is consistent across the three models reported in Table 9.

Table 9: DIFF GMM Results (Total Natural Models)

Variable	Model7	Model8	Model9
Natural Resources$_{-1}$	-0.1400	0.0448	0.1671
	(0.2924)	(0.1381)	(0.2755)
GDP per capita$_{-1}$	-3.4727	-1.1029	4.5411
	(7.9867)	(6.3340)	(5.8833)
Real GDP$_{-1}$	4.6304	4.1139	1.1398
	(5.3057)	(4.3901)	(2.0932)
GDP Growth$_{-1}$	0.03892	0.0050	-0.0063
	(0.2511)	(0.0244)	(0.0316)
Openness$_{-1}$	0.7346	-1.4578	-0.5441
	(1.7112)	(1.0264)	(0.9137)
Telephone lines$_{-1}$	1.3443*	1.0961	0.8830
	(0.6805)	(0.8194)	(1.1318)
Cor$_{-1}$	-0.1778		
	(1.8649)		
Nat*cor	-0.3945		
	(0.3410)		
Rol$_{-1}$		-0.9831	
		(1.8526)	
Nat*rol		-0.0566	
		(0.2322)	
Vol$_{-1}$			-2.8625
			(3.2219)
Nat*vol			-0.0638
			(0.1512)
N	148	148	148
F	5.47	6.54	2.2358
P Value	0.000	0.000	0.053
Arellano-Bond test for AR(1)	Z =-0.78	Z=-1.42	Z=-1.19
	P value 0.435	P Value 0.156	P Value 0.235
Arellano-Bond test for AR (2)	Z=0.48	Z=-0.34	Z=0.03
	P value 0.631	P Value 0.733	P Value 0.973
Sargan test of Overid	Chi2(5)=20.16	Chi2(5)=23.53	Chi2(5)=10.76
	P value 0.064	P Value 0.024	P Value=0.549
Hansen test of overid	Chi2(5)=10.56	Chi2(5)=12.32	Chi2(5)=14.15
	P value 0.567	P Value 0.421	P Value=0.291

Note: Standard errors are in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The results presented in Table 10 also satisfied the basic model specification test for Diff GMM estimation. Given a small sample size, the choice for differenced GMM is understandable since it uses few instruments rather than system GMM which allows for

more instruments (Roodman, 2006). Therefore it was important to limit the number of instruments to which differenced GMM performed very well.

The results in Table 9 show Differenced GMM results for the models with "Total Natural Resources" as a proxy for resource seeking. The coefficient for natural resource seeking is insignificant in all the three models in Table 9. As such we accept the null that Chinese investment is not resources seeking. The finding is consistent with the earlier model specification, fixed effects model, in which high level endogeneity was not considered. Even after isolating oil from the natural resource cluster and controlling for endogeneity, we find no evidence to suggest that Chinese investment is resource seeking. The oil variable is insignificant at all convectional levels of significance, see Table 10. Therefore, there is no evidence that Chinese Investment is resource seeking.

Economic performance variables are insignificance after controlling for endogeneity. Precisely, the lag of GDP per capita, real GDP and GDP growth are all insignificant in all models, including in the alternative models in Table 10.

The coefficient for telephone lines is significant at 10 per cent level of significant in Model7, see Table 9. This implies that indeed better telecommunication infrastructure is essential in determining investment in host countries as stipulated by the OLI paradigm. In Table 9, the coefficient for telephone lines is also significant at 5 per cent. This augments the finding that better infrastructure is critical in attracting investment.

The coefficient for openness and institutional factors are all insignificant. Institutional factors such as control for corruption, Rule of law and Voice & Accountability are also insignificant, confirming that indeed Chinese investment is not deterred by institutional risk factors in Africa. This finding is consistent in all the model results done in this study.

Table 10: DIFF GMM Results (Oil Models)

Variable	Model7	Model8	Model9
Oil	-0.1044	-0.0688	0.1059
	(0.2288)	(0.1673)	(0.1344)
GDP per capita	-2.4911	-0.7726	2.8488
	(5.6310)	(5.2272)	(4.3861)
Real GDP	4.3919	3.6067	1.5700
	(3.6755)	(3.6198)	(2.4573)
GDP Growth	0.0409	0.0241	0.0074
	(0.0270)	(0.3340)	(0.0339)
Openness	0.2692	0.1920	-03802
	(1.4917)	(1.1296)	(1.3838)
Telephone lines	1.4857**	1.6246	1.1098
	(0.6541)	(1.0625)	(1.0930)
Control of Corruption (cor)	0.6844		
	(1.1092)		
Oil*cor	-0.3405		
	(0.2064)		
Rule of Law (rol)		-0.1582	
		(1.0585)	
Oil*rol		-0.3323	
		(0.2453)	
Voice and Accountability (Vol)			-2.7621
			(2.0549)
Oil*vol			-0.1418
			(0.2410)
N	148	148	148
F	5.19	4.71	2.34
P Value	0.000	0.000	0.044
Arellano-Bond test for AR(1)	Z =-1.30	Z=-1.14	Z=-1.27
	P value 0.192	P Value 0.254	P Value 0.203
Arellano-Bond test for AR (2)	Z=1.10	Z=1.19	Z=0.66
	P value 0.272	P Value 0.234	P Value 0.511
Sargan test of Overid	Chi2(5)=21.07	Chi2(5)=18.73	Chi2(5)=13.01
	P value 0.049	P Value 0.095	P Value=0.368
Hansen test of overid	Chi2(5)=14.92	Chi2(5)=14.80	Chi2(5)=12.89
	P value 0.246	P Value 0.253	P Value=0.377

Note: Standard errors are in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Further, the interaction effect between natural resources and institutional factors is insignificant. This implies that there is no reinforcement effect between natural resources and institutions.

Conclusion

This study estimated fixed effects models and differenced GMM models to understand the determinants of Chinese investment in Africa. The results suggest that absolute market size and telecommunication infrastructure is consistently significant. However, the results suggest that Chinese investment is not resource seeking and it is not deterred by institutional risk factors such as corruption. The study also finds that the Chinese do not invest in resource rich countries with poor institutions.

CHAPTER SIX

CONCLUSION

6.0 Conclusions and Policy Implication

This study set out to assess the determinants of Chinese outward foreign direct investment. Using a fixed effects models and difference GMM estimation the following objectives were assessed. First, the study looked at whether Chinese investment is resource seeking in Africa. The results suggest that Chinese investment is not natural resource seeking in Africa. This was even robust after we isolated oil as a product cluster. Second, the study postulated to determine whether Chinese investment targets poor institution countries in Africa. The results posit that Chinese investment is not deterred by institutional risk factors such as corruption. This entails the uniqueness of the Chinese investments as compared to western investment. Policy implications of this finding are that Chinese investment is indeed an alternative and not a substitute to western investment which has been found to be sensitive to institution risk factors such as corruption, accountability and rule of law. Therefore African countries can strategically and easily attract Chinese investment without worrying about conditionalities in terms of governance issues.

Third, the study set out to determine whether Chinese investment is market seeking in Africa. The study employed three variables to capture the market seeking behaviour of Chinese investment. These variables are; GDP per capita, real GDP and GDP growth. The study found that real GDP, which entail the absolute host market size, was the only variable which was statistically and economically significant in determining Chinese investment in Africa. Therefore Chinese investors preferentially seek out larger markets within Africa.

Lastly, the study set out to determine whether the interaction effect between institution and natural resources determines Chinese investment. Evidence suggests that there is no feedback mechanism between poor institutions and natural resources in attracting Chinese investment. This implies that the Chinese are not primarily targeting to invest in resource rich countries with poor institutions.

This study also found that better infrastructure is very significant in attracting Chinese outward direct investment. Precisely, telecommunication infrastructure seems to be very critical in attracting Chinese investment.

Therefore the study suggests that Chinese investment is not resources seeking in Africa. However, Chinese outward foreign direct investment is market seeking. African countries need to improve their market performance to attract Chinese investment rather than restricting Chinese investment in fear of natural resource exploitation. African countries also need to develop infrastructure such as telecommunication to attract Chinese

investment and to act as enablers for development. The finding that Chinese investment is not deterred by institutional risk suggests that Chinese investment is an alternative to western investment which is deterred by institutional risk factors. Further, the study suggests that the Chinese are not investing in Africa to exploit natural resources in institutional risk countries but rather Chinese investment is spread across the continent and across different sectors such as finance and other business services.

6.1 Limitations of the Study

The major limitation in this study is the reliability and availability of data. Chinese data has been argued to be unreliable and the availability is limited. However, almost all data can be deemed to be unreliable given that most of it is prone to estimates and data extrapolation. This is even true for the highly reliable datasets such as World Bank data (WorldBank, 2015)[7]. This study has tried to clean the available data to ensure reliable estimates especially when it comes to ironing out the data inconsistencies in the Chinese Statistical Bulletin.

The second limitation entails the sensitivity of the results to different variables used. For instance for institutional risk factors, one general indicator would have been adequate in our estimation but lack of such an index entailed use of different variables. Lucky enough our study was not that sensitive to the type of data used but future work can try to aggregate such measures. This limitation also leads us to the limited time available for this study; enough time would have warranted research into possible ways of addressing

[7] World Bank data is collected through National Statistical Institutions as such data quality depends on the institutional capacity of these entities. This is a major challenge for developing countries. However, it present the most current data estimates.

such limitations. However, this study stands out in terms of differentiating the type of institutional risk being addressed.

In this study we mainly concentrated on Chinese FDI stock rather than Chinese FDI flows. A study looking into Chinese FDI flow would also be very informative in regards to this topic. This in itself is not essentially a limitation of this study but rather it points out areas for future research.

REFERENCES

Aljazeera. (2015). *China in Africa: Investment or Exploitation?*. Retrieved January 07, 2015, from / / www.aljazeera.com/prog/rammes/insidestory/2014/05/china-africa-investment-exploitation-201454154158396626.html

Amighini, A., Rabellotti, R., & Sanfilippo, M. (2011). *China's outward FDI: An Industry-level Analysis of Host Country Determinants*. Retrieved from https://www.cesifo-group.de/.../B62AA5259E8F72A8E04400144FAFB1..

Anghel, B. (2007). *A knowledge Capital Model Approach of FDI in Transition Countries.* Retrieved from nottingham.ac.uk/shared/shared.../2007_march_PG_Anghel.pdf

Angrist, J. D., & Pischke, J. S. (2008). *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton, NJ: Princeton University Press.Asiedu, E., & Lien, D. (2010). Democracy, Foreign Direct Investment and Natural Resources. *Journal of International Economics*, 84(1), 99-111.

Baltagi, B. H. (2005). *Econmetric Analysis of Panel Data* (3rd ed.). England: John Wiley & Sons, Ltd.

Bell, A., & Jones, K. (2015). Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data. *Political Science Research and Methods, 3*(1), 133-153.

Breivik, A. L. (2014). *Determinants of Chinese FDI in Africa: An Econometric Analysis.* Bergen: University of Bergen.

Buckley, P. J., Clegg, J. L., Cross, A. R., Liu, X., Voss, H., & Zheng, P. (2007). The Determinants of Chinese Outward Foreign Direct Investment. *Journal of international Business Studies, 38*, 499-518.

Cameron, C. A., & Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications.* New York, USA: Cambridge University Press.

Canning, D. (1998). A Database of World Stocks of Infrastructure, 1950-95. *The World Bank Economic Review, 12*(3), 529-47.

Cheung, Y. W., & Qian, X. W. (2009). The Empirics of China's Outward Direct Investment. California, USA: University of California.

Cingolani, L., & Crombrugghe, D. D. (2012). *Techniques for Dealing with Reverse Causality between Institutions and Economic Performance*. Netherlands: Maastricht Economic and Social research institute on Innovation and Technology (UNU-MERIT).

Dunning, J. H., & Lundan, S. M. (2008). *Multinational Enterprises and the Global Economy* (2nd ed.). Cheltenham, UK: Edward Elgar.

FOCAC. (2015). *FOCAC Archives*. Retrieved January 30, 2015, from http://www.focac.org/eng/ltda/

Gao, S. (2009). The Predictive Capacity of the Gravity Model of Trade on Foreign Direct Investment. Nationalekonomiska Institutionen.

Greene, W. H. (2002). *Econometric Analysis* (5th ed.). New Jersey: Prentice Hall.

Gujarati, D. N. (2004). *Basic Econometrics* (4th ed.). The Mcgraw-Hill.

Haglund, D. (2008). Regulating FDI in weak African States: a Case Study of Chinese Copper mining in Zambia. *The Journal of Modern African Studies, 46*(4), 547-575.

Hou, Z., Keane, J., Kennan, J., Massa, I., & Velde, D. W. (2013, March). *Shockwatch Bulletin: the Changing nature of Private Capital Flows to Sub-Saharan Africa*. Retrieved from http://www.odi.org/publications/7368-shockwatch-bulletin-changing-nature-private-capital-flows-sub-saharan-africa

Hu, H. (2013). *China's Outward Foreign Direct Investment: A Country Level Empirical Analysis of OECD Country Determinants between 2003 and 2010*. Sweden: Orebro University School of Business.

Jianbo, L., & Xiaomin, Z. (2014). *China's Foreign Aid: How Big is it and What is its Aim?* Retrieved December 2, 2014, from http://www.pambazuka.net/en/category.php/features/92733

Jopson, B., & Anderlini, J. (2009, Novemebr 9). China Pledges a USD 10 Billion in Low Cost Loans to Africa. *The Washington Post*, p. 12.

Kaplinksy, R., & Morris, M. (2009). Chinese FDI in Sub Saharan Africa: Engaging with Large Dragons. *European Journal of Development Research, 24*(1), 187-204.

Kolstad, I., & Wiig, A. (2009). What Determines Chinese Outward FDI? Bergen: CMI. Retrieved from http://www.cmi.no/publications/publication/?3332=what-determines-chinese-outward-fdi

Lemble, M. (2011). *Chinese Outward Direct Investment in AFrica- Determinats and Implications.* Lundi University: School of Economics and Management.

Markusen, J. R. (2002). *Multinational Firms and The Theory of International Trade.* London: The MIT Press.

Mhlanga, N., Blalock, G., & Christy, R. (2009). *Understanding Foreign Direct Investmentin the Southern African Development Community: An Analysis Based on Project-Level Data*. New York: Cornell University.

Moudatsou, A., & Kyrkilis, D. (2009). FDI and Economic Growth: Granger Causality Tests in Panel Data Model-Comparative Results in the Case of European Union (EU) Countries and Association of South East Asian Nations (ASEAN). *EEFS2008- Conference.* Warsaw.

Pease, M. K., & Clark, S. (2007). Chinese Foreign Direct Investment Inflows to Sub-Saharan Africa. Retrieved from https://www.whitman.edu/economics/Workingpapers/content/WP_09.pdf

Reed, R. W. (2013). *On the Practice of Lagging Variables to Avoid Simultaneity*. New Zealand: University of Canterbury: Department of Economics and Finance.

Reyna, O. T. (2010). Panel Data Analysis: Fixed & Random Effects (using Stata 10.x). Princeton University. Retrieved from http://www.princeton.edu/~otorres/Panel101.pdf

Roodman, D. (2006). An Introduction to Difference and System GMM in Stata. Washington DC: Center for Global Development.

StataCorp. (2013). Stata: Release 13. Statistical Software. College Station. TX: StataCorp LP.

Sumata, C., & Kikouta, T. D. (2013). The Determinants of China's Foreign Direct Investment in Central Africa: Evidence from the Republic of Congo and DRC. Centre for Chinese Studies. Retrieved from http://aeaa.journals.ac.za/pub/article/view/104

Tralac. (2013). *Africa-China-trading Relationship Synopsis.* Retrieved December 5, 2014, from http://www.tralac.org%2f2013%2f08%2f14%2fafrica-china-trading-relationship&norc=1&zx=1429210253544

UNCTAD. (2013). The Rise of BRICS FDI and Africa. Retrieved from http://unctad.org/en/PublicationsLibrary/webdiaeia2013d6_en.pdf

UNCTAD. (2014). *Foreign Direct Investment*. Retrieved December 10, 2015, from UNCTAD Web Site: www.unctad.org

Verbeek, M. (2004). *A Guide to Modern Econometrics* (2nd ed.). London, UK: John Wiley & Sons.

WorldBank. (2014). The Worldwide Governance Indicators, 2014 Update. Retrieved December 17, 2014, from www.govindicators.org

WorldBank. (2015). World Development Indicators. Retrieved April 17, 2015, from http://www.data.worldbank.org/products/wdi

Xinhua. (2010). *China Remains Leader of FDI Inflows to SADC in 2009: Report*. Retrieved fromhttp://www.china.org.cn/business/2010-12/18/content_21569667.htm

Yuriko, K. (2011, 10 3). *China's African Mischief*. Retrieved December 3, 2014, from http://www.aljazeera.com/indepth/opinion/2011/10/201110192445805195.html

Zhang, X., & Daly, K. (2011). The Determinants of China's Outward Foreign Direct Investment. *Emerging Markets Review, 12(4)*, 389-398.

APPENDIX

IMPORTANT NOTE ON CHINA MOFCOM FDI STOCK FIGURES[8]

This study acknowledges that the 2010 Statistical Bulletin has some mistakes. The total figures shown, in table 2, for Africa and the actual total of the individual African countries listed do not add up.

Table 11: Comparing Total Africa Figures with Individual Country Totals.

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Total shown for 'Africa'	899.55	1,595.25	2,556.82	4,461.83	7,803.83	9,332.27	13,042.12
Actual total of individual African countries listed	*899.56*	*1,595.22*	*4,099.96*	*9,703.52*	*7,803.84*	*9,332.27*	*13,042.12*

The totals for 2006 and 2007 differ hugely where as those for 2004, 2005 and 2008-10 add up. We compare the 2006 and 2007 individual-country data in the 2010 Bulletin with the 2006 & 2007 data in the 2008 Bulletin, and found significant differences. If we use the earlier versions of the data, the individual-country totals correspond with the 'Africa' totals shown in the 2010 (and 2008) Bulletins.

[8] I am very grateful to Jane Kennan (ODI Researcher) for pointing this out. Such data corrections have been used by hou, Keane, Kennan, Massa & Velde (2013). *Shockwatch bulletin: the changing nature of private capital flows to sub-saharan Africa*. ODI Working Paper 376

A critical look at the data posit that the nature of the differences were consistent rather than random. For all countries before Ghana in the alphabet, the figures in the two sources are identical; From Ghana (which, coincidentally, is the first entry on a new page in the 2010 Bulletin) onwards, the 2006 data from the 2010 Bulletin are identical to the 2007 data from the 2008 Bulletin and the 2007 data are identical to the countries in order from the top of the page *before* the one on which Ghana appears, i.e.

Table 12: Inconsistencies in the 2008 and 2010 Statistical Bulletins

Country	***2008 Statistical Bulletin***		***2010 Statistical Bulletin***			
	2006	***2007***	***2006***	***Note***	***2007***	***Note: same as 2007 figure already given for:***
Ghana*	8.09	41.87	41.87	Exactly same as 2007 figures from the 2008 Bulletin	404.03	Saudi
Guinea	54.63	69.97	69.97		1443.93	Singapore
Guinea-Bissau	..	..	..		7.74	Sri Lanka
Kenya	46.23	55.13	55.13		5.55	Syria
Lesotho	7.60	7.60	7.60		98.99	Tajikistan
Liberia	29.51	29.78	29.78		0.15	Taiwan
Libya	28.57	70.83	70.83		378.62	Thailand
Madagascar	54.34	76.01	76.01		1.42	Turkmenistan
Malawi*	0.96	1.16	1.16		11.99	Turkey
Mali	19.83	32.22	32.22		234.31	UAE
Mauritania	20.12	15.14	15.14		30.82	Uzbekistan

Mauritius	51.16	115.90	115.90		396.99	Vietnam
Morocco	27.01	29.65	29.65		107.23	Yemen
Mozambique	14.68	34.24	34.24		4,461.83	Total Africa(!)
Namibia	6.43	7.24	7.24		393.89	Algeria
Niger	32.99	134.53	134.53		78.46	Angola
Nigeria	215.94	630.32	630.32		35.60	Benin
Rwanda	7.71	7.30	7.30		43.39	Botswana
S. Tome/Principe		..	..		1.65	Burundi
Senegal	4.15	4.39	4.39		18.51	Cameroon
Seychelles	6.46	6.55	6.55		4.65	Cape Verde
Sierra Leone	14.89	32.28	32.28		3.98	CAR
South Africa*	167.62	702.37	702.37		13.53	Chad
Sudan	497.13	574.85	574.85		4.05	Comoros
Tanzania	111.93	110.92	110.92		104.40	Congo DR
Togo	11.72	14.42	14.42		65.40	Congo
Tunisia	3.91	3.57	3.57		28.18	CIV
Uganda*	14.67	18.68	18.68		1.60	Djibouti
Zambia	267.86	429.36	429.36		131.60	Egypt
Zimbabwe	46.15	59.15	59.15		44.63	Eq. Guinea