UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Determinants of Chinese Foreign Direct Investment in Africa

-

A panel data analysis

Olle Frendin & Emil Törnqvist

Abstract

This thesis examines how different recipient country determinants influence Chinese investors' decisions where to invest in Africa and whether the financial crisis in 2008 has induced a shift in the type of FDI investors engage in. With the help of panel data, this thesis analyses the FDI stock and determinants for 41 different countries in Africa over the period 2003-2018. The thesis finds that Chinese investors are attracted to countries with strong institutions, large markets and stable economic environments. Another central finding is that Chinese investors appear to be more interested in economic stability in middle income countries. Finally, this thesis finds a possible shift of interest among Chinese investors after the financial crisis, from being partly attracted to countries with large amounts of natural resources before the crisis, to countries with stronger institutions and better infrastructure after the crisis.

Bachelor's thesis in Economics, 15 credits
Spring Semester 2021
Supervisor: Christer Ljungwall

Department of Economics
School of Business, Economics and Law
University of Gothenburg

Table of Contents

List of tables

List of figures

Appendix

List of abbreviations

BRI	Belt and Road Initiative
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNI	Gross National Income
MNE	Multinational Enterprise
MOFCOM	Ministry of Commerce of the People's Republic of China
ODI	Outward Direct Investment
OLI	Ownership, Location and Internalisation
OECD	Organisation for Economic Co-operation and Development
OFDI	Outward Foreign Direct Investment
OLS	Ordinary Least Squares
SAIS-CARI	School of Advanced International Studies-China Africa Research Iniative
SOE	State Owned Enterprise
WDI	World Development Indicators
VIF	Variance Inflation Factor
WGI	Worldwide Governance Indicators

1. Introduction

1.1. Background

As China has emerged as a powerful financial actor on the world stage, many academics, policymakers and journalists have begun to question its motivations and raised concern about growing Chinese economic and political influence around the world. This has been especially true about the current role of China in Africa, where some have gone as far as to call it neo-colonialism (Peters, 2019). The China-Africa relationship is often touted as something which has developed recently. In reality, the history of the relationship is very rich as cultural and trade relations stretch back a long way. Chinese admiral Zheng He reached the eastern coast Africa, already in the 15th century. From where he brought back exotic animals which shaped the perception of the African continent inside China over the coming centuries.
(World History Encyclopedia, 2019)

It was not until the 1960's and the era of decolonisation, where Sino – African relations started to strengthen. During this time, China offered military and economic support to many countries in their wars for independence (Prybyla, 1964). In return, China received political support from these countries inside international organisations, such as the United Nations. The interest in Africa also increased during the 1980s as China's domestic economy started to pick up speed and the economic relationship with Africa started to trump the political. Fast forward to today; the total FDI stock in Africa has gone from 0.49 billion USD in 2003 to around 44 billion USD in 2018 (SAIS – CARI, 2021), making China one of the biggest investors in Africa. Economic links have also grown stronger, as China has become the largest African trading partner and in 2018 accounted for 16% of total trade (world bank, n.d.).

Although China's presence on the global market is still small compared to other countries, such as the United States. The increased Chinese presence in Africa has raised concerns, mostly in western countries, about their motivations. Are they investing to gain influence over generally poor countries to exploit them? Or rather to gain important, strategic partners? Are their motivations more in line with traditional theories, where strong institutions and economic stability generate good business opportunities? Increased Chinese influence is often hard to measure because data provided on loans for infrastructure projects is not always

reliable and hard to find. Foreign direct investment (FDI), however, is easier to measure and serves as a good measurement for financial strength and economic influence. Over the past 20 years Chinese outward foreign direct investment, especially in Africa has seen a rapid increase which sparks the following question: Are Chinese investors drawn to a certain type of country with poor institutions and large natural resources reserves?

China went from having virtually non-existent Outward FDI in the 1980s to being one of the biggest spenders in the world in 2018. In 1978, reforms were introduced in China that resulted in the country moving away from a centrally planned economy with almost only state-owned enterprises (SOEs) to a significantly more market oriented approach, which eventually led to China becoming the second biggest economy in the world. During the southern tour of China, former party secretary, Deng Xiaoping, called for market liberalisation, which is believed to have accelerated domestic growth and development. In 1999, the Chinese government initiated the Go Out Policy, an effort to encourage Chinese enterprises to invest abroad. These three factors along with other important policies can be seen as reasons for why China has become one of the largest investors in the world. After the financial crisis in 2008 there has been a further increase in OFDI from China and in recent years have kept growing, in part due to the Belt and Road Initiative, a massive global infrastructure project that was announced in 2013. Most African countries are part of the belt and road initiative.

Existing literature has examined the determinants that may explain why some countries receive more FDI than others. Most of them seem to conclude that Chinese investors are drawn to countries with more natural resources and unstable governments. There are some issues with the articles brought up where in some cases they did not have access to actual investment and use the total amount of “approved FDI” instead. In some cases, the studies are also based on a very limited timespan

The thesis consists of eight sections which are structured in the following manner: In section 2, the theoretical framework and the evolution of theoretical aspects of FDI are presented. Section 3 provides a review of previous studies and literature concerning FDI determinants. The empirical strategy is laid out in section 4. A review on the data and variables used in the thesis is presented in section 5. In section 6, the empirical results are presented, and the

discussion and analysis of the results are presented in section 7. Lastly, section 8 concludes the thesis and provides suggestions for further research.

1.2. Research objective and aim

The objective of this thesis is to contribute to the existing literature, by examining the determinants of Chinese FDI in Africa. This is done with the help of panel data analysis, to answer the main research question:

What are the determinants of Chinese Foreign Direct Investment in Africa?

This thesis aims to fill a gap in this area of research. Namely, the difference between African countries and their ability to attract Chinese FDI. By relying on the results of the first research question, this thesis also seeks to answer the following question:

Are the determinants the same for African countries of different income levels?

Finally, to achieve a more robust analysis and fill another gap that has not yet been sufficiently explored, this thesis aims to investigate the impact of the financial crisis on the determinants of Chinese FDI in Africa. The third and final research question that this thesis seeks to answer is:

Have the determinants changed after the financial crisis in 2008?

2. Theoretical framework

In the following section, the definition of FDI will be described first. Succeeded by the development of FDI theory and followed by a review of the main theory used in this thesis: the Ownership, Location and Internalisation (OLI) paradigm. The purpose is to provide background knowledge of FDI, and to clarify the reasoning behind the choice of variables in this thesis.

2.1. Definition of foreign direct investment

When investing in a foreign country, investors usually have two options. They either make a portfolio investment, which is often correlated with a short-term profit and not acquiring a significant role in the company. The other option is to choose a type of investment with the objective of acquiring a lasting interest in a country or a company located outside of their home country (Feenstra & Taylor, 2014). This is often referred to as foreign direct investment or FDI for short, which will make the investor interested in the long-term factors in a company or a country.

FDI can be split up into different types: vertical or horizontal FDI. Vertical FDI is when a company invests in a country with the intention of implementing a factory that produces components that later becomes part of a bigger product (Feenstra & Taylor, 2014). Many developed countries engage in vertical FDI, as it is an effective way to cut costs for big companies. Horizontal FDI on the other hand is when a company chooses to build a factory and completely transfer the production processes to another country. When countries face high tariffs or other trade barriers and still want access to the market in question, then horizontal FDI is a way to bypass that also called “tariff jumping” (Feenstra & Taylor, 2014).

FDI can be divided in other ways as well, a common way is to make a distinction between Brownfield and Greenfield FDI. Brownfield FDI means that a company will either buy existing companies or existing production facilities, an advantage with this that a company can avoid the cost of building new facilities. Greenfield FDI is the alternative, where a company will enter a new market through creating a subsidiary, this can encompass new factories, stores or new offices for example (Feenstra & Taylor, 2014).

2.2. General theories of foreign direct investment

For the objective of this thesis, it is important to analyse the general theories of FDI to obtain a deeper understanding of the subject before it is applied into this thesis. Current theories of FDI have been developed around, and modelled on, the investment patterns of rich countries, thus reducing the likelihood that the same theories are applicable on a “developing” country like China is small.

2.2.1. Early theories of foreign direct investment

There have been a lot of theories developed since the end of the second world war. One of the earliest was introduced by Ronald Coase in 1937, who argued that because of transaction cost between countries a more efficient solution would be to internalise the transaction instead, thus a Multinational Enterprise (MNE) would invest in a country to "skip" the middle hand. Most of the theories before the 1960s saw FDI as within the realms of international capital movements but Canadian economist Stephen Hymer developed a theory in the 1960s (published in 1976) that exposed the flaws of these theories. His theory tried to explain FDI activities with the assumption that market imperfections exist and that MNEs possess a monopolistic advantage, which in turn allowed them to be competitive in foreign markets (Hymer, 1976). The monopolistic advantages include human capital skills and financial power. If MNEs were to possess such an advantage, it would overcome the cost of investing in foreign countries, thus explaining FDI flows.

In 1976 Buckley and Casson's theory of internalisation was introduced, which focused more on how MNEs approached FDI. The theory is based on the work of Coase (1937) along with some other studies. It claims that market imperfections lead to suboptimal trade and FDI flows between countries. To overcome these market imperfections enterprises would internalise some of the steps of their production by investing in a foreign market. Meaning an enterprise will evolve into an MNE through FDI. Similar to Hymer (1976), Buckley Casson theory assumes that the decision-makers are rational and would only internalise if the benefits (profits) would exceed the costs. Market imperfections include government intervention, asymmetric information or time lags (Buckley & Casson, 1976). These different factors will affect the decision of whether an MNE should engage in FDI or not. Because it gives a deeper understanding of why enterprises choose to internalise their production abroad instead of trading with different enterprises in the open market, the theory of internalisation has had a big impact on the field of economics since its birth.

2.2.2. OLI Paradigm

The main theory applied in this thesis, the OLI paradigm (or the Eclectic paradigm), was introduced by John H. Dunning in 1980. Theories before were often either on micro- or macro-level, Dunning tried instead to merge these theories into one single theory and provide a more general explanation for why MNEs engage in FDI activity. The OLI paradigm is developed from theories such as Hymer's monopolistic advantage theory, the Coase theorem and Buckley and Casson's theory of internalisation. The OLI paradigm explains FDI based on three specific advantages: ownership advantages (O), location advantages (L) and internalisation advantages (I) (Dunning & Lundan, 2008). O-advantages refers to intangible assets such as human capital or patents. L-advantages refers to country-specific advantages such as low labour costs or natural resources. I-advantages refers to MNEs ability to internalise their O-advantages across borders in order to reduce transaction costs and it also refers to the reduced risk of copying. To sum the theory briefly, Dunning claims that if an MNE can amass these advantages so they have a competitive advantage in the foreign market, then they would engage in more FDI activity. Because this thesis mainly focuses on what country-specific determinants attract FDI, the focus lies on location-specific advantages and trying to understand why some countries receive more FDI. Dunning continued to divide location-specific advantages to four groups based on the motivations of FDI:

Natural resource-seeking FDI: The type of FDI directed at extracting resources from the host country at a smaller cost than they could obtain in the MNEs' home country, thus increasing profits and making the MNE more competitive. This type of FDI generally seeks minerals, ores and oil but also cheap labour and some investors also seek technological capabilities in order for their industries to obtain the "catch up" effect (Dunning & Lundan, 2008). Chinese investors have been mostly interested in the resource-seeking FDI that involves oil, ores and minerals (Dunning & Lundan, 2008), the reason for this being that they want to secure its long-term growth considering they lack natural resources in their home country. To account for this, we have used natural resources rents as a percentage of GDP as a proxy.

Market-seeking FDI: This is aimed at establishing an enterprise or a production in the host country to supply them with products and profit off its markets. The motives can come from an enterprise wanting to expand and exploit new markets or open new branches in the host country instead of supplying them with exports (Dunning & Lundan, 2008). Unlike the other

types of FDI, market-seeking FDI often treat their overseas departments more like a self-serving entity, while natural resource-seeking FDI are more interested in integrating the business in their network, making them more responsive to local markets (Dunning & Lundan, 2008). This type of investment is more aimed at the richer countries of the world and in Africa this leaves only a small number of possible locations, e.g., South Africa.

Efficiency-seeking FDI: Seeks to use factors in the country, e.g., lower cost of labour, that improves the enterprise's competitiveness on the global markets, also known as comparative advantages (Dunning & Lundan, 2008). Usually big and experienced enterprises who engage in this type of FDI, specialise in producing standardised products using a universally accepted production process (Dunning & Lundan, 2008). Historically, this FDI has been implemented after market-seeking or resource-seeking FDI have become adequately large (Dunning & Lundan, 2008). In this thesis, a proxy has not been used to account for this.

Strategic asset-seeking FDI: The fourth and last motivation according to Dunning is the type of FDI where an enterprise acquires assets from foreign companies in order to be more competitive in a given market. It is similar to efficiency-seeking FDI in its objective to capitalise from the advantage of the different markets. The motive is more to further develop the acquiring enterprise's assets whether that is the human capital or the physical assets (O-advantages) (Dunning & Lundan, 2008). The problem for both Strategic asset-seeking FDI and the efficiency-seeking FDI is the data, it is hard to measure the importance of the two and we will therefore not examine the variable related to it.

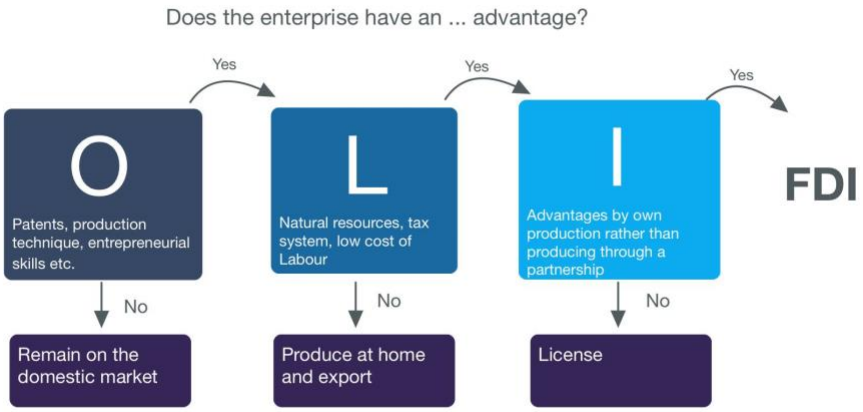

Figure 1: **Visual representation of the OLI paradigm**
Source: Adapted from Dunning & Lundan (2008)

What does the theory say about the importance of institutions? It is difficult to measure how strong institutions are in a country, although it is easy to look at economic performance and see that most poor countries have been poor for decades and that can be partly attributed to weak institutions considering that the modern economies and legal systems are built upon these institutions (Dunning & Lundan, 2008). A distinction has to be made between *formal* and *informal* institutions, while the former is for example the judicial systems and the written constitutions, the latter is the unwritten rules of society. Underdeveloped countries often have informal institutions that do not support the values of capitalism, which will not enable them to perform in an economically desirable manner (Dunning & Lundan, 2008).

Dunning & Lundan extended the OLI paradigm in 2008 with the intention of incorporating the importance of institutions into the OLI paradigm. Institutional effectiveness already plays a big role in explaining the difference in economic growth and in some way institutions already affect all the advantages in the OLI- paradigm and we can see a clear link between L-advantages and the importance of institutions (Dunning & Lundan, 2008) The political development of the world and the advances of the global economy in the last decades, should make institutionally based location advantages (Li) on of the the main focuses of any research paper concerning FDI or international businesses. The state of the host country's markets, economic system and government policies will affect the willingness of an MNE to invest in a particular country, mostly because it has to be beneficial for the MNE's investment but also because to the extent that their O-advantages will be protected (property rights). In this thesis L-specific advantages are the main focus, thus a look at the institutional factor is needed. Dunning & Lundan (2008) incorporate a country's laws and social customs into Li advantages but also stress the importance of the enforcement mechanisms of the host country also are an important factor when deciding where to invest.

3. Literature review

This section provides a brief description of the literature and selection process and a review of earlier research on recipient country FDI determinants. It finishes by investigating previous literature on Chinese FDI in Africa.

3.1. Description and selection of literature

Previous studies have researched the determinants of Chinese FDI in host countries. The empirical evidence is not entirely clear, with different scholars achieving different results depending on the geographical location and timeframe. Over the past decade, the topic of Chinese FDI has become increasingly popular in academia. Cheng & Ma (2007); Cheung & Qian (2009); Buckley et. al (2017) have researched what drives Chinese FDI, coming up with contrasting results. Sanfilippo (2010) and Ross (2015) have focused on determinants that attract Chinese FDI in Africa. Donou-Adonsu & Lim (2015) also studied the impacts of Chinese FDI compared to that of other industrialised countries in Africa, whereas Asiedu (2002) examined general FDI in Africa. To provide a solid foundation for understanding the topic, the rest of the section covers the most important literature for this thesis.

3.2. Previous research

Buckley et al. (2007) investigated what determines Chinese FDI by studying the behaviour of Chinese multinational firms between 1984 and 2001. The study was, according to the authors: "*[O]one of the first to model formally the forces driving Chinese ODI".* Research is based on the general framework for FDI. But, it also attempts to present a specific theory for Chinese FDI, based on three key factors: capital market imperfections, special ownership advantages of Chinese MNEs, and institutional factors influencing Chinese ODI. China's high density of state-owned enterprises can lead to capital market imperfections within the country. As an example, SOEs have a much lower cost of capital, because they are backed by state funding which most companies in industrialised nations are not. Ownership advantages concern the experiences of Chinese companies, who are used to operating in an emerging market context and may therefore be better equipped to tackle obstacles standing in the way of doing business. Lastly, institutional factors mean that Chinese firms are shaped by the

home environment. Since SOEs (at the time of this study) were the only ones engaged in investment abroad, they are in some ways constrained by state guidance.

The authors conducted a panel data analysis of both Pooled OLS and the random-effects model for 49 countries, where 22 are OECD countries and 27 are non-OECD countries over 17 years. The dependent variable is the total amount of approved FDI. The variables of interest are total GDP, used as a proxy for market size, and tests the *market-seeking* hypothesis of the OLI paradigm. Furthermore, natural resources are used for *resource-seeking* FDI, where the ratio of metals and ores exports used for merchandise exports, measure natural resource abundance. Ownership advantages are measured by the total number of patents held in the host country and completes the *asset-seeking* portion of FDI. Political risk measures the institutional strength of the recipient country, cultural proximity to China takes into account how many Chinese or people of Chinese descent live in the country. Policy liberalisation is included to account for the effect of the market liberalisations as a result of Deng Xiaoping's tour of southern China. The authors also include several control variables to improve the efficacy of the model: exchange rate, imports & exports, inflation, geographic distance to China, and openness to FDI. All variables are log-transformed.

GDP is statistically significant and positive for the full sample, between 1984 and 1991 (before Deng's southern tour) and for the non-OECD countries. Natural resources are positive and significant for the full sample and the period between 1992-2001 (after Deng's southern tour). Both market-seeking and resource-seeking hypotheses seem to hold, albeit for different periods. Political stability is positive and significant for the full sample and after Deng's southern tour. This indicates that Chinese MNEs are almost oblivious to risk because an increase in risk would mean an increase in Chinese FDI. Cultural proximity is also positive and significant illustrating the importance of ownership advantages. The variable for Deng's southern tour in 1992 is also positive and significant. Meaning that policy liberalisation did affect the strategy for Chinese FDI. Inflation is also positive and significant, highlighting macroeconomic stability as a key factor. Imports and exports prove to be significant for different periods. It is important to consider the special framework for Chinese FDI because it does not exactly follow the pattern of other industrialised countries.

Kolstad & Wiig (2010) studied the host country determinants of Chinese FDI between 2003 and 2006 in a total of 104 countries. Because of the short time frame, the authors use an OLS

estimation technique instead of panel data analysis. To appropriately address the differences between countries, they perform further regression analysis after splitting the sample into OECD and non-OECD countries. They use FDI flows from China to the host country as their dependent variable while the explanatory variables are natural resources and institutions. The proxy for natural resources is fuels, ores, and metals exports as a share of GDP and the rule of law index from the world bank for institutions. GDP, trade as a share of GDP, inflation, and distance to China are used as control variables. Furthermore, in the second regression, they use an interaction variable between institutions and natural resources.

The authors find no significant effect of institutions on Chinese FDI. The effect of natural resources is positive and significant only for the non-OECD countries in the sample. Meanwhile, the interaction variable between institutions and natural resources is negative and significant for the full sample and the non-OECD countries. In the words of the authors, this implies that:

"The worse the institutions are in the host country, the greater Chinese investment is attracted by natural resources. Conversely, the effect of institutions also depends on the natural resources. The more natural resources, the more is Chinese FDI attracted by poor institutions. (Kolstad & Wiig, 2010, p.32)"

This provides empirical evidence of why institutions and natural resources should be studied further and included in the model when it comes to Chinese FDI.

Kolstad & Wiig (2011) also examined the determinants of Chinese foreign direct investment, in Africa specifically by studying 29 countries between 2003 and 2006. Their approach is consistent with their previous work about Chinese outward foreign direct investment and the same variables are included in the model: institutions, natural resources, inflation, GDP, and an interaction term. GDP - market size - is found to be positive and significant for the full sample, indicating that Chinese FDI in Africa is attracted by larger markets. However, when South Africa is removed from the sample, market size is no longer significant. Indicating that South Africa may have been a large outlier in the sample. All other variables are negative and non-significant, except for the interaction term, which is negative and significant. Similar to the findings in their other article, the nature of the interaction variable means that the worse the institutions are in the host country, the more investment is driven by natural resource

abundance and vice versa. Moreover, the authors compare the results of Chinese FDI in Africa to total FDI and discover that the interaction variable is negative and significant, using total FDI in Africa as the dependent variable. GDP is positive and significant, which means that market size is important for all investors in Africa. China's actions as an investor in Africa do not differ significantly from that of other countries, at least not between 2003 and 2006. They suggest studying Chinese FDI using panel data for longer periods.

Shan et al. (2017) conducted a study, using panel data on 22 African countries between 2008 and 2014, to determine whether market size, natural resources, and institutional quality are significant in attracting Chinese FDI. The authors used a fixed-effects model, with FDI stock as the dependent variable. Like most studies, GDP is used to measure market size, natural resources rents as a percentage of GDP is used for natural resources. The other variables of interest are proxies for institutional quality; voice and accountability, political stability & absence of terrorism, regulatory quality, rule of law, and control of corruption. Furthermore, trade openness, inflation, and quality of infrastructure are included as control variables. All variables in the model are log-transformed.

Similar to findings in other studies, market size is positive and significant. Natural resources are not significant at any level, indicating that Chinese investment is not necessarily motivated by natural resource abundance. Regarding institutional quality, voice and accountability are positive and significant, while political stability is negative and significant. This would mean that Chinese investment is more prevalent in risky political environments. Regulatory quality and rule of law are both negative, but the only regulatory quality shows the significance and in turn that Chinese investment is attracted to countries with less stable markets. Corruption is not negative but also not significant, and therefore does not affect the dependent variable. With regards to the control variables, infrastructure is negative and significant, meaning that Chinese investors will likely invest more if the quality of infrastructure is poor. Trade openness and inflation are not significant. Using more recent data in combination with panel data analysis, unlike other previous research on Chinese FDI in Africa, the findings are important and show a shift from resource seeking to market seeking FDI:

"Integrating our findings with those reported by earlier studies based on data in 2007 and before (Sanfilippo, 2010; Wang, 2012), we found that there has been a shift of motivations of Chinese FDI in Africa from natural resources seeking to market seeking. (p.149)"

The evidence from previous research in this area provides a solid foundation to build on. Even in more recent studies, however, very few comparisons over time and between countries have been conducted. Not only because of the sheer size of Africa but also because of the different economic, political, and social factors between countries, it is likely that these differences will affect the amount of Chinese FDI received. This thesis draws inspiration from the variables used in previous studies but will through a different empirical strategy seek to answer questions that have not previously been dealt with.

4. Empirical strategy

This section describes the empirical strategy used in this thesis and presents the limitations associated with it.

4.1. Research methodology

This thesis aims to examine what determinants in the recipient countries influence Chinese FDI in Africa, through a quantitative study based on econometric analysis. The sample contains data from 41 African countries over 15 years (2003-2018). Because some variables did not have any data available for 2019 or later, those years were omitted. Since the dataset consists of time series data (years) and cross-sectional units (countries), a panel data analysis is conducted. The countries included in the study must have a minimum of 50 million US dollars in Chinese FDI stock, by the year 2018. To study the difference between groups of countries and over time, the sample is divided into different groups. The first group contains the full sample of all countries. The second group contains countries that are classed as low-income countries by the World Bank[1] while the third group includes all countries that are classed as middle-income countries. All countries are sorted into these groups according to their income levels in 2018. There are only two high-income countries in Africa: Mauritius and Seychelles. Because the number of observations in that category would be too small to

[1] A country is classified as a low-income country if its GNI, Gross national income is 1,035$ or less. A middle-income country if GNI per capita is between 1,036$ and 12,535$. (World Bank, 2021).

compare with the other groups, these countries were omitted. Moreover, the full sample is tested at two different periods, to investigate the pattern of Chinese FDI in Africa before and after the financial crisis. This is done to assess whether there has been a definitive change in Chinese investment behaviour after 2009.

4.2. Limitations of the study

There are some concerns regarding the reliability of economic data from China and some statistics from MOFCOM may be underestimated. Since no other database extensively covers Chinese FDI flows and stock in Africa, we have chosen to use the information available in spite of the concern raised. Furthermore, the sample is also limited to 41 countries, which means that no claims can be made for all African countries, only for those eligible for the study. Some observations are also missing for certain variables which is a limitation, but do not affect the model too much, since the number of observations is sufficiently large.

5. Data

This section explains the data selection process, a description of the variables included, tests for heteroskedasticity and multicollinearity and the equation used for the model.

5.1. Data selection

The data on Chinese FDI are retrieved from the China Africa Research Initiative (CARI) at John Hopkins School of Advanced International Studies. CARI provides a full picture of the annual FDI stock in Africa between 2003-2018. Originally, the CARI data are collected and summarized from the China Statistical Yearbooks and *The Statistical Bulletin of China's Outward Foreign Direct Investment* issued by the Ministry of Commerce in China (MOFCOM). Meanwhile, the data on independent variables are collected from the World Development Indicators and World Governance Indicators database, which has been compiled with data from the World Bank national accounts data, and OECD National Accounts data files. Portions of the data are also collected from the African Development Bank, which presents an annual, unique infrastructure index included in this study.

Table 1. Descriptive statistics

	FDI (Millions Of US $)	Natural resources	Institutions	GDP (Billions of US $)	Openness	Inflation	Infra-structure
Mean	442.76	15.31	-0.771	43.6	71.96	7.203	18.194
Median	108.32	11.109	-0.800	13.1	63.93	5.6162	13.233
Max	7 472.77	68.79	0.731	547	347.997	98.224	85.847
Min	0.0[2]	0. 263	-1.852	0.477	17.927	-8.974	0.36878
Std. dev	871.79	13.205	0 .555	82.3	37.999	8.09	16.1131

Source: Authors own calculations

5.2. Variables

5.2.1. Dependent variable

The accumulated Chinese FDI stock of each country included in the study, meaning the total accumulated amount of Chinese investment in the host country, acts as the dependent variable. It is expressed in millions of US dollars in Table 1, and is measured at current market prices as suggested by Chakrabarti (2001).

5.2.2. Independent variables

Natural resource rents, which is the rate of return on natural resources as a percentage of GDP, are used as a proxy for *natural resource*s in the model. This is done in order to investigate if a main motive for China is to secure access to natural resources for increased domestic growth and development. This thesis expects natural resource abundance to positively affect the amount of Chinese FDI invested in the country.

To account for the strength of *institutions* of a host country, the rule of law index from the World Bank is used as one of the independent variables. The index ranges from -2.5 to 2.5, where a higher score is wanted. The quality of institutions in a country may affect its ability to attract FDI. Previous studies have shown mixed results regarding the effects of this variable, which is why it makes sense to include it. It measures how a country adheres to the

[2] The value 0 is classified as the minimum value since a few countries had not received any Chinese FDI in 2003.

rule of law by looking at eight different factors, including absence of corruption and criminal justice. This thesis expects institutional strength to positively affect the amount of Chinese FDI in the host country meaning that countries who score higher on the rule of law index are expected to receive more Chinese FDI.

GDP is included as a control variable to account for the overall performance and market size of the host country. The data are measured in US dollars and at current market prices, similar to Chakrabarti (2001). This thesis expects that a larger market size will positively affect the amount of Chinese FDI received.

Macroeconomic stability is likely to affect the amount of FDI received. The host country's *inflation rate* is therefore used as a control variable to include economic stability. A high and/or volatile inflation rate will likely scare off investors because of the added risk that follows. The inflation rate is expressed as a percentage and is the annual change in CPI, for each country. This thesis expects inflation to negatively affect the amount of Chinese FDI received.

Openness, which is the sum of exports plus imports divided by GDP and is expressed by a percentage from 0-100. According to traditional economic theory, if a country is open to trade, it will have positive effects for economic development in that country. Previous studies have included this variable to test if the same is true for trade and FDI. To investigate the same relationship for Chinese FDI, trade openness is included as a control variable. This thesis expects trade openness to positively affect the amount of Chinese FDI.

The last control variable is *infrastructure development*. Foundational public goods such as roads, telecommunications and running water are essential in a functioning society and serve as pillars of basic development. Infrastructure development will therefore likely be a factor for investors to consider and it is included as a control variable. This thesis expects infrastructure development to positively affect Chinese FDI.

5.3. Panel data

A Panel data set combines cross-sectional and time-series data, which makes it possible to study a number of units over a period of time. Panel data analysis deals with common

problems in empirical studies that occur when only time-series or cross-sectional data is used, such as handling the effects of omitted variables and generating better individual predictions by pooling the data rather than predicting every single observation (Hsiao, 2007).

Considering this study examines the causal effects of certain variables on FDI, by studying multiple countries over a longer time period, it will be more appropriate to examine different groups of countries and thereafter make claims of causal effects, rather than predicting the individual case of every single country. Similarly, omitted variable bias could potentially affect the model used in this thesis, due to multicollinearity: the correlation between two or more (independent) variables. However, the use of panel data reduces the probability of this, and more importantly, there is no problem of multicollinearity in this model.
Moreover, cross-sectional units and time series are often subject to heterogeneity, meaning that some variables in a model may change over time while others will not. By using panel data, both time-variant and time-invariant factors can be controlled for and thereby limit the effects of potentially biased estimators (Baltagi, 2005).

There are two main ways to fit a panel data model, through fixed effects or random effects[3]. The most common way to decide what fit is appropriate is through a Hausman test (See A.1. in the Appendix). This thesis rejected the null hypothesis, signalling that a fixed effects regression is best. When measuring *ceteris paribus* effects or dealing with time-variant variables, i.e., they change over time a fixed-effects model is usually used (Wooldridge, 2013).

The explanatory variables in this model do change over time. For instance, most countries in the sample have increased their GDP over the time period that is studied. Similarly, it is only possible to make inferences regarding ceteris paribus effects. The fixed-effect model also allows the dependent variables to be correlated with time-invariant unobserved factors and to impact the dependent variable. In this thesis, the probability of different time-invariant variables affecting the dependent variable is relatively high. Although there is no multicollinearity problem, there is still a correlation between two or more variables and they will likely affect each other, albeit in small ways.

[3] In the random effects model, the time invariant factors are not allowed to affect the dependent variable.

A panel can be balanced or unbalanced. Because the gathered data stems from different sources we were forced to match the data for each country with the right time period. This model deals with an unbalanced panel, as a result of some missing observations. Some of the missing observations belong to countries that are subject to large amounts of FDI and are therefore still included in the analysis. When conducting panel data analysis on an unbalanced panel, there will be a loss in degrees of freedom for every cross-sectional unit, due to the loss of observations. Despite this, it is more important to know why the panel is unbalanced (Wooldridge, 2013).

A panel data equation with a fixed effects model and one independent variable can be written as:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$$

Where i is the specific cross-sectional unit and t, the specified time period. α_i is the intercept for every given time period. β_1 Acts as the coefficient for the independent variable X_{it} , for every cross-sectional unit and time period respectively (Torres, 2007).

5.4. Model

The final equation for the panel data model tested is described as:

$$LFDI_{it} = \alpha_i + \beta_1 INST_{it} + \beta_2 NAT.RES_{it} + \beta_3 GDP_{it} + \beta_4 OPEN_{it} + \beta_5 INFL_{it} + \beta_6 INFR_{it} + u_{it}$$

LFDI is the total FDI stock in the host country, log-transformed. This format is called log-level and means that a change of one unit in one of the coefficients leads to a corresponding change in the dependent variable by the coefficient multiplied by 100, in percent (Dzemski, 2020). Illustrated as:

$$\Delta Y = (\Delta\beta_1 \; x \; 100)\%$$

The independent variables, their names and their expected signs are summarised in Table 2 below.

Table 2. Expected sign of variables

Variables	Name in regression model	Expected sign
Institutions	INST	+
Natural resources	NAT.RES	+
Gross domestic product	GDP	+
Openness	OPEN	+
Inflation	INFL	-
Infrastructure	INFR	+

Source: The authors

5.4.1. Multicollinearity

There are several ways to find out if the model is subject to multicollinearity. As stated in section (5.3) there is no correlation of 0.6 or more between any given variables, which offers a strong indication that there is no problem of multicollinearity. Table 3 displays the correlation between all variables. This thesis also looks at the Variance Inflation Factor (VIF), which estimates the variance of one variable caused by another. There is no set value for determining the maximum value of the VIF, but usually hovers between 5 and 10 (Craney, 2007). As seen in A.2 in the Appendix, the highest obtained value is 1.98, meaning that there is no problem of multicollinearity

Table 3. Correlation matrix

	FDI	Inst.	Nat.res	GDP	Openness	Infl.	Infra
FDI	1.0000						
Inst.	-0.0273	1.0000					
Nat. res	0.0000	-0.4802	1.0000				
GDP	0.4407	0.0956	-0.0706	1.0000			
Trade open	-0.1262	-0.1158	0.3094	-0.2243	1.0000		
Infl.	0.0326	-0.0872	0.0414	0.0803	-0.0880	1.0000	
Infra.	0.2774	0.3671	-0.0399	.5837	0.0178	-0.0738	1.0000

Source: Authors own calculations

5.4.2. Heteroskedasticity

To check if the data is homoscedastic, meaning constant variance across all units, a Breusch-Pagan test is performed. As the output in A.3 in the Appendix shows, the null hypothesis is rejected, signalling that the data shows signs of heteroskedasticity, meaning non-constant variance over time. A White test for heteroskedasticity is also performed to thoroughly verify the results. The White test also rejects the null hypothesis signifying that the data is heteroskedastic. If the variance of the coefficients is not constant over time, the coefficients will not be efficient, and neither will the standard errors. The best way to combat heteroskedasticity is by using robust standard errors (Baltagi, 2005).

6. Results

This section presents the empirical results obtained from the regressions.

Table 4. Regression results

	All countries	**Low-income**	**Middle-income**	**Period 1 2003 - 2009**	**Period 2 2010 - 2018**
Institutions	1.577** (0.724)	0.593 (0.049)	1.416* (0.777)	1.634** (0.741)	0.899* (0.525)
Natural resources	0.015 (0.018)	0.026 (0.028)	-0.00001 (0.018)	0.054** (0.012)	-0.007 (0.0068)
GDP	7.03e-12* (4.12e-12)	5.85e-11* (1.14e-11)	7.73e-12** (1.87e-12)	1.09e-11** (4.87e-12)	3.61e-12 3.32e-12
Trade openness	0.001 (0.005)	0.005 (0.005)	-0.004 (0.007)	0.006 (0.005)	-0.005 (0.004)
Inflation	-0.034* (0.018)	-0.002 (0.0144)	-0.06*** (0.011)	-0.023** (0.011)	-0.004 (0.008)
Infrastructure	0.147 *** (0.038)	0.408*** (0.068)	0.114*** (0.029)	0.408*** (0.122)	0.08*** (0.02)
Constant	2.726** (1.079)	-0.356 (1.055)	3.105*** (1.006)	-3.254** (1.66)	5.045*** (0.939)
Observations	572	230	342	233	339
R-sq	0.4480	0.6865	0.5407	0.4982	0.3496

Source: STATA regression analysis
Note: Robust standard errors given in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1%-level respectively.

The results from the first regression, presented in the first column of Table 4, showed that rule law - the proxy for institutions - was positive and significant at the 5% level, in line with the prediction. If a country improves their institutions, it will attract more Chinese investment. Natural resources showed a positive sign, but no significance at any level. An abundance of natural resources should therefore not affect Chinese FDI in the host country. GDP - market size - was both positive and significant at the 10% level, indicating like many previous studies that a larger market attracts more Chinese FDI[4]. Trade openness was positive but showed no significance while inflation was negative and significant at the 10% level. A higher rate of inflation will deter Chinese investment, while a lower rate will attract it. Infrastructure was positive and significant at the 1% level, signaling that Chinese FDI is more likely to favour countries with a higher initial quality of infrastructure.

18 countries from the sample are defined as low-income countries according to the World Bank. The results obtained from this regression differ somewhat from the full sample. Rule of law was positive but not significant at any level, meaning that the level of institutional strength does not affect the dependent variable positively, for low-income countries. Natural resource rents were positive but not significant at any level. Mirroring the results of the full sample shows that it should not matter for Chinese investors, even if the host country is a low-income country. Market size was both positive and significant at the 10% level, indicating that it is an important factor even for low-income countries. Trade openness is positive but not significant for low-income countries, at any level. Inflation is negative and also not significant at any level. Infrastructure development is positive and significant at the 1% level. For this group an increase in infrastructure would lead to a larger increase in the dependent variable than that of the entire sample, showing the importance of infrastructure development in low-income countries.

23 countries belong to the middle-income group and are considered either upper or lower middle-income countries by the World Bank. Institutions are positive and significant, at the 10% level. Natural resources show a positive sign and no significance at any level. Interpreting the results, Chinese investment in middle-income countries may be geared towards more diversified economies. Market size is positive and significant at the 5% level,

[4] The coefficient for GDP might seem small but is in fact in line with previous studies, such as Kolstad & Wiig (2010)

in line with previous findings. Trade openness was positive but does not show any significance. Inflation was negative and significant at the 1% level, highlighting economic stability as a factor that attracts more Chinese FDI for middle-income countries in Africa. Same as in previous regressions, infrastructure development is positive and significant, but the corresponding increase is smaller than that of the low-income countries.

This regression contains all countries in the sample, but from 2003 through 2009, to investigate the effects of the global financial crisis on Chinese FDI in Africa. Looking at the numbers, the total FDI stock in most African countries increased notably after this point. Institutions are positive and significant at the 5% level. The variable - natural resources shows a positive sign and is significant at the 5% level. GDP is positive and significant at the 5% level for this group as well. There appears to be no relationship between trade and increased investment before the financial crisis either as it is not significant at any level. Inflation is negative and significant at the 5% level. Just like the first and third regression, macroeconomic stability was an important factor for attracting investment even before the global financial crisis. Infrastructure development was once more positive and significant at the 1% level.

After the financial crisis, from 2010-2018 institutions were positive and significant at the 10% level. Natural resources were negative but showed no significance, indicating a possible shift in strategy, away from natural resource extraction after the financial crisis. Market size is not significant, after the financial crisis. Trade openness is negative but not significant at any level. Inflation is negative but shows no significance, in contrast to before the crisis. Infrastructure development was significant at the 1% level, similar to other clusters.

7. Discussion

This section discuss the empirical findings of the study. Firstly, the major findings and their implications are discussed. Then a comparison with previous studies is provided to put the result in context and the results are discussed from a theoretical standpoint as well. Afterwards the methodological limitations are briefly discussed.

The point of departure is to identify what economic and political determinants in the recipient country attract more Chinese FDI. Are there any differences between countries of different

income levels and between time periods? In all but one regression natural resource abundance was not associated with higher amounts of FDI. The lack of significance means that it is not possible to confirm the hypothesised relationship that natural resources are one of the key determinants attracting FDI. It was found, however, that natural resources were important before and during the financial crisis, i.e., up until 2009. Interestingly, it ceased to be so after the financial crisis, implying that Chinese investors have become less focused on engaging in resource-seeking FDI, over the past decade.

The strength of institutions in a country was thought to positively impact Chinese FDI. Most of the results support the idea that stronger institutions attract more Chinese FDI. This is logical because Chinese investors, like most investors, should believe that good institutions lower the risk premium and provide better conditions for certain types of FDI, such as greenfield FDI, supporting Dunning's OLI paradigm. However, institutions were not found to be significant for low-income countries, which can be explained by the fact that most low-income countries in Africa perform poorly in this respect. The results might suggest that middle-income countries have more to offer Chinese investors. For example, through better opportunities to make stronger shareholder commitments due to more developed financial markets, than in low-income countries.

In terms of the control variables, larger market size, higher economic stability, and higher initial levels of infrastructure development in the African host country are shown to attract more Chinese FDI. Investing in low-income countries is usually synonymous with high risk, to begin with. This may indicate why economic stability is not important for low-income countries to attract Chinese FDI, while it is so for middle-income countries. Many low-income countries in Africa fall into the category of underdeveloped and non-diversified economies, with poor financial markets. They are therefore extremely vulnerable to external shocks, which in turn can cause drastic changes in consumer prices, used to measure inflation. This is something that must be taken into account from an investor’s perspective. Middle-income countries do not generally pose the same amount of risk, in terms of economic stability. When investing in countries from this group, there will be more room for decision making and after the financial crisis, it seems like economic stability is not as important. The results in this thesis are not sufficient to tell if it is a shift that is part of a greater strategy, or just due to increased investment in unstable economies.

The findings suggest that the market size of the host country is an important variable from a Chinese perspective, meaning that a larger market will attract more Chinese FDI than a smaller one. This holds for both low-income and middle-income countries, giving weight to market size within different groups. *Ceteris paribus*, a low-income country with a larger market size will attract more Chinese FDI than a smaller market. After the financial crisis, however, there is no evidence of market size as one of the main determinants.

The more open a country is to trade, the easier it should be to gain access to the host country's domestic market. Confusingly, empirical evidence does not support the hypothesis presented and it is not possible to establish a relationship between trade openness and FDI, for any type of country or in any period.

The only variable that is consistent both between countries and over different time periods, is infrastructure development. For low-income countries, a one per cent change in the development index would induce a corresponding increase of Chinese FDI by around 40%. This very large number may also state that many low-income countries receive lower levels of FDI and also have a less developed infrastructure. Contrary to the effects of infrastructure development for low-income countries, middle-income countries do not reap the same benefits. For a one per cent change on the infrastructure development index, Chinese FDI would increase by about 11%. Although much less than the corresponding increase seen by low-income countries, the number is still high and affirms the same relationship for different groups of countries. There has been no change in this variable after the financial crisis, and decent infrastructure is a must if a country wants to attract Chinese FDI.

In opposition to Kolstad & Wiig (2011), our major findings indicate a strong relationship between good institutions and increased Chinese FDI in Africa. Moreover, natural resource abundance is not seen as a major driving force of Chinese investment. There are several potential reasons for the diverging results between this thesis and their article. Firstly, Kolstad & Wiig (2011), use an interaction variable between institutional quality and natural resource exports to motivate their conclusion. Seeing that this variable is negative and significant, they claim Chinese investment is more driven by natural resources if the institutional quality is poor, in the host country. But, none of the variables shows any significance on their own in contrast to the findings of this thesis. Secondly, they have a

smaller sample size, over a shorter amount of time and use OLS regression instead of panel data analysis.

Most previous studies agree that market size has been important in facilitating increased Chinese investment. (Buckley et al. 2007; Kolstad & Wiig 2010; 2011; Shan et. al, 2017) The results from this study are consistent with previous findings and show a positive relationship between the two. This supports the market-seeking hypothesis, proposed by Dunning. Since the aforementioned studies date back to 1984 and this study ends in 2018, it offers a strong indication that Chinese FDI has for the most part been *market seeking*. This thesis cannot, however, confirm that Chinese investment is still market seeking today because the results from after the financial crisis did not show any significance.

Buckley et. al (2007) stressed the importance of looking at Chinese FDI from a different perspective because most of the literature is based on industrialised countries. Most of the major MNEs engaged in foreign markets are still state-owned and therefore likely to have ownership advantages over MNEs from industrialised countries. Institutional factors are different today. Even though China considers itself to be a developing country, many parts of it have undergone rapid change over the last decades, meaning that the institutional differences between the Chinese domestic market and most African markets are a lot bigger today and still increasing.

Most of the results of this thesis support the theory of Dunning's OLI paradigm, as the sign of the coefficients are in line with his theory. This would indicate that Chinese investors do not differ substantially from the traditional "western" investor. The finding that natural resources were significant before, but not after the financial crisis, strengthens the claim made by Shan et al. (2017) and others that there may have been a shift in the decision-making process by Chinese investors, from natural resource-seeking to more market-seeking. This indicates that the OLI paradigm may need some updates because the global economy has undergone major changes since the birth of Dunning's theory in 1979. The results obtained may add an important point that has not been discussed previously: As China has developed over the past decades and continues to grow towards a high-income country, their investment decisions and patterns may continue to change. The decreased focus on natural resources may signal that this transformation has already begun.

Economic and financial data from China are often subject to scepticism about their reliability by academics. This thesis must also take that into account and it is possible that the data used in this study is either over or underestimated. There are many potential reasons for this, such as sensitivity about investments in certain projects, accounting practices, and pressure from the central government to meet certain criteria. Ideally, this thesis would have wanted to be benefited from using a different measurement for natural resource abundance. Preferably natural resources exports as a percentage of total exports. However, there was not sufficient data for the countries included, and natural resource rents were used instead, which still captures the intended effects of the variable. Similarly, rule of law may not fully capture institutional strength, but adding other variables such as political stability and control of corruption resulted in an excessive correlation between these variables. There are arguments in this area of research whether GDP or GDP per capita should be used. In this thesis, GDP is used because it illustrates the size of the whole economy rather than GDP per capita, which shows the income level of a country. Because we wanted to investigate the effects of market size, big countries could have been misrepresented as small markets, due to their large populations.

8. Summary and conclusions

This section summarises the most important findings and provide a clear answer to the research questions posed in the thesis. The section ends with suggestions of future research.

This thesis has found that Chinese FDI in Africa is attracted to countries with stronger institutions, larger market size, higher economic stability and higher levels of infrastructure development. There are differences between lower and middle income countries, since economic stability was considered to be an important factor for middle-income countries

Similarly, before the financial crisis natural resource abundance did attract more Chinese FDI, but has since ceased to do so. In the last decade, strong institutions, market size and infrastructure development have been the driving forces behind Chinese FDI. Our findings support the market-seeking motives of the OLI paradigm, suggesting that Chinese investors aim to profit from the different African markets.

This thesis has contributed to the existing literature by comparing groups of countries by different income levels, in Africa. In addition, by studying the effects of the financial crisis, it has also provided evidence that a strategic shift in allocating FDI may have begun taking place, by Chinese investors. It also finds that the OLI paradigm does not fully succeed to explain Chinese FDI.

For further research, there are many areas which can help understand and develop the research on determinats of Chinese FDI. Firstly it would be useful to delve deeper into sector-specific FDI in Africa, and compare FDI flows and stock in different sectors. Today, infrastructure investment and mining activities recieves the most Chinese FDI in Africa. It seems as if manufacturing is becoming more important and could potentially become a large market for Chinese offshoring. Another area that could be interesting for the OLI paradigm is to include variables that concern strategic asset-seeking FDI or efficiency-seeking FDI, e.g. labour cost, as it would help the assestment of efficiency-seeking FDI.

References

African Development Bank. (2020). *Africa Infrastructure Development Index 2020.* Retrieved 2021-04-28. https://infrastructureafrica.opendataforafrica.org/rscznob/africa-infrastructure-development-index-aidi-2020

Asideu, E. (2002). On the Determinants of Foreign Direct Investment to Devloping Countries: Is Africa Different? *World Development, Vol. 30, 107-119.* doi: 10.1016/S0305-750X (01)00100-0

Baltagi, B. (2005). *Econometric Analysis of Panel Data, third edition.* Chichester, John Wiley & Sons Ltd.

Buckley, P.J., Casson, M. (1976). *The future of the multinational enterprise*. London, Macmillan.

Buckley, P.J., Clegg, J., Cross, A., Liu, X., Voss, H., & Zheng, L. (2007). The Determinants of Chinese Outward Foreign Direct Investment. *Journal of International Business Studies Vol. 38* (4), *499–518.* doi: 10.1057/jibs.2008.102

Buckley, P.J., Clegg, J., Cross, A., Liu, X., Voss, H., & Zheng, L. (2017). A retrospective and agenda for future research on Chinese outward foreign direct investment. *Journal of International Business Studies, Vol. 49* (1), 4-23. doi: 10.1057/s41267-017-0129-1

Chakrabarti, A. (2001) The Determinants of Foreign Direct Investments: Sensitivity Analyses of Cross-Country Regressions. *Kyklos, Vol. 54, 89–114.* doi: 10.1111/1467-6435.00142

Cheung, Y-W., Qian, X. (2009). Empirics of China's outward direct investment. *Pacific economic review, Vol. 14,* 312-341. doi: 10.1111/j.1468-0106.2009.00451.x

Coase, R.H. (1937). The nature of the firm. *Economica, Vol. 5, 386-405*

Craney, Trevor (2007). Model-Dependent Variance Inflation Factor Cutoff Values. *Quality Engineering, volume 14, 2002 – issue 3,* 391-403. doi: 10.1081/QEN-120001878

Donou-Adonsou, F., Lim, S. (2018). On the importance of Chinese investment in Africa. *Review of Development Finance, Vol. 8,* 63-73. doi: 10.1016/j.rdf.2018.05.003

Dunning, J.H., & Lundan, S.M. (2008). *Multinational Enterprises and the Global Economy, Second Edition.* Cheltenham: Edward Elgar Publishing Limited.
Econometric Analysis of Panel Data, Badi H. Baltagi third edition

Dzemski, A. (2020). Basic Econometrics – Lecture notes.

Feenstra, R.C., Taylor, A.M. (2014). *International Economics, third edition.* New York City: Worth Publishers.

Hsiao, C. (2007). *Panel Data Analysis - Advantages and Challenges.* TEST, *Vol. 16, 1-22.* doi: 10.1007/s11749-007-0046-x

Hymer, S. H. (1960). The International Operations of National Firms: A Study of Direct Foreign Investment. PhD Dissertation. MIT, Cambridge (published posthumously under the same title in 1976).

Kolstad, I., Wiig, A. (2010). What determines Chinese outward FDI? *Journal of World Business, Vol. 47,* 26-34. doi: 10.1016/j.jwb.2010.10.017

Kolstad, I., Wiig, A. (2011). Better the Devil You Know? Chinese Foreign Direct Investment in Africa. *Journal of African Business, Vol. 12,* 31-50. doi: 10.1080/1536710X.2011.555259

Omar, M., Pandey, S., Ross, A., Xu, A. (2019). The impact of institutional quality on Chinese foreign direct investment in Africa. *Local economy: The journal of the local economy policy unit, Vol. 34,* 572-588. doi: 10.1177/0269094219882329

Benedict, Peters. (2019, 22 may). Why we should beware of China's 'new colonialism'. *New African.* Retrieved 2021-10-08 from: https://newafricanmagazine.com/18866/

Prybyla, J. (1964). Communist China's Economic Relations with Africa 1960-1964. *Asian Survey, 4*(11), 1135-1143. doi:10.2307/2642664

Ross, A.G. An empirical analysis of Chinese outward foreign direct investment in Africa (2015). *Journal of Chinese Economic and Foreign Trade Studies Vol. 8 No. 1,* 4-19. doi: 10.1108/JCEFTS-12-2014-0025

Sanfillippo, M. (2010). Chinese FDI to Africa: What Is the Nexus with Foreign Economic Cooperation? *African development review, Vol. 22,* 599-614. doi: 10.1111/j.1467-8268.2010.00261.x

School of Advanced International Studies-China Africa Research Initiative (SAIS-CARI). (2021). *Data: Chineses investment in Africa.* Retrieved 2021-05-15 from http://www.sais-cari.org/chinese-investment-in africa?fbclid=IwAR2ByUlgA3tKW8tWNMimmnkmSzBDiXPvRl23D6iypTBYEkjAKA3OQ3IsZxA

Shan, S., Lin, Z., Li, Y., Zeng, Y. (2017). Attracting Chinese FDI in Africa: The role of natural resources, market size and institutional quality. *Critical perspectives on international business: Vol. 4 Issue ⅔* 28(4), 404-413. doi: 10.1037/a0014399

Statista. (2021). *China: state-owned and private enterprises in outward FDI stock 2009-2019.* Retrieved 2021-05-22 from https://www.statista.com/statistics/730083/china-share-of-state-owned-and-private-enterprises-in-outward-fdi-stock/

Torres, O. (2007). *Panel Data Analysis Fixed and Random Effects using Stata.* Retrieved May 22, 2021, from https://www.princeton.edu/~otorres/Panel101.pdf

Wooldridge, J.M. (2013). *Introductory Econometrics: A Modern Approach, 5th Edition.* Mason, Ohio: Cengage Learning.

World Development Indicators. From *Wikipedia.* Retrieved 2021-05-18 from https://en.wikipeda.org/wiki/World_Development_Indicators

World Integrated Trade Solution (Worldbank). (n.d.). *Sub-Saharan African Trade.* Retrieved 2021-05-23 from https://wits.worldbank.org/countrysnapshot/en/SSF

World Bank. (n.d.). *WGI-Home*. Retrieved 2021-05-18 from https://info.worldbank.org/governance/wgi/

World Bank. (n.d.). *World Development Indicators*. Retrieved 2021-05-20 from https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country

World Bank. (2021). *World Bank Country and Lending Groups.* Retrieved 2021-05-10 from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

World History Encyclopedia. (2019). *The Seven Voyages of Zheng He.* Retrieved 2021-05-12 from: https://www.worldhistory.org/article/1334/the-seven-voyages-of-zheng-he/

Appendix

A.1. Hausman test

Hausman test	***P-value***
H_0: Difference in coefficients not systematic	0.000

Source*:* STATA test-statistics for Hausman
Note**:** *A p value of 0.000 means a rejection of the null hypothesis, signalling that a fixed effects model should be applied*

A.2. Test for multicollinearity

	Institutions	**Natural resources**	**GDP**	**Trade**	**Inflation**	**Infrastructure**
VIF	1.62	1.47	1.77	1.21	1.04	1.98

Source*:* STATA test-statistics for multicollinearity
Note: VIF = Variance Inflation Factor. No variable presents a VIF higher than 5, meaning that there is no problem of multicollinearity in the model.

A.3. Tests for heteroskedasticity

Breusch-Pagan test	*P-value*
H_0: Constant variance	0.0060
White test	*P-value*
H_0: Homoskedasticity	0.0000

Source*:* STATA test-statistics for heteroskedasticity
Note: *The Breusch-Pagan test rejects the null hypothesis that the data is not subject to constant variance. The White test also rejects the null hypothesis of homoskedasticity, meaning the data is heteroskedastic.*

A.4. List of countries included in the study

Countries	**Income level**		**Countries**	**Income level**
Algeria	Middle-income		Mozambique	Low-income
Angola	Middle-income		Namibia	Middle-income
Benin	Middle-income		Niger	Low-income
Botswana	Middle-income		Nigeria	Middle-income
Cameroon	Middle-income		Rwanda	Low-income
Central African Republic (CAR)	Low-income		Senegal	Middle-income

Chad	Low-income		Sierra Leone	Low-income
Republic of the Congo	Middle-income		South Africa	Middle-income
Democratic Republic of Congo (DRC)	Low-income		Sudan	Low-income
Cote d'Ivoire	Middle-income		Tanzania	Middle-income
Djibouti	Middle-income		Togo	Low-income
Egypt	Middle-income		Uganda	Low-income
Equatorial Guinea	Middle-income		Zambia	Middle-income
Eritrea	Low-income		Zimbabwe	Middle-income
Ethiopia	Low-income			
Gabon	Middle-income			
Ghana	Middle-income			
Guinea Bissau	Low-income			
Guinea	Low-income			
Kenya	Middle-income			
Libya	Middle-income			
Liberia	Low-income			
Madgascar	Low-income			
Malawi	Low-income			
Mali	Low-income			
Mauretania	Middle-income			
Morocco	Middle-income			

***Source**:* World Bank. Low-income = GNI per capita <1,036$. Middle-income = 1035$ < GNI per capita < 12,535$