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Chinese outward foreign direct investment in Africa

Its determinants and the impact of the One Belt, One Road initiative

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In the past two decades, African countries have become the destination of increasing investments of Chinese multinational enterprises. This phenomenon is supposed to be strengthened under China's One Belt, One Road, a strategy announced in 2013 with the aim of stimulating commercial relations among Asia, Europe, and Africa. Research, however, has not kept up with these developments. This study attempts to fill such gap by empirically studying the factors that determine Chinese investment in African countries, and by investigating the impact of the One Belt, One Road on the amount of such investments. The hypotheses are tested by analysing 51 African countries through the use of panel data regression. The results obtained indicate that Chinese investors are attracted by host countries' natural resource endowment and market size, and are dissuaded by the presence of a high rate of inflation, while no evidence was found for political risk. Regarding the One Belt, One Road initiative, no effect was observed for Africa as a whole, but a regional analysis reveals its positive impact on investment inflows in the Northern and Eastern regions, which might be justified by the advantageous geographic position of these regions.

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Table of Contents

List of abbreviations.....	v
1 Introduction	1
1.1 Research Problem.....	2
1.2 Aim and Scope	4
1.3 Outline of the Thesis	5
2 Theory	6
2.1 Theories on direct investment	6
2.1.1 Extending the Eclectic paradigm.....	10
2.2 Chinese outward foreign direct investment.....	11
2.2.1 The Chinese context	11
2.2.2 Chinese investments in Africa.....	13
2.2.3 Natural resource-seeking.....	14
2.2.4 Market-seeking.....	15
2.2.5 Efficiency-seeking.....	16
2.2.6 Strategic asset-seeking	17
2.2.7 Risk factors.....	17
2.2.8 The One Belt, One Road initiative	19
3 Data.....	24
3.1 Data sources	24
3.1.1 Transformation of data	25
4 Methods.....	26
4.1 The Model	26
4.1.1 Dependent variable.....	26
4.1.2 Independent variables.....	27
4.1.3 Control variables	28
4.1.4 Econometric procedure	30
5 Empirical Analysis	31
5.1 Results	31
5.1.1 Regional analysis.....	34
5.1.2 Robustness checks.....	36
5.2 Discussion of results.....	38
6 Conclusion.....	40
6.1 Limitations of the study.....	41

6.2	Future research	42
References	43
Appendix A	47
Appendix B	48
Appendix C	49

List of Tables

Table 1: variables recapitulation	29
Table 2: regression output baseline model (all African countries)	31
Table 3: regression output regional analysis	34
Table 4: results of robustness checks	36
Table 5: Descriptive statistics	48

List of Figures

Figure 1: China's annual GDP growth (%) 1978-2017	3
Figure 2: One Belt, One Road initiative, geographic coverage	20

List of abbreviations

FDI = foreign direct investment

FOCAC = Forum on China-Africa Cooperation

GDP = gross domestic product

ILO = International Labour Organization

IMF = International Monetary Fund

MOFCOM = Ministry of Commerce of the People's Republic of China

NBS = National Bureau of Statistics of China

NDRC = National Development and Reform Commission

OBOR = One Belt, One Road

OECD = Organization for Economic Co-operation and Development

OFDI = outward foreign direct investment

OLS = ordinary least squares

SEZ = special economic zone

SOE = state-owned enterprise

UNCTAD = United Nation Conference on Trade and Development

WDI = World Development Indicators

WTO = World Trade Organization

1 Introduction

In 1978 China, then a centrally planned economy with limited contact with the rest of the world, undertook a reform process that would radically change its economic environment and its position on international markets. Official statistics provide a concrete understanding of the results of the transformation: over the course of forty years, China has gone from being the 11th largest economy in the world in terms of GDP, to become the second largest economy (World Bank, 2019). Reforms addressed all areas of the country's economy. Internally, changes mainly occurred in the sense of creating incentives to improve productivity, in both agriculture and industry. On the side of foreign economic policy, on the other hand, China started dismantling the restrictions on trade and investments that had previously maintained the country isolated from international markets. In this regard, a new strategy was adopted, the Open Door policy, aimed at integrating the country in the global economy. As an initial step, from 1980 onwards, China started welcoming foreign investors to establish their production facilities in a series of expressly set up Special Economic Zones (SEZs) located on the Southern coast (Chen et al., 1995). This represented a major turning point from the orientation that had prevailed during the Maoist era: after being rejected on nationalistic and ideological grounds for three decades, capital inflows from capitalist countries started being seen as an element of critical importance for China's own modernization, as foreign investors brought along advanced technologies, and for boosting exports (Chen et al., 1995). After an initial slow start in attracting foreign investment, from the mid-1980s China adopted a series of measures to improve the investment climate, specifically addressing the factors that discouraged investors: cumbersome bureaucratic procedures and uncertainty surrounding private property rights and contract enforcement (Chen et al., 1995). The gradual improvement of these aspects had the desired effect of creating greater confidence among foreign investors, allowing China to become an increasingly important destination of foreign direct investment (FDI), emerging as the second largest recipient in the world from 1993 onwards (Cheng and Kwan, 2000).

Before proceeding further, it is of the utmost importance to clarify what is meant by foreign direct investment, as it will be a central aspect in this study. The widely accepted OECD

definition describes foreign direct investment as “a category of cross-border investment made by a resident in one economy (the direct investor) with the objective of establishing a lasting interest in an enterprise (the direct investment enterprise) that is resident in an economy other than that of the direct investor. (...) The ‘lasting interest’ is evidenced when the direct investor owns at least 10% of the voting power of the direct investment enterprise” (OECD, 2008, p.17). The introduction of foreign direct investment provided the stimulus China needed to deepen its integration into the world economy. For starters, foreign investors, bringing their knowledge of global markets, contributed to expand China’s foreign trade; the expansion of foreign trade, in turn, exposed Chinese firms to global competition, resulting in increasing observance of the rules of a market economy, and spurring improvements in management and production to obtain better economic results and higher efficiency (Chen et al., 1995). In parallel to the increase of FDI inflows into China, another phenomenon was taking place, albeit attracting much less attention: Chinese outward foreign direct investment (OFDI). Although dating back to the beginning of the Open Door policy, Chinese direct investments abroad remained of modest amount and exclusive to a few selected state-owned enterprises until the end of the 1990s, when they started to be promoted through the Going Global policy (Buckley et al., 2008). By that point, after years of contact with foreign investors, Chinese firms had accumulated some experience that could help them undertake their internationalization process. China’s accession into WTO, in 2001, further stimulated its outward direct investment activity, which continued growing until its amount surpassed that of inward FDI in 2016, making China the second largest provider of outward direct investment in the world.

1.1 Research Problem

Although the importance of China’s outward direct investment activity has grown to become comparable to that of its inward FDI, the latter has been studied more often and more thoroughly. Empirical literature on Chinese outward FDI started with research on its locational determinants in general (Buckley et al., 2007; Cheung and Qian, 2009; Kolstad and Wiig, 2012), and later proceeded with studies focused on specific sets of countries, to provide more precise insights. Among these, there has emerged a series of studies (Sanfilippo, 2010; Cheung et al., 2012; Zhang et al., 2013; Ross, 2015) on the determinants of Chinese OFDI in African countries, going beyond the widespread speculations on the aims of Chinese investors

in Africa and trying to obtain a deeper understanding of the phenomenon. This stream of research is where this thesis will be located. The results of previous studies need to be updated, as the most recent study on the topic, Ross (2015), uses data only until 2012 (and only for eight African countries). Such temporal gap would be negligible in the study of other topics or other countries, but the developments experienced by China’s economy since then may have modified the dynamics of Chinese OFDI. After three decades of double-digit growth (see fig.1) – only briefly interrupted in correspondence of the Tiananmen events (1989-90), the Asian crisis (1998-99), and the global financial crisis (2008-09), and soon restored to former levels – from 2011 China has entered a phase of moderate growth (Kang et al, 2018).



Figure 1: China's annual GDP growth (%) 1978-2017 (Source: World Bank (2019), author's construction)

To deal with the “new normal” of slower growth, over the following years China directed increasing attention to strengthen its role of outward direct investor. In this framework can be collocated the adoption of a new strategy, which is seen as a sort of upgrade of China’s OFDI policy (Kang et al., 2018): the One Belt, One Road initiative (OBOR).

The One Belt, One Road initiative is a grandiose plan of commercial cooperation between China and the rest of Asia, Africa, and Europe, based on the revival of the old Silk Road trading routes. Since its inception, in 2013, the Chinese government has initiated a series of agreements with the countries situated along the OBOR, and Chinese firms have undertaken projects to bridge infrastructure gaps and improve international connections. As this is also the case for African countries, it becomes important to include the OBOR initiative in the analysis on Chinese direct investment in Africa, to understand its impact – if there is any – on the phenomenon. The incorporation of the OBOR in a study on the determinants of Chinese OFDI has been introduced in Kang et al. (2018), but the examination had involved all countries receiving Chinese OFDI inflows: this thesis will be the first study – to the best of the author’s knowledge – to focus the analysis on African countries. In specific, this thesis will try to answer the following questions:

1. What locational determinants influence Chinese outward direct investment in African countries?
2. What is the impact of the One Belt, One Road initiative on Chinese outward direct investment in African countries?

1.2 Aim and Scope

By addressing the research questions listed above, this study aims to examine the phenomenon of Chinese OFDI in African countries, widening the perspective of the existing literature by including the One Belt, One Road initiative. To do so, data on Chinese OFDI inflows into African countries will be collected, along with a series of variables indicating locational determinants of OFDI, and analysed through methods used in the literature. Since locational determinants of OFDI have already been studied in the past, their underlying theory will be highly based on existing literature, with particular reliance on Dunning’s paradigm of direct investment. As will be more thoroughly illustrated in the following chapter, Dunning individuates four motives of OFDI: resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking motives, whose importance will vary according to the characteristics and development stage of the countries considered (Dunning, 2008). Dunning’s paradigm is perhaps the most widely accepted explanation of direct investment, and is thus chosen as the

basis for the majority of studies on the topic; such is also the case in this thesis. The examination of the effects of the OBOR initiative on Chinese OFDI inflows into African countries, which has no direct examples in previous research, will be operated through the use of a temporal dummy variable, as further explained in the methods sections. The evidence obtained will hopefully shed light on the changing role of China as an international investor, and on its new foreign policy. As China integrates further into the global economy, it is crucial to gain better understanding on its behaviour and its policy choices, for a series of reasons. Firstly, knowing which factors guide Chinese OFDI could provide indications to countries wishing to attract Chinese investors. Secondly, an evaluation of the OBOR initiative could help the countries already, or potentially, involved to make more informed decisions about it. Finally, it could also help China identify possible areas of improvement in carrying out the initiative.

1.3 Outline of the Thesis

This thesis will proceed as follows. Chapter 2 will provide a theoretical background for the phenomenon of foreign direct investment and discuss the characteristics of Chinese outward direct investment. It will also briefly illustrate the relationship between China and African countries, with particular attention to OFDI, and introduce the One Belt, One Road initiative. These topics will then lead to the formulation of the hypotheses. Chapter 3 will cover the methodology followed to perform the empirical analysis, describing the data employed, the model, and the econometric approach. Chapter 4 will present the results obtained from the regression analysis and perform robustness checks, while Chapter 5 will discuss the results. Chapter 6 will conclude by providing a picture of the entire study, recognizing its limitations, and suggesting openings for further research.

2 Theory

2.1 Theories on direct investment

Up until World War II, international trade was the main component of international business, while foreign direct investment played but a negligible role (Hosseini, 2005). This unbalance was reflected in the academic attention the two activities received in those years: significant theoretical efforts were devoted to understanding the mechanisms behind international trade, virtually none to foreign direct investment. This scenario started to change after World War II, with the massive US-initiated FDI in Western Europe (Hosseini, 2005). As the phenomenon grew in entity and complexity, it gave rise both to questions and to the first attempts at explaining its dynamics. It soon became apparent that the theory of comparative advantage, used to explain trade among nations, was not able to capture foreign direct investment, and this marked the beginning of the search for a more suitable theory (Hosseini, 2005). This section will provide a brief review of the literature, focusing on the most influential theories.

As Dunning (2008) points out, the issue of foreign direct investment can be examined from several different perspectives, depending on the question one wishes to address: “is it primarily ‘Why do firms own foreign production facilities?’; or ‘Why do firms locate their activities in one country rather than another?’; (...) or ‘Why does the participation of foreign, relative to indigenous, firms differ between countries and sectors?’” (Dunning, 2008, p.80). Such variety of questions explains the multiple lines of research pursued in the subsequent years, as scholars differed both in the questions they tried to answer, and in the unit of analysis (Dunning, 2008). In this respect, Dunning identifies three main strands of literature. A first group of researchers approached the phenomenon from a macroeconomic point of view, mainly trying to individuate location-specific variables that attract FDI and to understand why firms from different nationalities varied in their propensity to engage in different types of FDI (Dunning, 2008). Examples of this orientation are Kojima (1973) and Markusen (1984), the latter also taking into account firm-specific characteristics to explain their dissimilar FDI strategies (Dunning, 2008).

Leading the discussion away from economics and more in the direction of the theory of industrial organization, is a second series of scholars. Starting with the seminal contribution of Hymer (1960), these scholars tried to investigate “why firms of one nationality are better able to penetrate foreign markets than indigenous firms located in those markets”, even though they would intuitively appear to be disadvantaged due to the costs of doing business abroad (Dunning, 2008, p.81). To counterbalance such costs, multinational enterprises must possess other elements, such as “superior technology, better products, or firm-level economies of scale”, that make investing in another country profitable (Hosseini, 2005, p.532).

Finally, a third stream of research, including Buckley and Casson (1976, 1985, 1998, 2002), and Rugman (1982, 1986, 1996), among others, adopted an approach related to the theory of firms (Dunning, 2008). In their analysis, the focus lies more on the organization of multinational enterprises, the firms that engage in FDI, and the main driver of the latter is the decision to internalize certain steps of cross-national production. The necessity of internalization derives from the observation of imperfections, e.g. information asymmetries about the quality of such products or tariffs and other government interventions, in the market for raw materials and intermediate products (Buckley, 2011). If multinational enterprises find such imperfections to hinder the supply of the inputs they need – for example by rising transaction costs – they have “an incentive to bypass them and bring the activities under common ownership” (Buckley, 2011, p.461).

That of internalization represented a first attempt to reach a more holistic theory of FDI, but it was Dunning’s Eclectic paradigm (or OLI paradigm) that provided a general explanation of the phenomenon, somewhat merging the theories above (Hosseini, 2005). As Dunning (2008) notes, foreign direct investment can include a wide range of different motives and activities, depending on the characteristics of the firms and countries involved, and is therefore hard to summarize in an all-encompassing theory and more likely to lead to a series of competing theories. In such a scenario, the use of a paradigm appears to be better suited, as it “seeks to present a general framework for analysing the relationship between phenomena from which it is possible to formulate a variety of competing or non-competing theories. Perceived in this way, a theory is a derivative of a paradigm, but one paradigm may be able to accommodate several theories” (Dunning, 2008, p.78). According to this paradigm, foreign direct investment occurs when three conditions are satisfied:

- 1) The firm should possess “unique and sustainable ownership-specific (O) advantages vis-à-vis firms of other nationalities” (Dunning, 2008, p.99) that can increase the firm’s ability to generate wealth. These can include intangible assets such as innovatory capacity, organisational and marketing systems, accumulated experience in finance, etc., or advantages related to common governance, e.g. interfirm cooperation and geographic differences among the firm’s branches, with consequent possibility to exploit differences in factor endowments and government regulation (Dunning, 2008).
- 2) Besides ownership-specific factors, it is also crucial to consider location-specific (L) factors, among which are host country’s natural resources endowment, market characteristics, institutions, and trade regulations: depending on these elements, a country will be more or less able to attract FDI.
- 3) Finally, Dunning highlights the importance of the above-mentioned internalization advantages: if the first two conditions are satisfied, the firm faces the choice of using its ownership advantages, and thus engage in FDI, or to sell them (or their right of use) to external firms (Dunning, 2008). More specifically, a firm is likely to opt for internal use of its ownership advantages in the presence of strong internalization advantages (I), such as the possibility of avoiding buyer uncertainty about the quality of inputs and of controlling their supply, due to the linkages with its subsidiaries (Dunning, 2008).

In Dunning’s view, this triad of determinants of foreign direct investment (called OLI by their initials) can be compared to a three-legged stool: “each leg is supportive of the other, and the stool is only functional if the three legs are evenly balanced” (Dunning, 1998, p.45). Despite the equal weight given by Dunning to the three conditions listed above, there is a fundamental difference among them: ownership-specific and internalization advantages refer to the firm, while location-specific factors are related to host country characteristics, and could possibly help explaining why countries differ in their amount of FDI inflows (UNCTAD, 1998). These factors are also the only ones under direct influence of host governments (at least partly), so understanding what attracts FDI can lead the formulation of policies to encourage it (UNCTAD, 1998). In line with this analysis, Dunning proceeded to classify location-specific determinants depending on the type of FDI:

- A) Resource-seeking FDI: as the name suggests, foreign investments of this kind are directed at acquiring abroad “resources of a higher quality at a lower real cost” than those available in the firm’s home country, increasing the profitability and

competitiveness of the investing firm (Dunning, 2008, p.68). Firms can seek different kinds of resources. Firms from both developed and developing countries might need physical resources, including “mineral fuels, industrial minerals, metals and agricultural products” (Dunning, 2008, p.68). In recent years, moreover, another kind of resource-seeking investment has gained particular importance: that of developing countries in more advanced ones to obtain intangible assets, such as “technological capability, management or marketing expertise and organisational skills”, to facilitate their industrial catch-up (Dunning, 2008, p.69).

B) Market-seeking FDI: this type of FDI is aimed at establishing production in a country to supply its markets (or those of adjacent countries) with goods or services, and arises in two cases: it can originate from a firm’s desire to exploit new markets, or involve markets which have been previously serviced by the investing firm’s exports (Dunning, 2008). In the latter situation, the transition from exporting to producing in loco might become necessary to counter the imposition of tariffs and other barriers that would excessively rise entry costs in the market (Dunning, 2008). Besides the attractiveness of market size, there are several other motivations for market-seeking FDI. In order to retain its business, for example, a firm might have to follow its main suppliers or customers if they establish foreign-producing facilities, or it might need to be physically present in a market where its competitors operate, for defensive or aggressive reasons (Dunning, 2008). Another frequent scenario is that of a firm having to adapt its products to local tastes and needs, and its presence in the country would help becoming familiar with them and not be disadvantaged in comparison to local firms (Dunning, 2008). In other cases, FDI in a specific country might be expressly encouraged by the host government, with incentives ranging from tax concessions to subsidized costs of labour and capital (Dunning, 2008). Lastly, the nature itself of the goods might make production in a country more convenient than importing from abroad, especially in case of goods with high transport costs.

C) Efficiency-seeking FDI: investments of this kind are undertaken “to rationalise the structure of established resource-based or market-seeking investments in such a way that the investing company can gain from the common governance of geographically dispersed activities” (Dunning, 2008, p.72), and are therefore typical of more experienced firms, with numerous foreign investments. Efficiency is pursued through two main strategies in the placement of production facilities: on the one hand, firms try to locate their various branches according to the disparities in the availability and

cost of factors in different countries, concentrating labour- and natural resource-intensive activities in developing countries, and capital-, technology- and information-intensive ones in more developed countries (Dunning, 2008). On the other hand, firms also attempt to supply multiple markets while concentrating production in a limited number of locations (Dunning, 2008).

D) Strategic asset-seeking FDI: although some authors see it as a subtype of efficiency-seeking FDI, Dunning indicates as a fourth kind of FDI the foreign investments directed at maintaining the firm's global competitiveness and pursuing its long-term strategic goals (Dunning, 2008), usually through the acquisition of assets of foreign companies. Despite the fact that the rationale is analogous to that of efficiency-seeking FDI, as it is based on the advantages of the "common ownership of diversified activities and capabilities, or of similar activities and capabilities in diverse economic (...) environments" (Dunning, 2008, p.73), the aim of the investing firm is more that of augmenting its global portfolio of assets and competences to increase its ownership-specific advantages vis-à-vis its competitors.

2.1.1 Extending the Eclectic paradigm

As discussed above, Dunning was well aware of the complexity of FDI, and this consciousness is demonstrated by his express choice of formulating a paradigm, instead of a theory (a paradigm being able to include several competing theories, as previously explained). Among other things, the nature and characteristics of FDI will vary depending on the development stage of country of origin and country of destination, the risk-taking attitude of the investing firm, and on eventual strategic objectives of the governments involved (Dunning, 2008). The paradigm provides an overarching explanation, and can nest several subordinate theories formulated to explain more specific cases of FDI. In this respect, in the past couple of decades, there has been a growing recognition of the need to formulate a theory of FDI to describe the experience of developing countries. As Buckley (2007; 2008) and Kolstad and Wiig (2012) observe, in fact, Dunning's paradigm was built with the aim of explaining the experience of industrialized countries investing abroad, and therefore might not be readily applicable to emerging countries. The following chapters will illustrate if this is true for the case of China. In order to assess whether (and how) the general paradigm needs to be adapted, it is crucial to briefly examine the context and the situation regarding Chinese outward FDI.

2.2 Chinese outward foreign direct investment

2.2.1 The Chinese context

China's current position in the global economy is the result of a process started in 1978, when the country opened up again after three decades of self-imposed isolation, adopting the so-called Open Door policy (Chen et al., 1995). The latter was part of a series of reforms that transformed China's economy and society from the Maoist system of central planning to a socialist market economy. Reforms, over the following years, did not proceed according to a predefined blueprint, but rather in a piecemeal and often experimental way (Lin et al., 1996). Particularly cautious were those related to the integration of China into the world economy: outward direct investment was permitted, but regarded with diffidence, as it was feared that it might substitute domestic investment (Sauvant, 2005; Buckley, 2008) or that the control of properties held overseas might be lost, for either the relative inexperience of Chinese firms or excessive monitoring costs (Zhan, 1995; Ding, 2000; Buckley, 2008). To prevent such problems, the government held tight control of OFDI, relegating it to a limited number of state-owned enterprises (SOEs), such as the China International Trust and Investment Corporation, which were allowed to operate abroad as "experimental" multinational enterprises (Buckley, 2008, p.721). The amount invested provides a rather clear indication of the marginality of the phenomenon at the time: from 1979 to 1985, in fact, only US\$197 million were invested, for a total of 189 approved projects (Buckley, 2008). In 2017 alone, the yearly OFDI flows amounted to US\$158,288.30 million (MOFCOM, 2018).

From the second half of the 1980s onwards, however, the advantages of OFDI were gradually recognized, and it started to be used more and more extensively, always under the authority of the state. The subsequent developments confirmed its increasing importance. In 1999, the introduction of the Going Global policy officially encouraged OFDI, viewing it as a way to improve the competitiveness of domestic firms on international markets, and thus strengthen the Chinese economy itself (Buckley, 2008). The commitments related to China's WTO accession (2001) further boosted OFDI, contributing to simplify approval procedures and slightly relax state control. The latter persists even today, but OFDI is no longer a prerogative of state-owned enterprises, as private firms were officially authorized to invest abroad in 2003 (Buckley, 2008).

As Chinese OFDI grew in importance, it started attracting scholarly attention. From the beginning, it was evident that China's case presented peculiarities that might lead Chinese investors to respond to host country factors differently than other investors (Kolstad and Wiig, 2012), potentially requiring an adjustment of the traditional view of FDI. Such peculiarities mainly revolve around the importance (prior to 2003, exclusivity) of SOEs in outward investment activities. A first point concerns the aims of OFDI: while, in fact, private firms can be supposed – perhaps in a simplistic view – to engage in OFDI mainly with the aim of profit-maximization, SOEs tend to primarily pursue political objectives, besides profit-maximization (Kolstad and Wiig, 2012). The pursuit of such objectives, which range from supporting the Chinese foreign policy to ensuring regime survival (Morck et al., 2008; Buckley, 2008), means that decisions regarding foreign investments are likely to prioritize what is politically convenient, which does not necessarily coincide with what is convenient in an economic sense. This manner of operating would jeopardize the survival of investing firms, if state ownership did not translate into soft budget constraints. In addition to the latter, we also have to consider that the involvement of the state in OFDI tends to bring decisions on a diplomatic level, between China and host countries, and such government-to-government relationship is supposed to alleviate some of the uncertainties of investing abroad, e.g. nationalization or contracts failures, especially in riskier countries (Ramasamy, 2012). The combination of these factors leads to a perverse attitude towards risk, inducing Chinese firms to invest in countries usually avoided by Western investors for their weak institutions and lack of rule of law (Buckley, 2007; Kolstad and Wiig, 2012; Chen et al., 2018; Ramasamy, 2012).

Investing in such countries is not exclusive to SOEs, but also common practice for private firms. This brings us to a final point worth mentioning about China's peculiarities: Chinese private firms are used to operating with “corrupt or otherwise dysfunctional institutions”, and thus “far more capable of dealing with burdensome regulations and navigating around the opaque political constraints” than their Western counterparts (Morck et al., 2008, pp.345-346). This familiarity – defined by Buckley (2008, p.719) as “home country embeddedness” – therefore creates competitive advantage in dealing with host countries with weak institutions (Kolstad and Wiig, 2012), an aspect that should be taken into account when studying Chinese OFDI. Among China's investments in somewhat risky environments, its OFDI activity in African countries is perhaps the most debated, and will be more thoroughly addressed in the following section.

2.2.2 Chinese investments in Africa

Over the last fifteen years, the stock of Chinese OFDI in the African continent has increased dramatically, starting from a value of USD 491 million in 2003, to an amount of USD 43,296.50 million in 2017. Such astonishing growth has fuelled significant discussion, in both mass media and scientific articles, from which emerges a rather polarized view of the matter. On the one hand, Chinese OFDI in Africa is often pictured as “neo-imperialism” and “authoritarian capitalism”, based on the exploitation of natural resources while covertly undermining democracy (Bräutigam et al., 2017, p.2). On the other hand, some credit China with helping boost Africa’s growth, through its positive impact on the prices of natural resources and improvement of infrastructure (Bräutigam et al., 2017; He and Zhu, 2018). Trying to settle this debate lies out of the scope of this thesis, but the issue should be better contextualized to avoid leaving the reader with an inaccurate impression.

The upsurge of attention that the relation between China and Africa is attracting should not deceive us into thinking it is a new phenomenon: after centuries of trade-based contact, mainly through the intermediation of Arab and Persian merchants, the “modern era” of Sino-African relations began after World War II and the Korean War (1950, 1953), and at the dawn of the independence movement in Africa (Alden and Alves, 2008). In 1955, Zhou Enlai, Foreign Affairs minister of the new-born People’s Republic of China, met several African leaders in the Bandung conference, and the following year marked the start of diplomatic relations between China and Egypt, first African country to establish ties with China (Alden and Alves, 2008). By the end of the 1970s, China had been recognized by other 40 African nations, the result of an increasingly strong relationship, labelled as South-South cooperation (Cissé, 2012).

Over the course of the four decades following the Bandung conference, such cooperation proceeded through different kinds of official ties, from cultural pacts to favour exchange of students, to economic aid and the provision of know-how (Alden and Alves, 2008). This relationship started to evolve from the mid-1990s, when the first Chinese enterprises (exclusively SOEs at the time) started entering Africa as investors, pushed by the increase in the amount of trade with the continent and by the escalating need of resources to support China’s industrial growth (Kaplinsky and Morris, 2009). After a somewhat slow start, from the early 2000s Chinese investments in Africa started increasing, boosted by the combination of the above-mentioned Going Global policy, the establishment of the FOCAC (Forum on

China-Africa Cooperation) in 2000, and the legal permission for private enterprises to engage in OFDI, in 2003. After more than two decades from the start, Chinese OFDI in Africa has undoubtedly grown but – and this is the other point where we should not be deceived by the mediatic resonance of the phenomenon – the amount of OFDI remains relatively small. A look at the data, in fact, reveals that the stock of China's OFDI in Africa as of 2017 represents a mere 2.4% of the global stock of Chinese OFDI, and the 2017 flows to the continent are only 2.6% of total flows of Chinese OFDI for that year (MOFCOM, 2018). Perhaps more importantly, figures also show that Chinese investments constitute 9.8% of the global FDI inflows in Africa (UNCTAD, 2018; MOFCOM, 2018), not a share of gargantuan proportions, despite the alarmism in the media. With the increase in the size of OFDI, moreover, also came the diversification of investments away from the initial focus on resource extraction, as demonstrated by the general decrease in the OFDI flows towards the top five recipients (Congo (DRC), Nigeria, South Africa, Sudan and Zambia), all resource-rich countries (Bräutigam et al., 2017). In parallel to this downward trend, Chinese OFDI increased in manufacturing and commercial services, especially in countries less endowed with natural resources (Bräutigam et al., 2017; He and Zhu, 2018). Literature on the determinants of Chinese OFDI in Africa confirms the multifaceted nature of China's activities in the continent, and this is what the present study will attempt to do as well. More specifically, the following subsections will review the various motives of OFDI in the Sino-African scenario, leading to the formulation of hypotheses.

2.2.3 Natural resource-seeking

It has been mentioned above that the search of natural resources to fuel China's growth represented the first driver of Chinese OFDI in African countries, and it is also the one that has received the biggest mediatic coverage. Undeniably, the four decades of China's economic development have prompted an increasing demand of natural resources, still ongoing today. The object of such demand has primarily been oil, since China became a net importer in 1993, but other sectors of the extractive industry acquired importance over the years (He and Zhu, 2018; Alden and Alves, 2009). In this respect, Africa's abundant endowment of natural resources – such as hydrocarbons, minerals and timber – represents a clear attraction for Chinese enterprises for the years to come, as China's need for energy and raw materials does not appear to be declining (Alden and Alves, 2009; Ross, 2015). Regarding existing literature on the subject, natural resources are included in most studies on

Chinese OFDI in Africa, but do not find universal supporting evidence. Sanfilippo (2010) finds a positive impact of natural resources on Chinese OFDI flows in one of the first empirical studies on the topic, based on 41 African countries for the period 1998-2007. Such finding is also corroborated by Ross (2015) for the period 2003-2012, although the limited number of countries included in the study (8 countries) gives an incomplete picture of the phenomenon. Cheung et al. (2012), in an analysis spanning the period 1991-2007, find that natural resources have a positive effect on OFDI only from 2003 on, presumably as a result of the Going Global policy. On the other hand, Zhang et al. (2013), using the number of newly established overseas companies in Africa as a proxy of OFDI, find that natural resources are not a statistically significant determinant neither of the number of SOEs established, nor of that of private enterprises. Despite the latter example, it still seems reasonable to assume a positive influence of natural resources on Chinese OFDI, both because it finds support in most studies, and because China's industrial growth is still ongoing. This leads us to assume the following:

H1: Chinese OFDI flows in African countries are positively correlated with host country's endowment of natural resources

2.2.4 Market-seeking

In Dunning's view, as previously explained, market-seeking FDI is undertaken "to sustain or protect existing markets, or to exploit or promote new markets" (Dunning, 2008, p.70). Arguably, both these aims are present in the specific case of China's OFDI in Africa: on the one hand, trade between China and the continent is well-established and has exhibited an upward trend over the past decades, increasing the convenience for Chinese firms involved to produce in loco, avoiding transport costs and import tariffs; on the other, emerging African countries also represent attractive markets for Chinese firms without past experiences in trading with the continent. This is increasingly important with the ever-growing competition Chinese firms face on the domestic market, which forces them to seek new markets abroad (Zhang et al., 2013). Among the studies reviewed in the case of natural resources, the market-seeking motivation finds support in Zhang et al. (2013), where market size appears to be a significant positive driver of the establishment of both SOEs and private firms, and the only significant variable in the case of the latter. Further evidence on the positive influence of market-seeking aims on the amount of OFDI is provided by Sanfilippo (2010) and Cheung et

al. (2012), while Ross (2015) represents the exception, having found no statistical support. It must be noted, however, that such conclusion might be due to the fact that the study only considers 8 countries. The prevailing results of previous research lead to the formulation of our second hypothesis:

H2: Chinese OFDI flows in African countries are positively correlated with host country's market size.

2.2.5 Efficiency-seeking

Unlike the previous two motives, efficiency-seeking is often overlooked in the studies on Chinese OFDI in Africa (and Chinese OFDI in general), on the ground that labour costs are already low in China, so firms are not incentivized to search for lower cost locations for their production (Buckley, 2007; Ross, 2015). The issue, unfortunately, is not so easy to settle: although labour costs have historically been low in China, if compared to other countries, since the mid-2000s the country is experiencing a labour shortage, as rural migrant workers – who previously seemed to represent an unlimited supply of labour – became less and less willing to work in urban areas, due to the discriminatory measures and low wages they met (Meng, 2017; Cui et al., 2018). As a consequence of this phenomenon, real wages started increasing, making China less competitive vis-à-vis other countries in terms of labour costs (Cui et al., 2018). It is therefore possible that, in recent years, Chinese firms might have relocated some operations in Africa for motivations of cost reduction. The possibility to investigate the matter, however, is hindered by the lack of wage level data for African countries, not covered in the International Labour Organization (ILO) statistics and in other databases, to the best of the author's knowledge. Other studies on Chinese OFDI in Africa do not face this issue simply because they dismissed the possibility of this type of motive, and other analyses on Chinese OFDI in more developed countries can count on a higher number of statistical sources, such as the above-mentioned ILO or OECD data. The efficiency-seeking motive will thus be omitted from this analysis, as in previous studies. It must be noted, however, that the reasons behind such omission are very different from those of previous authors, who dismiss the efficiency-seeking motivation of Chinese investors with the justification that labour costs are already low in China. With the recent increase in labour costs, it is no longer possible to be satisfied with such conclusion, and it would be useful to

include labour costs among the determinants of Chinese OFDI. Their omission from this study is therefore purely motivated by the lack of available data.

2.2.6 Strategic asset-seeking

Since the beginning of its industrial development, the Chinese government has actively encouraged enterprises to invest abroad to obtain advanced proprietary technology, know-how, brands, and other strategic assets (Buckley, 2007). This type of OFDI motivation, however, occurs in developed and industrialized economies, leading us to suspect that it might not have a heavy presence in attracting Chinese investments in Africa. This assumption is shared by the authors of previous studies, who mostly choose to leave it out of the analysis altogether. Ross (2015) is the exception, as he includes strategic asset seeking, but supposing a lack of association with OFDI flows – hypothesis that would be confirmed by the results, which report a lack of significance. In our study, the inclusion of strategic asset seeking OFDI finds a crucial limit in the availability of data: the observation of all the indicators used in previous literature to examine this type of OFDI – namely *high-technology exports as % of manufactured exports*, used by Ross (2015), and *annual patent registrations in host country*, used by Buckley (2007) – reveals a lack of data for many African countries (in the case of several countries, the entire time series is missing). In the presence of so many missing values, using such indicators to proxy strategic assets would mean excluding from the analysis an excessive number of observations (and dropping the countries with no data), which seems a rather extreme price to pay for the sake of including a motive of OFDI that is widely regarded as not relevant in the case of African countries. Consequently, we find it more reasonable to omit this motive of OFDI from the present analysis.

2.2.7 Risk factors

Besides the “traditional” determinants of OFDI descending from Dunning’s paradigm, literature on Chinese OFDI has repeatedly revealed the importance of considering risk factors in the study of the phenomenon. As mentioned in the introduction to the peculiarities of Chinese OFDI, Chinese firms tend to exhibit a distorted attitude towards risk, investing generously in countries deemed too dangerous and/or unstable by investors from more advanced economies (Buckley, 2007; Cheung et al., 2012). This behaviour, seemingly contradicting common sense, has several explanations. First of all, as stressed by Buckley

(2006), a country might prospect returns on market- and resources-related investments so high as to compensate the risk factors involved. Moreover, less risky countries probably have already attracted foreign investors from more advanced countries, in which case Chinese firms – being latecomers – might choose underinvested (i.e. less stable) countries to avoid competition (He and Zhu, 2018). Being a pioneer in investing in a specific host country, on the other hand, also offers benefits linked to the consolidation of a firm's position in an economy before the entry of other investors, and a stronger bargaining power vis-à-vis the host government (He and Zhu, 2018). Finally, it must be remembered that risk indicators are calculated by the point of view of developed economies' investors, and might not correspond to the risk perception of firms from an emerging country like China (He and Zhu, 2018).

Since African countries are generally regarded as politically and/or economically unstable, risk factors are universally included in the related studies. Regarding economic risk, Sanfilippo (2010) reaches contrasting findings when considering the relationship between OFDI flows and the risk factors considered, inflation and external debt. While higher inflation is positively related to Chinese OFDI inflows, a large external debt has a negative impact on the level of OFDI (Sanfilippo, 2010). Cheung et al. (2012) finds their index of economic risk – reflecting socioeconomic and investment risk – to be positively associated with Chinese OFDI. On the other hand, Ross (2015) does not find statistical support for the relationship between economic stability and OFDI flows in his analysis of 8 African countries, but this result might depend on the specific countries considered. Following the considerations made above and the results of previous research – leaving aside the results of Ross (2015), which might not be very representative of all African countries, we hypothesize:

H3a: Chinese OFDI flows in African countries are positively associated with rising levels of economic risk

When it comes to political risk, previous studies differ in the aspects considered. Cheung et al. (2012), using five different indices – political system risk, conflict risk, social tension risk, corruption risk, law and order risk – finds corruption risk to be positively related with OFDI flows (higher levels of corruption risk corresponding to higher OFDI), while other indices are not statistically significant. Zhang et al. (2013) observe a significant positive effect of political risk on the number of SOEs established, while the effect is positive but not significant in the case of private enterprises. Particularly interesting results are those obtained by Chen et al. (2018), who consider two dimensions of political risk, rule of law and political

stability. Although both referring to political risk, the two aspects seem to have an opposite effect on OFDI flows: countries with a low level of rule of law were found to attract OFDI, while politically unstable countries appeared to discourage it. As the authors observe, this phenomenon could descend from the high component of state intervention in Chinese OFDI: as deals often have a state-to-state nature, a stable political scenario guarantees that such deals will be upheld, as it does not suggest the risk of sudden changes of the political actors or in the country's attitude towards China. As Chinese firms are used to operating in an environment with a rather low level of rule of law, the latter does not inhibit Chinese OFDI. Moreover, the state-to-state relationship underlying OFDI can guarantee a certain degree of protection that lies at the political level, beyond rule of law (Chen et al., 2018). This interpretation seems particularly suitable, considering the characteristics of Chinese OFDI described in section 2.2.1. For this reason, both rule of law and political stability will be included in this study, in the following hypotheses:

H3b: Chinese OFDI flows in African countries are negatively associated with host country's level of rule of law.

H3c: Chinese OFDI flows in African countries are positively associated with host country's level of political stability.

2.2.8 The One Belt, One Road initiative

To complete an up-to-date picture of Chinese outward investments, it is essential to include the latest development of their underlying strategy: the One Belt, One Road initiative (henceforth OBOR). The initiative, in continuity with the previous steps of China's opening-up policy (especially the Going Global policy), represents the attempt to revive the "routes of trade and cultural exchanges that linked the major civilizations of Asia, Europe and Africa, collectively called the Silk Road" (NDRC, 2015). The connection of such territories will be achieved through the development of two infrastructure projects (see Figure 2), the Silk Road Economic Belt and the 21st-Century Maritime Silk Road. The Silk Road Economic Belt will link China and Europe passing through Central Asia and Russia. The 21st-Century Maritime Silk Road will connect, on one side, China and Europe by crossing the Indian Ocean and the Red Sea, and, on the other side, China and South East Asia through the South China Sea (Du and Zhang, 2018).



Figure 2: One Belt, One Road initiative, geographic coverage (Source: Herbert Smith Freehills, 2018)

The inception of the initiative dates back to 2013, when Chinese President Xi Jinping unveiled the vision of the Silk Road Economic Belt at Nazarbayev University, during his state visit to Kazakhstan in September, and that of the Maritime Silk Road before the Indonesian Parliament, in October (Du and Zhang, 2018). These announcements were then followed by an official document issued by the National Development and Reform Commission, the Ministry of Foreign Affairs, and Ministry of Commerce, the “Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road”, to confirm the commitment taken and describe the principles of the initiative (NDRC, 2015). As illustrated in this document, the OBOR is China’s answer to the aftermath of the international financial crisis, characterized by a slow recovery of the global economy and persisting uneven development (NDRC, 2015). To address these issues, China proposes a “massive infrastructure-led economic integration plan” (Du and Zhang, 2018, p.191), consisting of a general improvement of international transport routes, on land and at sea, in order to increase connectivity among countries (NDRC, 2015). The latter are then invited to coordinate their economic policies and carry out a higher level of regional economic cooperation, beneficial for all the parties involved, with the aim of establishing a global free trade regime based on

“orderly and free flow of economic factors, highly efficient allocation of resources, and deep integration of markets” (NDRC, 2015). In this respect, China commits to continue its opening-up policy and to deepen its integration into the world economic system (NDRC, 2015), and has proceeded to set up several funds to specifically support the initiative, such as the Silk Road Fund and the Asia Infrastructure Investment Bank (Du and Zhang, 2018).

Since the OBOR’s inception, there have been scholars and politicians who have expressed a certain degree of diffidence towards it, suspecting that the Chinese government might have interests behind the initiative, such as extending its political ideology. While this particular concern appears to be groundless, as the above-mentioned “Vision” stresses the “mutual non-interference in each other’s internal affairs” (NDRC, 2015), it would be naïve to assume that China might invest in a project of this size without reaping some benefits. The infrastructure gap exhibited by many regions of the OBOR damages Chinese firms in the first place, as it increases the costs of transporting their products (when it does not impede it altogether). We should not be surprised if the Chinese government formulates a strategy to tackle this issue and enable China to profit more from international trade (Ehizuelen and Abdi, 2018). Instead of speculating over China’s strategic motives, we can ask a different question: do other countries – African countries, in the specific case of this study – benefit from the initiative?

This question is even more justified in light of existing disagreements regarding the impact of the initiative on Africa, even though the debate is still limited, due to an equally limited literature on the topic. Chen (2016, p. 179) affirms that “Africa is not a major region along the Belt and Road, and therefore it is difficult for African States to fully benefit from the Belt and Road initiative” and calls for a deeper inclusion of the continent in the strategy. The need to increase the role of Africa within the initiative is also expressed by Ehizuelen and Abdi (2018), but the latter recognize that China has already taken important steps in upgrading Africa’s infrastructure through projects built and funded by Chinese companies with the support of the Chinese government. In January 2017, for example, a US\$4 billion railway project, connecting Ethiopia’s capital, Addis Ababa, to the port of Doraleh in Djibouti, was completed, giving landlocked Ethiopia a direct access to the sea and improving its trade flow (Ehizuelen and Abdi, 2018). In May of the same year, another railway project has been inaugurated, linking Mombasa to Nairobi, and there are plans to connect Mombasa to Uganda, Rwanda, and South Sudan (Ehizuelen and Abdi, 2018). In Djibouti, which has been hosting since 2016 the first Chinese naval base in the continent, China plans to establish a

deep-water port, with the aim of connecting the country to planned and completed ports in the rest of Africa and in the Indian Ocean (Nantulya, 2019). African countries would certainly gain from further integration, but the examples above demonstrate that a number of projects is already in place.

Given these initial developments, it is still an open question whether the initiative is already yielding benefits to African countries. Kang et al. (2018) and Du and Zhang (2018), comparing OBOR countries and non-OBOR countries from different continents (in Kang's case, all the recipients of Chinese OFDI), have found a positive impact of the OBOR on Chinese OFDI in the countries involved in the initiative, but the matter is still to be explored in the case of African countries. As Chinese SOEs are the primary force behind the construction of infrastructure, China's investments in the infrastructure sector of the continent would be expected to grow (Du and Zhang, 2018). As Du and Zhang (2018) further note, improvements in the quality of infrastructure can generate investment opportunities, and therefore stimulate further OFDI from both state-owned and private firms, from China and other countries. In the initial period, however, Chinese companies are likely to respond more actively than their counterparts from other countries, encouraged by the Chinese government's commitment to the initiative and by the facilitations it offers to boost OFDI, ranging from technical assistance to fiscal incentives (Du and Zhang, 2018). These considerations lead us to the formulation of the following hypothesis:

H4: the OBOR initiative has a positive impact on Chinese OFDI inflows in African countries.

Besides affecting the amount of OFDI, the OBOR might also have a different influence on the various determinants of OFDI described in Dunning's paradigm. More specifically, an upgraded infrastructure system is likely to strengthen natural resource seeking OFDI, by providing the means to more easily transport the people and equipment necessary to extract said resources, and to transport the resources themselves, once extracted. These considerations lead Kang et al. (2018) to suppose that the OBOR might boost natural resource seeking OFDI, but their results do not exhibit statistical significance. While the effect might not have appeared in their case, which did not specifically regard African countries, it might surface in a study focused on African countries, which have historically attracted investors due to their natural resource endowment:

H5: the OBOR initiative strengthens the resource-seeking motivation of Chinese OFDI in African countries.

When it comes to market-seeking OFDI, it has been previously explained that investors aim to either expand into new markets, or consolidate their presence into the ones where they are already operating (Dunning, 2008). The OBOR might be helpful in both circumstances: an improvement of infrastructure, in fact, can lead to a more thorough penetration in inland areas of the continent, thus favouring connection with new markets, while, at the same time, facilitating trade on “old” ones. Kang et al. (2018), in their comparison among OBOR and non-OBOR countries, find that the OBOR boosts market seeking motives in OBOR countries, leading us to suppose:

H6: the OBOR initiative strengthens the market-seeking motivation of Chinese OFDI in African countries.

3 Data

3.1 Data sources

The data used in this study were obtained from several sources. Data on OFDI flows and Chinese exports were retrieved from Chinese official statistics, while the rest of indicators comes from statistics compiled by other institutions. More specifically, data on OFDI flows were acquired from two editions of the *Statistical Bulletin of China's Outward Direct Investment*, the 2009 edition, covering the years 2003-2009, and the 2018 edition for the years 2010-2017. The choice of time period was guided by the consideration that data on Chinese OFDI has been published in a format consistent with IMF and OECD standards only since 2003 (Cheung and Qian, 2009; Kolstad and Wiig, 2012), and previous data might present problems of comparability. Data on Chinese exports to African countries, on the other hand, were obtained from the online database of the Chinese National Bureau of Statistics, while the rest of data was obtained from the IMF (for the case of inflation), and the World Bank Indicators. When it comes to the number of units included in the analysis, data on Chinese OFDI flows are available for 52 African countries, but the number drops to 51 due to the unavailability of some indicators for South Sudan (for a list of the countries, see Appendix A).

When deciding to use Chinese statistics, it is essential to be aware of their limitations. Over the period of China's economic development, the statistical system underwent reforms to adapt reporting methods to the changing economic environment. In parallel, efforts were made to bring statistical data closer to international standards, as demonstrated by the adoption of the International System of National Accounting in 1995 (Koch-Weser, 2013). Despite these efforts, however, the quality of Chinese statistical production is still widely questioned, the main accuse being that data are manipulated according to political considerations in order to overstate performance and maintain consensus (Holz, 2004; Koch-Weser, 2013). In addition to this, there might be issues related to, inter alia, the comparability of data across provinces, as provincial-level statistical offices might use different methods, and to the imprecise definition of variables (Holz, 2004). Besides these issues, data from

Chinese sources are not immune from the problems that affect statistical production in general, such as measurement errors (random or systematic) or sampling errors (Holz, 2004). Nevertheless, for the purpose of studying Chinese outward investments and exports, Chinese statistics provide the most exhaustive data available, and are used in all previous studies.

Notwithstanding the efforts in harmonizing data from statistical agencies of different countries, data from the IMF and the World Bank might still suffer from problems of comparability, as countries may differ in their statistical methods, in the definition of variables, and in temporal coverage (World Bank, 2019). To these issues, we have to add measurement errors and sampling errors, already discussed above. While it is imperative to acknowledge these shortcomings, as they might compromise the accuracy and reliability of data, it should be noted that data reported by such organizations derive from what they deem to be the most authoritative sources (World Bank, 2019): if alternative data exist, they are highly unlikely to be of better quality. In addition to such concerns about the quality and comparability of data, the choice of studying African countries needs to be made with the awareness that data on such countries present problems of limited availability: some indicators include a significant number of missing values, while other indicators are altogether unavailable. This issue may negatively impact the process of choosing variables to include in the study, as often what seems to be the most appropriate variable must be substituted with a less suitable proxy for insufficiency of data. Although the substitution is guided by the examples of previous studies, still the outcome might not be optimal, and this is something to be conscious of when analysing the results obtained.

3.1.1 Transformation of data

For most indicators, the data obtained from official statistics were ready to be analysed. The variables expressed in monetary terms, however, needed to be transformed to be comparable, as some were measured in current US dollars, and some in constant US dollars. The values expressed in current dollars were therefore transformed into constant 2010 dollars, through the use of the appropriate deflator.

4 Methods

4.1 The Model

Regarding the model to use to test our hypotheses, the choice largely occurred with consideration to past studies. More specifically, the starting point were the models used by Buckley et al. (2007) and Ross (2015) to study the determinants of Chinese OFDI. The choice of variables, however, was often constrained by data limitations, leading to settle for the “second best” option in several cases, as explained more in detail in the variable section. On this foundation, a variable representing the OBOR was added (alone and interacted with other variables) to study the effects of the initiative on Chinese OFDI. The characteristics of our data, covering multiple countries for several years, suggest a panel data analysis, for which the following log-linear model will be used:

$$\begin{aligned} \log of di_{it} = & \beta_0 + \beta_1 natresources_{it} + \beta_2 loggdp_{it} + \beta_3 inflation_{it} + \beta_4 rulelaw_{it} + \beta_5 polstab_{it} \\ & + \beta_6 OBOR_{it} + \beta_7 OBOR * natresources_{it} + \beta_8 OBOR * loggdp_{it} + \beta_9 distance_{it} \\ & + \beta_{10} fixtel_{it} + \beta_{11} chinexports_{it} + \varepsilon_{it} \end{aligned}$$

4.1.1 Dependent variable

OFDI flows (logofdi_{it}): as in the vast majority of other studies on the determinants of OFDI, the dependent variable used will be *annual flows of Chinese OFDI into host country*, obtained from the Statistical Bulletin of China’s Outward Foreign Direct Investment (2009 and 2018 editions). The values reported in the Bulletin, expressed in millions of current US dollars, were then transformed into constant 2010 US dollars, in order to make them compatible with other variables expressed in monetary terms. Having observed the skewness of the distribution of OFDI flows, a logarithmic transformation was performed, to make the data closer to a normal distribution, following the example of Ross (2015) and Buckley et al. (2007).

4.1.2 Independent variables

Natural resources rents (natresources): to indicate natural resources seeking motivations of OFDI, the independent variable of choice will be, as in Ross (2015), *total natural resources rents (%GDP)*, retrieved from the World Bank database. Given that in Dunning's paradigm the endowment of natural resources is positively correlated with OFDI inflows, this variable is expected to exhibit a positive coefficient.

Size of the economy (loggdp): to express market seeking motives of OFDI, the standard approach in the literature is that of using market size of host country, and such will also be the procedure followed here. Market size will be proxied by *GDP in constant 2010 US\$* (more specifically, its logarithmic transformation, to address the skewness of the distribution of GDP values), indicator obtained from the World Bank database. Since – according to Dunning's paradigm – large markets attract OFDI, this variable is expected to present a positive coefficient.

Inflation: economic risk was proxied through *inflation*, a measure universally used in previous literature on the topic. Data for this variable were acquired from the IMF database. While, intuitively, high inflation should discourage OFDI, in the case of Chinese foreign investors evidence pointed to the contrary, leading us to hypothesize that they might be attracted by high inflation rates. For this reason, we would expect the coefficient of this variable to be positive.

Rule of law (rulelaw) and *Political stability (polstab)*: when it comes to political risk, two aspects are taken in account, following the distinction suggested by Chen et al. (2018): rule of law and political stability. Both are expressed with the corresponding indicators from the World Bank Worldwide Governance Indicators (WGI). In terms of value, both indicators range from -2.5 to 2.5, with lower scores indicating lower rule of law and political stability. Considering our hypotheses, we will expect the coefficient of *rule of law* to be negative (as weaker rule of law has been observed to attract higher levels of Chinese OFDI), and that of *political stability* to be positive (higher stability has been found to be conducive to higher OFDI).

OBOR: to examine the impact of the One Belt One Road initiative on OFDI, we proceeded to construct a dummy variable to indicate the years after the announcement of the initiative, occurred in 2013 (taking value of 0 for the period 2003-2013, and value 1 for the period 2014-

2017). This procedure is analogous to that of Buckley et al. (2007), who constructed a dummy variable to indicate the period after 1992, year in which Deng Xiaoping introduced a higher degree of liberalization in China. Since it was hypothesized that the announcement of the initiative would stimulate OFDI, due to the prospect of infrastructure improvements, we would expect the coefficient of this dummy variable to have a positive coefficient.

*Interaction OBOR*natural resources (OBOR*natresources)*: as it was assumed that the OBOR initiative would boost the natural resources seeking motive, we created an interaction of the previously described OBOR dummy and the variable natural resources rents (*natresources*). Considering what we hypothesized in H5, we would expect the interaction to exhibit a positive coefficient.

*Interaction OBOR*loggdp*: since in H6 we hypothesized a strengthening effect of the OBOR initiative on market seeking motives, we included an interaction of the OBOR dummy with host country GDP (expressed in logarithms). As in the case above, we would expect the coefficient of the interaction to be positive.

4.1.3 Control variables

Distance: in the literature on the determinants of OFDI, geographical distance is generally supposed to be a deterrent of OFDI, as the cost of investing in a more distant country are greater (Buckley, 2007; Kolstad, 2012). To take into account this effect, it is often included among control variables, and this is how we proceed in this study. Because OFDI is expected to decline as distance increases, the coefficient of the variable is expected to be negative. Distances were calculated from Beijing to the capital city of each host country, using the “city distance tool” provided by the Geobytes website, following the example of Buckley et al. (2007).

Fixed telephones (fixtel): previous studies (Sanfilippo, 2010; Ross, 2015; Kang et al., 2018) have found that countries with a well-developed communication network tend to attract direct investments and increase their productivity, as a high communication capacity makes it easier to coordinate and control investment projects (Ross, 2015). This leads us to expect this variable to exhibit a positive coefficient. The choice of proxy for communication network fell on *fixed telephone subscriptions (per 100 people)*, as in Sanfilippo (2010), for reasons of data availability, as it was the indicator with the highest coverage of years and countries. Data on

this indicator were retrieved from the World Bank database. Considering the importance of internet connection nowadays, it would have been useful to also consider *fixed broadband subscription*, but data were too limited.

Chinese exports to host country (chinexports): several existing studies also include China's exports to host country among control variables (Buckley et al., 2007; Sanfilippo, 2010; Zhang et al., 2013), to account for the fact that Chinese investing firms might be attracted to countries to which they export, for the market-seeking reasons previously mentioned: as a firm's exports to a certain country increase, it might become advantageous to move production in such country, to reduce transportation costs, to avoid entry barrier and/or to be closer to customers and observe how their preferences change (Dunning, 2008). Since exports are thought to encourage OFDI, the coefficient of this variable is expected to present a positive sign. Data on exports were obtained from the website of the National Bureau of Statistics of China.

Table 1: variables recapitulation

Determinants of OFDI	Proxy	Expected sign	Main or control variable	Data source
Natural resource endowment (H1)	Natresources: total natural resources rents (% of GDP)	+	Main	World Bank Development Indicators
Market size (H2)	Loggdp: logarithm of GDP	+	Main	World Bank Development Indicators
Economic risk (H3a)	Inflation	+	Main	IMF
Political risk (H3b)	Rulelaw: rule of law	-	Main	Worldwide Governance Indicators
Political risk (H3c)	Polstab: political stability	+	Main	Worldwide Governance Indicators
One Belt, One Road initiative (H4)	OBOR dummy	+	Main	Author's construction
Combined effect of endowment of natural resources and OBOR (H5)	OBOR*natresources	+	Main	Author's construction; World Bank Indicators
Combined effect of market size and OBOR (H6)	OBOR*loggdp	+	Main	Author's construction; World Bank Indicators
Distance from China	Distance: distance from capital of host country to Beijing	-	Control	Geobytes
Communications	Fixtel: fixed telephone subscriptions (per 100 people)	+	Control	World Bank Indicators
Chinese exports to host country	Chinexports: Chinese exports to host country	+	Control	National Bureau of Statistics of China

4.1.4 Econometric procedure

Considering the presence of a time-invariant variable (*distance*) in the model, fixed-effect estimators cannot be used, or the variable would be dropped out. The choice of estimator, therefore, lies between pooled OLS estimator and random-effect estimator. Pooled OLS is hardly ever used in empirical studies, as it treats observations as if they were cross-sectional, so the random effect estimator was considered preferable. Besides these considerations, a Breusch Pagan Lagrangian multiplier test was performed to guide the choice, and its results – provided in Appendix C – confirm the appropriateness of the random effect estimator.

After running our model for all countries together, to examine whether the effect of the OBOR initiative on Chinese OFDI operates differently depending on the area considered, African countries will be divided into five regions, following the classification defined by the African Union (see Appendix A). The econometric model will be then applied to each region, to investigate possible differences among them. Although primarily a way to more thoroughly study the impact of the OBOR initiative across African regions, this analysis will hopefully shed some light on the other hypotheses as well.

5 Empirical Analysis

5.1 Results

Table 2: regression output baseline model (all African countries)

VARIABLES	Baseline Model
natresources	0.0187* (0.0108)
loggdp	0.991*** (0.141)
inflation	-0.0141* (0.00759)
rulelaw	-0.127 (0.405)
polstab	0.145 (0.212)
obor	4.585 (2.901)
obor#c.natresources	0.000689 (0.0150)
obor#c.loggdp	-0.158 (0.123)
distance	2.46e-05 (0.000148)
fixtel	0.00243 (0.0358)
chinexports	2.59e-06*** (6.51e-07)
Constant	-21.98*** (3.897)
Observations	554
Number of id	51

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

Starting from the motives of OFDI described in Dunning's paradigm, the results of the regression provide evidence confirming the expectation that host country natural resources would have a positive impact on OFDI inflows, as the coefficient of *natresources* is positive

and statistically significant (at the 10% level). Considering such finding, we do not reject our first hypothesis. This result confirms that of Ross (2015), who uses the same proxy, *total natural resources rents*. Buckley et al. (2007) do not find any significant evidence for natural resource seeking motives, but this might derive from the choice of proxy used, *ores and metals exports*. The latter, in fact, might provide a potentially misleading indication of a country's endowment of natural resources, as ores and metals represent only a fraction of it. If the measure is limited to a specific aspect, it might leave out of the analysis other elements related to natural resource seeking OFDI, and therefore lead to an imprecise result. Proceeding with market seeking OFDI, our results show our proxy for market size (*loggdp*) to be positive and highly significant (at the 1% level), indicating a positive impact on the amount of OFDI inflows. This would suggest that Chinese OFDI is based on market-seeking motives, leading us to not reject H2. This finding corresponds to the results obtained by Sanfilippo (2010), Cheung et al. (2012), Zhang et al. (2013), and Kang et al. (2018).

Moving on to risk-related variables, *inflation* exhibits a negative and statistically significant (at the 10% level) coefficient. The sign of the coefficient goes against H3a, where it had been hypothesized that Chinese OFDI would be attracted by countries with a high inflation rate – hypothesis seemingly unreasonable, but justified by the results of previous studies, which indicated a positive relationship between inflation and Chinese OFDI (Buckley et al., 2007; Sanfilippo, 2010; positive but not significant: Kolstad and Wiig, 2012; Ross, 2015). The negative coefficient would mean that Chinese investors are discouraged by high inflation, a behaviour closer to that of investors from developed economies but contrasting previous findings. A possible explanation could be that, since the years analysed in past studies, Chinese OFDI may have started to acquire characteristics more similar to that of advanced countries because the Chinese economy itself has evolved. Regarding risk factors based on the level of governance of host countries, we find no effect of *rule of law* on Chinese OFDI, since it exhibits a negative coefficient, as predicted in H3b, but lacks statistical significance. Neither *political stability* is significant, although it presents the expected positive coefficient. The signs exhibited by both rule of law and political stability seem to follow the explanation offered by Chen et al. (2018): Chinese OFDI is positively related to political stability, as it should protect deals made at government-to-government level, typical feature of Chinese OFDI. On the other hand, it is negatively associated with rule of law, because Chinese enterprises are familiar with operating in a business environment characterized by weak rule

of law. However, considering that both coefficients are not significant, we cannot say if this is indeed the case.

When it comes to the effects of the One Belt, One Road initiative, the results provide no statistically significant evidence to suggest an impact on Chinese OFDI flows, neither in the case of the OBOR dummy nor in that of the interactions. The sign exhibited by the OBOR dummy and by the interaction between OBOR and natural resources is positive, as assumed in H4 and H5, while that of the other interaction is negative, against expectations. According to these results, therefore, the OBOR would have no effect on Chinese OFDI, neither on its own, nor through boosting other OFDI motives. As there are no studies that consider this matter in the African context, there is no direct term of comparison for our findings, but we can try to provide a tentative explanation, and to investigate further. On the one hand, the lack of significance could be partially due to the fact that the time period considered might be too short to allow strong effects to surface, in which case the analysis should be repeated in the future, leaving Chinese investors a longer time to react to the OBOR announcement. On the other hand, results might not be significant for African countries considered as a whole, but might be significant for a subgroup of countries, due to differences in their geographical position: this seems an aspect worth exploring, and will be the object of further analysis.

5.1.1 Regional analysis

Table 3: regression output regional analysis

VARIABLES	North	East	West	Central	South
natresources	0.0825** (0.0337)	0.0296 (0.0328)	0.0569*** (0.0166)	0.0377*** (0.0143)	-0.00993 (0.0256)
loggdp	1.440*** (0.393)	1.063*** (0.259)	0.391** (0.155)	0.609** (0.262)	1.443*** (0.312)
inflation	0.146** (0.0617)	0.00350 (0.0196)	-0.0187 (0.0215)	0.0499** (0.0254)	-0.0234** (0.00994)
rulelaw	2.678* (1.611)	-1.023 (0.642)	0.856* (0.477)	0.424 (0.781)	-2.573*** (0.672)
polstab	-0.988** (0.491)	0.582 (0.454)	-0.570** (0.290)	-0.0667 (0.371)	3.364*** (0.648)
obor	22.18* (11.59)	24.63*** (7.379)	-2.834 (4.453)	-2.962 (8.910)	10.79 (8.079)
obor#c.natresources	-0.0484 (0.0546)	0.144** (0.0730)	-0.00202 (0.0260)	0.00350 (0.0406)	0.148** (0.0720)
obor#c.loggdp	-0.857* (0.450)	-1.042*** (0.325)	0.134 (0.191)	0.170 (0.400)	-0.457 (0.343)
distance	0.00137*** (0.000422)	0.000235 (0.000400)	-5.32e-05 (0.000316)	-0.000222 (0.000478)	-0.00167*** (0.000424)
fixtel	-0.0281 (0.108)	0.0870** (0.0392)	-0.229*** (0.0655)	-0.292 (0.245)	0.130 (0.135)
chinexports	4.59e-06*** (1.55e-06)	8.69e-06*** (2.29e-06)	1.02e-06 (8.17e-07)	1.95e-05** (7.63e-06)	2.85e-06** (1.44e-06)
Constant	-49.06*** (12.17)	-26.23*** (5.255)	-6.591 (5.806)	-10.93 (6.985)	-14.38 (9.055)
Observations	69	127	154	91	113
Number of id	6	12	15	9	9

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

The results obtained from the regional analysis indeed show more variation in respect to the impact of the OBOR initiative: while for Africa as a whole the coefficient of the dummy was positive but not significant, in the Northern and Eastern regions it now appears to be positive and statistically significant (at the 10% and 1% level, respectively). The positive impact of the

OBOR on Chinese OFDI in both regions is likely to be connected to their geographical position. Northern African countries, in fact, border the Mediterranean Sea, seen as the final target of the OBOR. Among them, the position of Egypt is particularly favourable, at the junction of Mediterranean and Red Sea, hosting the Suez Canal. Eastern Africa, on the other hand, is in proximity of both the Indian Ocean and the Red Sea, crucial parts in the design of the Maritime Silk Road. In addition to their position, both regions have already received Chinese investments for infrastructure projects. In the Northern region, Chinese companies have started investing in the construction of a Special Economic Zone in the Suez area, improving port facilities. In Eastern Africa, inter alia we can cite the already-mentioned Mombasa-Nairobi and Addis Ababa-Doraleh railways.

Moving on to examine the interaction terms, again the regional results present a more detailed picture, departing from the general lack of statistical significance exhibited by the original regression. The interaction *OBOR*natresources* has a positive and highly significant coefficient in the Eastern and in the Southern region, finding that would indicate that the OBOR initiative boosts the natural resource seeking motive of Chinese OFDI in Africa (thus confirming H5). The second interaction, *OBOR*loggdp*, is instead surprisingly negative in all regions but the Western and the Central, and significant in the Northern and the Eastern regions. The negative coefficient would indicate that the OBOR reduces the effect of market size on OFDI, and therefore the market-seeking motivation of Chinese investments, contradicting what we supposed in H6.

In regard to the other hypotheses, our previous results are not universally confirmed. *Natresources*, which had a positive and significant coefficient in the general regression, turns out to be positive and significant only in the Northern, Western, and Central regions. *Loggdp*, our proxy for market size, results positive and significant in all regions. When it comes to risk factors, all not significant in the general regression, results exhibit a higher degree of variation among regions. *Inflation* appears to be positive and significant in the Northern and Central regions – in agreement with H3a, where it was supposed that Chinese investors would be attracted by countries with a high rate of inflation – while it is negative and significant in the South, and not significant in the other two regions. *Rule of law* turns out to be negative and significant, as hypothesized in H3b, only in the Southern region, while it is positive and significant in the North and West, contradicting H3b. Finally, *political stability* turns out to be

positive and significant, as presupposed in H3c, only in the South, and surprisingly negative and significant in the Northern and Western region, contrarily to expectations.

5.1.2 Robustness checks

Table 4: results of robustness checks

VARIABLES	Baseline Model	Model 2 gdp per capita	Baseline Limited	Model 3 ores and metals	Model 4 no risk
natresources	0.0187* (0.0108)	0.0311*** (0.0117)	0.0390*** (0.0137)		0.0193* (0.0101)
loggdp	0.991*** (0.141)		0.951*** (0.147)	1.032*** (0.133)	0.960*** (0.135)
inflation	-0.0141* (0.00759)	-0.0150* (0.00783)	-0.0159* (0.00884)	-0.0164* (0.00879)	-0.0145* (0.00756)
rulelaw	-0.127 (0.405)	0.392 (0.422)	0.0104 (0.428)	-0.437 (0.378)	
polstab	0.145 (0.212)	-0.197 (0.222)	-0.0107 (0.240)	0.0844 (0.229)	
obor	4.585 (2.901)	0.112 (1.217)	3.985 (3.042)	5.848* (3.004)	4.471 (2.892)
obor#c.natresources	0.000689 (0.0150)	0.0116 (0.0160)	0.00523 (0.0220)		0.000805 (0.0149)
obor#c.loggdp	-0.158 (0.123)		-0.132 (0.129)	-0.201 (0.127)	-0.153 (0.122)
distance	2.46e-05 (0.000148)	-0.000170 (0.000158)	-4.41e-05 (0.000155)	-0.000117 (0.000143)	3.95e-05 (0.000139)
fixtel	0.00243 (0.0358)	-0.0552 (0.0447)	0.0212 (0.0354)	0.0346 (0.0332)	0.00399 (0.0305)
chinexports	2.59e-06*** (6.51e-07)	3.50e-06*** (5.83e-07)	2.30e-06*** (6.96e-07)	2.08e-06*** (6.77e-07)	2.55e-06*** (6.46e-07)
lgdppercap		0.615** (0.256)			
obor#c.lgdppercap		0.0905 (0.158)			
oremet				0.0302*** (0.00687)	
obor#c.oremet				-0.0137 (0.00849)	
Constant	-21.98*** (3.897)	-1.224 (2.437)	-20.67*** (4.103)	-21.94*** (3.717)	-21.42*** (3.691)
Observations	554	554	431	431	554
Number of id	51	51	44	44	51

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

After the examination of the results obtained, some robustness checks were performed. As a first step, robustness was checked by substituting some of the variables with alternative proxies used in literature. More specifically, two alternative models were tested. In Model 2, the logarithm of GDP (*loggdp*) was substituted with the logarithm of GDP per capita (*lgdppercap*). The results show that the new variable is correctly signed and significant (at the 5% level, lower than the 1% level exhibited by *loggdp*), and all the other variables that were significant in the baseline model maintain their sign and their significance. There are some changes in the value of their coefficients, but they are rather small. The variables that lacked significance in the baseline model present more variation: they all remain not statistically significant, but some exhibit an opposite sign and larger changes in the value of coefficients. However, their lack of significance does not allow to draw any precise conclusion from these changes.

In Model 3, total natural resources rents (*natresources*) was substituted with another proxy for the endowment of natural resources, *ores and metals exports (oremet)*, previously used by Buckley et al. (2007). Indicating only ores and metals, this variable is less representative of a country's endowment of natural resources than our original choice, total natural resources rents, and this should be kept in mind when observing the results. In addition, such variable presented a large number of missing values, bringing the number of observations from 554 to 431, and the number of countries considered from 51 to 44. As such difference might affect the comparability between Model 3 and our baseline model, the latter was limited to the observations presenting a non-missing value for *oremet* (see the column "Baseline Limited" in the table of results). As with the previous substitution, the variables that were significant in the baseline model preserve their sign and significance, and do not exhibit major changes in the value of their coefficients. Again, changes occur among non-significant variables. The biggest change with this new model is visible in the OBOR dummy, which becomes significant (at the 10% level), while it presented the expected sign but lacked significance in the baseline model. This result, however, should be considered with caution, as *oremet* is less suitable than *natresources* in describing a country's endowment of natural resources, and might thus give a distorted picture of the attractiveness of the country.

The third, and final, robustness check regarded the indicators of political risk, rule of law and political stability, both lacking significance in the baseline model. Since the search for possible alternatives for these variables was not fruitful, robustness was checked by omitting

them from the model (see Model 4). Without these variables, the only changes regard the magnitude of coefficients, but all variations are very minor, and variables maintain their sign and statistical significance (or lack of).

5.2 Discussion of results

Having obtained the results presented above, it is reasonable to ask how they tie back to the starting point of this thesis and the research questions. Following the latter, the results could be ideally divided into two parts: on one side, the findings on the locational determinants of OFDI, which can be compared to the conclusions reached in previous research; on the other side, the results regarding the impact of the OBOR initiative, which cannot be directly compared with any previous study.

The analysis on locational determinants of Chinese OFDI in Africa was justified by the need of providing an up-to-date picture of the phenomenon, as previous research did not cover the years from 2012 onwards – years of considerable change for China. As explained in higher detail in the result section, the evidence obtained confirms only partly the results of past studies. Among the determinants of OFDI described in Dunning's paradigm, host country endowment of natural resources and market size seem to have a positive impact of OFDI inflows, largely confirming previous literature and implying the validity of natural resource seeking and market seeking motives of Chinese OFDI in Africa. Efficiency seeking motives, omitted from the analysis due to lack of data on labour costs, remain unobserved. Since labour costs presumably play a considerable role in attracting OFDI for efficiency seeking motives, their absence is likely to affect the results of the analysis.

Moving on to host country risk, inflation was found to deter OFDI, contrarily to expectations, while rule of law and political stability both turned out to be not statistically significant. In this respect, our findings differ from previous studies, but it is important to consider that the recent developments of the Chinese economy might have changed the attitude of Chinese investors towards risk. More moderate growth rate, higher labour costs, and higher role as an OFDI provider are characteristics that bring China closer to advanced economies, so it is

possible that also the attitude towards risk may be becoming more similar to that of such countries.

The second part of the analysis, the investigation on the effects of the OBOR initiative on Chinese OFDI, was motivated by the necessity of understanding such a new phenomenon, never studied before in the context of African countries. The results obtained by including all countries in a single regression failed to provide an informative picture of the matter, as none of the coefficients was statistically significant. The lack of previous research on the subject means that our findings cannot be compared with precedents, to see if other authors obtained more defined results. Believing that the inclusion of all African countries in the same regression might have “polluted” the results, the various countries were divided into regions, and for each region we run a separate regression. The results indeed shed more light on the initiative: the impression that comes after operating the distinction among macro-regions is that the impact of the OBOR differs markedly among regions, presumably implying that it strongly depends on geographical factors. In specific, significant effects were observed in only three out of the five regions considered, the Northern, Eastern, and Southern regions, while Western and Central Africa did not offer any significant evidence in any of the variables related to the OBOR (i.e. the OBOR dummy and the interactions). At a certain level, this is understandable, as the first three regions occupy geographical positions closer to the route of the Maritime Silk Road, and are thus more likely to benefit from the initiative, at least at the beginning. A natural question, to which there is no answer just yet, would be whether the other two regions will ever reap any benefits from the OBOR in the future, as now they do not seem to be affected either positively or negatively. This should be the ultimate objective of the initiative, if it really were to follow its original ambition of connecting Africa, Europe, and Asia through new infrastructure projects and awaken the potential of all areas involved.

6 Conclusion

The ongoing expansion of China as a global investor has become the object of increasing mediatic attention, especially in relation to its direct investments in African countries. As public resonance grows, it becomes more and more important to have academic studies providing empirical evidence on the topic, to obtain a more informed view of the phenomenon and fight speculations. The recent developments of China's foreign policy only confirm this necessity, as the One Belt, One Road initiative prospects a deepening of economic relations between China and Africa. In view of stronger economic relations, it is advisable to obtain an understanding of the determinants of Chinese OFDI, leading to our first research question. As the determinants of OFDI are clarified, countries wishing to attract Chinese investors would have an indication of what elements to target to improve their attractiveness in the eyes of investors, leading to the formulation of policies ad hoc. Such information, however, could also benefit countries which already receive Chinese OFDI but aim to increase its amount. In this respect, the results obtained stress the importance of natural resources and market size in attracting Chinese investors, largely confirming previous literature. In contrast to the latter, economic risk appears to discourage Chinese OFDI, and factors of political risk do not have any effect on it. This may suggest that, as China develops, the behaviour of its investors might be growing more and more similar to that of Western investors.

As for our second research question, regarding the effects of the OBOR initiative, our findings show that they vary considerably according to geographical location. In the countries belonging to the Northern and Eastern regions, the OBOR has already started to positively affect the amount of Chinese OFDI inflows, while the other regions still exhibit no effect. The effects of the OBOR on resource-seeking and market-seeking motives of OFDI are also limited to specific regions, but partly go against expectations. On the one hand, in fact, the OBOR seems to strengthen natural resource-seeking motives (as expected) in the Eastern and Southern regions, while no evidence is found for the remaining regions. On the other hand, however, it appears to decrease the effect of market seeking motives in the Northern and Eastern regions (again, other regions do not exhibit any effect). These results can be read as a

feedback of how the OBOR is working in practice, indicating possible areas of improvement to policy makers of both China and other countries involved. Moreover, they may provide insights on a new phenomenon, whose scale and scope are not yet widely understood.

6.1 Limitations of the study

The results obtained come with a series of limitations. First of all, the quality of data itself may represent a weakness of the study: as mentioned in the data section, Chinese statistics are often the object of criticism, due to possible political manipulation of data, while data on African countries may have problems of comparability. Awareness of these issues will hopefully lead to a more careful consideration of the results of the study, but will not ultimately improve their quality. Particularly cautious judgement should be used in case of any eventual practical application of the results obtained. In addition to the quality of data, it is important to consider possible limitations related to the choice of variables. A general problem of econometric analysis is that the choice of variables is often not incontestable: the chosen variables may be criticized, and better options might be suggested, no matter how scrupulous the choice was. While this concern might regard any econometric study, it is reinforced, in the present case, by the fact that some of the variables were the result of a forced choice, given the unavailability of better indicators. Moreover, the unavailability of data is in itself a considerable weakness of the study, not only because it limited the choice of variables, but because missing data might have affected the results in ways hard to predict. In additions to the issues above, it is also crucial to be aware of possible errors of distraction or inexperience that might have occurred in any of the steps of the research. A final limitation that should be mentioned regards the OBOR. The initiative was announced in 2013, and Chinese firms have already started (and in some cases, completed) various infrastructure projects in Africa; in some regions, however, it might be too soon to observe the effects of such interventions because they might require to be included in a bigger network of projects to really benefit OFDI.

6.2 Future research

The pace of the developments of China's economy and foreign policy represents in itself enough justification for further studies, to keep up with the ongoing transformation. However, the results and limitations of this study also provide more specific openings for further research. In the first place, repeating the analysis in the future might provide a clearer picture of the impact of the OBOR: a longer period since its announcement might allow infrastructure projects now in construction to be completed, and new trade routes to be opened, rendering the effects more discernible than in the present situation, where some projects are still in the making and not all countries have been reached. Speaking of the reach of the initiative, it would be particularly interesting to investigate whether Central and Western Africa – the regions where the OBOR dummy was not significant – will be engaged to a greater extent in the future, as currently they do not seem to be strongly affected. Another area that further research could improve is that of variable choices, especially when it comes to including in the analysis labour costs, unavailable for most African countries in official statistics: it would be desirable if future researchers could access such data and use it in their studies, to take into account the efficiency-seeking motive of Chinese OFDI.

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Appendix A

Countries included in the study

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo DR, Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Lybian Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Republic of South Sudan (omitted for unavailability of data), Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

Regional division

Northern region: Algeria, Egypt, Lybia, Mauritania, Morocco, Tunisia

Eastern region: Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Sudan, Uganda, Tanzania

Western region: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo

Central region: Burundi, Cameroon, Central African Republic, Chad, Congo, Congo DR, Equatorial Guinea, Gabon, Sao Tome and Principe

Southern region: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe

Appendix B

Table 5: Descriptive statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
logofdi	579	2.332	2.261	-4.54	8.498
natresources	763	14.246	13.602	.001	63.49
loggdp	745	23.133	1.626	18.708	26.864
inflation	771	8.117	18.484	-72.7	379.8
rulelaw	772	-.673	.618	-1.94	1.63
polstab	772	-.533	.869	-2.7	1.2
obor	780	.267	.443	0	1
distance	780	10647.66	1494.217	7543.4	12955.85
fixtel	765	3.69	6.114	0	32.653
chinexports	771	114000	220000	23.34	1590000

Appendix C

Breusch and Pagan Lagrangian multiplier test for random effects

$$\text{logofdi}[\text{id},t] = Xb + u[\text{id}] + e[\text{id},t]$$

Estimated results:

	Var	sd = sqrt(Var)
logofdi	5.167985	2.27332
e	1.9335	1.390504
u	1.293091	1.137141

Test: $\text{Var}(u) = 0$

$\text{chibar2}(01) = 162.18$

$\text{Prob} > \text{chibar2} = 0.0000$