

Do Foreign Direct Investments affect Exports?

The case of China's involvement in the African economy



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Abstract

China has over the last decades clearly increased its foreign direct investments (FDI) in Africa. This has gained public attention and the question has been raised whether China's growing investments could be harmful for the local African economy. This study examines if China's FDI in Africa has affected the African countries' total product export. This is analyzed more in detail by investigating both the African primary export sector and the manufacturing export sector. Finally, it is examined if resource-rich African countries have experienced particular effects on its product export from China's FDI. This is analyzed by using panel data for 31 African countries in the period of 2004-2015. In conclusion, the results show that Chinese FDI in Africa has contributed to the African countries' total product export by promoting both the primary and manufacturing exports. Furthermore, the results show the same effect on resource-rich and non resource-rich African countries. The findings contradict the beliefs that China's FDI in Africa would be harmful for the African countries in terms of product export.

Keywords: *Foreign direct investment, Export, Multinational enterprise, Africa, China*

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Abbreviations

FDI	Foreign Direct Investment
MNE	Multinational Enterprise
GDP	Gross Domestic Product
IFDI	Inward Foreign Direct Investment
OFDI	Outward Foreign Direct Investment

1. Introduction

China has over the last decades emerged as one of the world's leading global investors with a significant increase in outward foreign direct investments (OFDI) (The World Bank, 2017). Although, Chinese institutions invest in foreign economies worldwide, much attention has been drawn to China's foreign direct investments (FDI) in Africa. In order to improve the access to natural resources, China has progressively become more involved in the African economies, which also has increased the trade between the two regions (Lall & Kraemer-Mbula, 2005). The desire to possess natural resources stems from the emergence of their industrial sector, where they face a high global demand for their manufacturing goods. In order to satisfy the global demand, the Chinese production has been thriving, which in turn has required access to great quantities of natural resources and materials. Thus, China's access to African natural resources has facilitated China's industrialization and economic development (Renard, 2011).

China's increasing engagement in the African economies has given rise to discussion about China's influences in Africa. *The New York Times* (2017) has for instance been questioning whether China is colonizing Africa. The debate is on the one hand focusing on what positive aspects that Chinese FDI in Africa entails, on the other hand what problems that may arise from China's investments. By permitting investments from China, the African countries' can expect a modernized production and infrastructure, which may benefit the local firms. However, China's FDI in Africa is occasionally described as non-altruistic, meaning that China neglects the African interests in favor of their own (Kolstad & Wiig, 2011). This is indicated by China's FDI in poorly governed African countries with high levels of public corruption. Another discussed concern is whether China's FDI in the African primary sector increases these countries' dependence on their natural resources, which may preclude other sectors, such as manufacturing from developing. This concern is based on the observations that several African countries have failed to develop a competitive manufacturing industry and instead rely heavily on their primary product export (often referred to as the 'resource curse') (Lall & Kraemer-Mbula, 2005). These countries tend to experience slow economic growth and an increase and

diversification of their exports seem crucial in order to experience economic prosperity (Amurgo-Pacheco & Pierola, 2008).

The discussion highlights interesting questions about the actual effects of China's investments' in Africa. To some extent China's increasing involvement in the African economy has been studied. However, no research has, to my knowledge, examined if China's FDI in Africa affects the African export performance. By further understanding the role of China's FDI on African export, it would be possible to get an indication if inward foreign direct investments (IFDI) contribute to the amount and diversification of a country's exports.

The general aim of this study examines if China's FDI in Africa affects the African countries' total product export (excluding the export to China). African export to China is excluded since previous studies conclude that Chinese FDI in Africa has progressed together with increased trade between the regions (Kolstad & Wiig, 2011; Renard, 2011). Therefore, this paper particularly examines if a country's IFDI affects its export performance to the rest of the world (excluding the source country of the FDI). Furthermore, this is analyzed more in detail by examining potential dissimilarities in the effect on the primary export sector (exports based on raw materials) and the manufacturing export sector. Finally, it is examined if resource-rich African countries have experienced particular effects on its product export from China's FDI. The study uses panel data for 31 African countries in the period of 2004-2015.

This study starts out by defining FDI and discussing its expected effects on a host country's export. Section three highlights China's FDI in Africa and African product export. Section four presents the hypothesis about the impact of China's OFDI on the African countries' export. The fifth section gives an overview of previous relevant research on the subject. Furthermore, in section six, the method of the study is described. Section seven discusses the collected data and describes the descriptive statistics. Lastly, the results are presented in section eight, which is followed by a discussion in section nine.

2. FDI and Export

FDI is a type of international investment that occurs when a resident of an economy invests in another, foreign economy. In this context, a resident contains public and private enterprises, governments, non-profit organizations, institutions, individuals, and households (IMF, 2009). Furthermore, FDI is based on residency and not nationality. Generally, the residency is determined on the economic territory to which the resident is strongest connected and most engaged (IMF, 2009). Moreover, FDI requires that the resident has a lasting interest and a significant influence in the foreign economy. A lasting interest implies that the investment is of a long-term nature with a durable relationship between the resident and the foreign business (IMF, 2009; UNCTAD, 2009). A significant degree of influence means that the resident possesses at least 10 percent of the voting shares in the foreign business (IMF, 2009). When discussing FDI, multinational enterprises (MNEs) are important subjects. A MNE is a company with production or sales in several countries, however, it is typically managed from the parent enterprise in the home country. Furthermore, a MNE owns a significant share of equity in a foreign business, and thus, is engaged in FDI (Navaretti and Venables, 2004). Most research on the topic of FDI uses MNEs (or similar concepts such as multinational corporations (MNCs) etc.) as terminology when discussing residents who engage in FDI. In this paper the same setup is used and hence, FDI is discussed from a MNE's point of view.

FDI is categorized into FDI flows and stocks. While FDI flows are measuring the FDI for a specific period of time, e.g. annually, FDI stocks are a measure of the accumulated direct investments in a given point of time. FDI flows involve equity transactions, earning reinvestments, and intra-company debt transactions (OECD, 2017a; UNCTAD 2017a). FDI stocks consist of the accumulated value of equity and net loans that residents own in a foreign business (OECD, 2017b). Both FDI flows and stocks are measured in inward and outward FDI. Its label depends on the reporting country and the destination of the FDI. OFDI flows and stocks imply that a MNE with residency in the reporting economy invests in a foreign economy. On the contrary, IFDI flows and stocks imply that a foreign MNE increases its direct investments in the reporting economy. If a MNE with residency in country X purchase equities in enterprises with residency in country Y (assume that the criteria

for a transaction to be considered FDI are satisfied), country X increases its OFDI while country Y increases its IFDI.

Depending on the characteristics and intentions of the MNE's investment, FDI is usually divided into horizontal and vertical FDI. With horizontal FDI, a MNE starts producing the same type of good in a foreign country as they do in its home country. This means that the firm duplicate its production in the host country in order to serve foreign customers in a more efficient way. Therefore, horizontal FDI is intended to improve the MNE's access to foreign markets (Neary, 2008). The underlying reasons for a MNE to open a new plant abroad would typically be to lower its trade costs. By opening a factory abroad, the MNE reduces the costs associated with exports as it locates closer or more strategically to its foreign markets. This implies that high trading costs increase a MNE's incentives to open a plant abroad, as exporting to foreign economies gets costly. Although, by distributing the production over different locations, fixed costs occur from the foreign plants and the MNE can lose the benefits from concentrating its production in the MNE's home plant (Neary, 2008). This means that great advantages from concentrating the production in the home plant increase the incentives to export to foreign markets rather than engaging in horizontal FDI.

Unlike horizontal FDI, vertical FDI is intended to make a MNE's production process more cost efficient. Through fragmenting the production process, by moving parts of the production to a foreign and more strategic location, the firm can reduce its production costs. For instance, by taking advantage of cheaper conditions in the host country (e.g. by reducing wage costs and costs of raw materials) the MNE may have incentives to open a plant abroad. Furthermore, a MNE who engages in vertical FDI intends to serve its home market, rather exporting to third countries (Neary, 2008). This implies that the MNE's foreign plant exports intermediates back to the home plant where the product is finished and distributed to the home market. The decision to move a section of the production abroad does not solely depend on the production cost and the local benefits of the host country. Also, the trading costs are considered (Neary, 2008). Contrary to horizontal FDI, high trading costs decrease a MNE's

motives to engage in vertical FDI as it gets costly for the MNE to export from its affiliate in the host country to the home plant.

2.1 Theoretical aspects

The theoretical aspects of the effects that FDI has on a host country's export performance can be divided into direct and indirect effects. The direct effects regard the MNE's exports from its affiliate in the host country (Zhang & Song, 2001). Furthermore, the direct effects concern why MNEs in a foreign market may be more successful than local firms in establishing exports sales. The underlying ideas of the direct effects of IFDI on the host country's exports are in line with the early theories of Hymer (1976) and Dunning (1980) of why firms decide to invest in a foreign country in the first place. They argue that firms need firm-specific advantages in production, knowledge, management etc. over the local firms in order to consider FDI (implying imperfect market competition). Thus, since MNEs tend to be superior in technology and knowledge, they are more efficient than most local firms. This implies that they are able to produce and export to lower prices than its competitors in the host market. Based on these assumptions Zhang and Song (2001) describe the advantages that MNEs are expected to have over local firms depending on the industry where they operate (processing of natural resources, labor-intensive manufacturing of final goods, and labor-intensive manufacturing of intermediate goods in a vertical industry). In the industry of processing natural resources, foreign firms are usually more capable to export because of superior technology, marketing, and networking. In the labor-intensive manufacturing business of final goods (e.g. textiles) MNEs tend to have better distribution networks, knowledge about consumer preferences, and ability to brand themselves. This implies that MNEs usually have a greater understanding for the international market, which is key when exporting. Lastly, MNEs that produce intermediate goods in a vertical network have the benefit to export back to the home plant, but also to other firms in the home country.

The presence of MNEs in a foreign market is also thought to contribute to the local firms' capabilities. The indirect effects of IFDI on the host country's export represent the MNEs' impact on the local firms' export performance (Zhang & Song, 2001).

This is also referred to as spillover effects, since MNEs are thought to spill over parts of their qualities in production and management etc. to the indigenous firms. As foreign firms are expected to have firm-specific advantages they may, particularly when producing close substitutes to the local firms, increase competition in the host market. This forces the local firms to become more efficient and competitive in order to remain in production (Zhang & Song, 2001). Consequently, this affects the local companies who learn about the MNEs' technology and management skills. This is called technology spillovers and include technology diffusion, acquisition of labor skills, and learning about markets (Navaretti & Venables, 2004). They arise in different ways, e.g. if workers of a MNE leave the firm for local employment and bring special managerial and technological knowledge with them. Another indirect effect that may increase the exports of local firms is from using and observing the infrastructure, networks and export behavior established by the MNEs (Haddad & Harrison, 1993). Subsequently, pecuniary externalities may arise if a MNE purchases inputs from local firms in the foreign economy as the MNE increases their sales, which benefits the local industry (Navaretti & Venables, 2004). In this scenario it is also likely that technology spillovers occur as the MNE interacts with the local firms (Zhang & Song, 2001). The indirect effects from IFDI is therefore thought to improve the local firms' efficiency thanks to spillovers from the MNEs. Increased efficiency in production for local firms imply lower production costs which allow lower buyer prices. This means that the local firms, by learning from MNEs, may become more competitive on the international market.

The indirect effects could be important for the local industries in the host country since they are thought to modernize the local firms' business and thus, expected to increase their export. This may be particularly essential for the developing countries who tend to rely on a few number of export commodities (Amurgo-Pacheco & Pierola, 2008). When a country depends on a narrow amount of products, their economy becomes vulnerable to external shocks such as a fall in world demand, which in turn results in high income volatility and growth fluctuations (Amurgo-Pacheco & Pierola, 2008; Samen, 2010). This is particularly true for countries who depend on primary exports, since primary goods have a low income elasticity which results in a limited world demand (Samen, 2010). Furthermore, these theories are often associated with the occurrence that many resource-rich countries tend to have

restricted economic prosperity (Sachs & Warner, 2001). This tendency is often called the 'resource curse' and implies that economies with an abundance of natural resources would experience slower economic growth than resource-poor countries. This is somewhat a paradox since one may think that richness in natural resources would have positive effects on the economy from the exports of the primary goods. Explanations to the resource curse stress that revenues from natural resources appreciate a country's currency, which in turn make other exports more expensive for foreign economies and hence, less competitive (called the Dutch disease) (Corden & Neary, 1982). However, newer theories rather emphasize that the institutional quality decides whether an economy is able to avoid the natural resource curse or not (Brunnschweiler & Bulte, 2008; Mehlum, Moene & Torvik, 2006). That means that resource-rich countries with high corruption and weak rule of law are targets of the resource curse. The latter explanation for the resource curse is troublesome since corruption often emerge as a consequence from having access to natural resources (Broadman, 2006). This suggests that a country with an abundance of natural resources often faces issues with corruption, which consequently captivates the country in the resource curse.

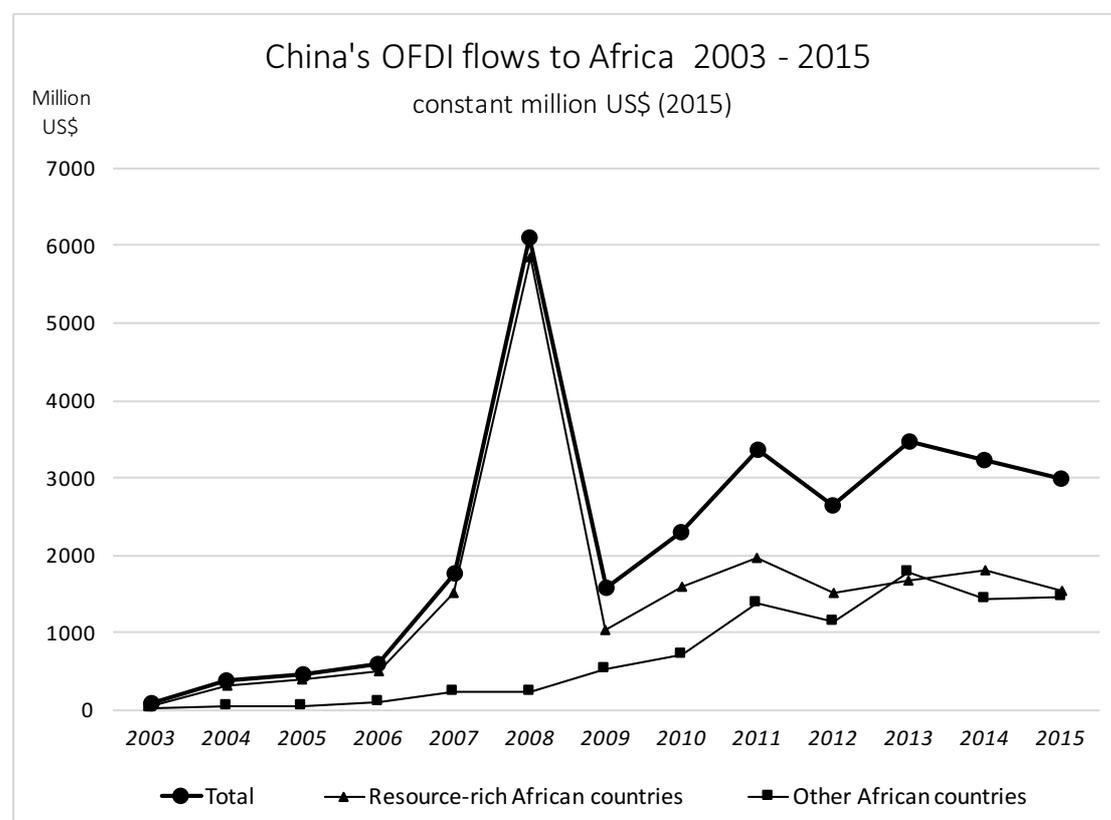
These theories stress the importance for resource-rich countries to develop substitutes to their primary exports. Furthermore, by diversifying the exports and becoming less reliant on primary commodities, it is possible for a country to stabilize its exports earnings, which consequently is expected to lead to better economic growth (Amurgo-Pacheco & Pierola, 2008). In addition, since corruption tend to be prevalent in resource-dependent countries there are further incentives to diversify the exports in order to reduce political risk (Broadman, 2006; Samen, 2010). Export diversification may happen horizontally or vertically. The former implies that a country starts to export new products, while the latter implies that through further processing, marketing etc. increased value is added to existing products (Samen, 2010).

Now FDI is defined and its theoretical relationship to the host country's export performance is discussed. Consequently, the next section regards China's FDI flows to Africa and the African export.

3. The case of Africa

As previously highlighted, Chinese FDI in African countries has increased noticeably since the beginning of the millennia. The increased involvement in the African economy has proceeded together with increased trade between the regions (Lall & Kraemer-Mbula, 2005). Figure 1 illustrates the Chinese OFDI flows to Africa during the years 2003-2015. In this period, China's OFDI flows to Africa has on average increased by 33% annually (SAIS-CARI, 2017).

Fig 1. China's OFDI flows to Africa.



Source: FDI data (SAIS-CARI, 2017). Resource-rich countries (IMF, 2007).

In the late 1990's the Chinese government liberalized the restrictive policies regarding FDI and encouraged more firms to open plants abroad, e.g. the 'go global' policy in 1999. Although, it was not until 2003 that private firms were officially allowed to apply for OFDI-projects (Buckley et al. 2008). The liberalization of private ownership and encouragement to invest in foreign economies have resulted in the presence of private Chinese MNEs in Africa. Even though China's liberalizing policies have facilitated FDI initiatives for private firms, the Chinese government still controls the

OFDI to a large extent. All firms who seek to implement FDI need approval from Chinese authorities, implying that the Chinese state assures that also the private firms' FDI-projects are in line with the government's agenda (Fetscherin & Gugler, 2010). The investments are essentially directed towards resource-rich African countries with the Chinese state-owned enterprises as the major source behind the strategic investments in raw materials and infrastructure (Renard, 2011; Zhimin & Junbo 2009). This is consistent with previous research that conclude that China's FDI in Africa has been characterized by an attempt to access natural resources due to its low supply relative to its demand (Buckley et al. 2008; Drogendijk & Blomkvist 2013; Kolstad & Wiig, 2011). Furthermore, these investments have been strategic in order to facilitate economic progress and the growth of the Chinese industry (Kolstad & Wiig, 2011). To my knowledge, there exists no easily available data for China's FDI in Africa on sector-level. This implies that there are no public statistics to what sectors in the African economy that China's FDI has targeted. However, the assumption that China's FDI in Africa is aimed to supply its industry with natural resources, implies that the majority of the FDI is vertical. This means that Chinese MNEs in Africa mainly export primary goods back to China where the intermediates are finished and sold from the home plant. Thus, the majority of China's FDI in Africa is assumed to be vertical FDI, although to what extent remains unknown.

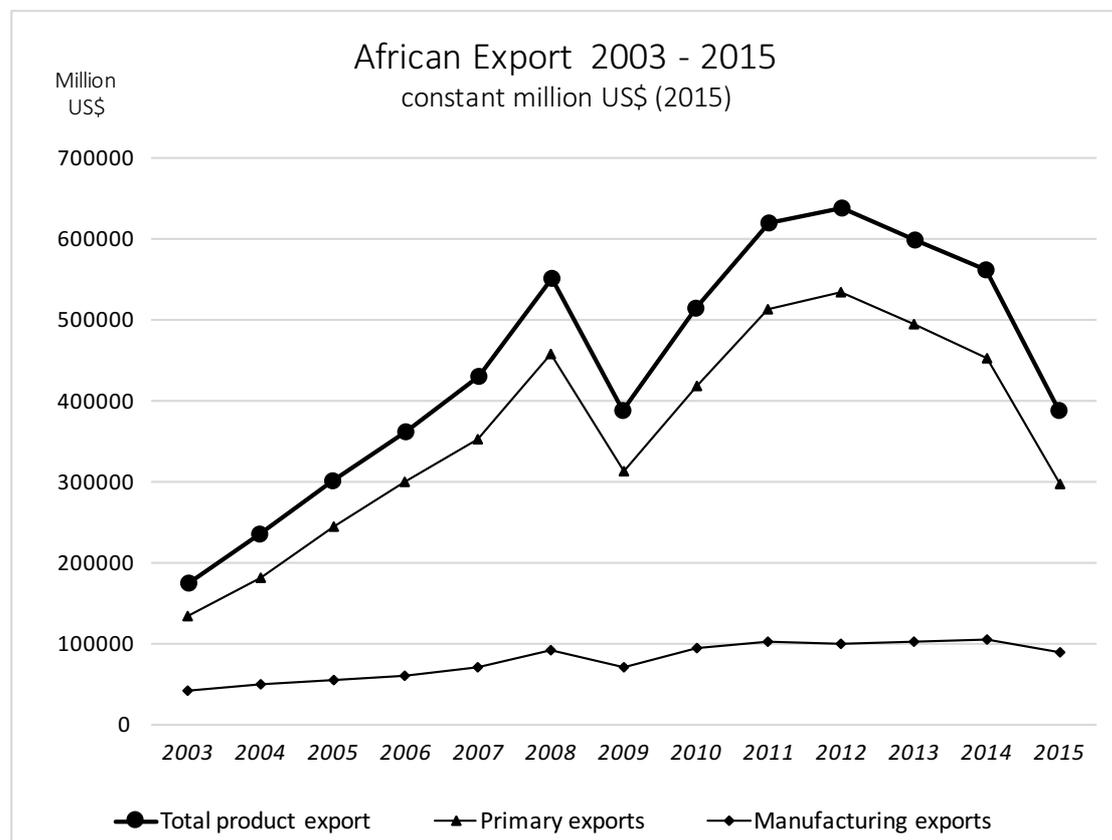
3.1 African export

The African countries' differences in size, geographical location, and political stability etc. are factors that influence their economies. Hence, the African countries have experienced very dissimilar economic development, with some countries prospering while others have had little or negative economic growth since the beginning of the millennia. For instance, Broadman (2006) entitles Nigeria and South Africa the African 'super powers' due to their significant share of the continent's economic activity (i.e. distribution and consumption of products and services, which consist of over 50 percent). This implies great differences between the African countries' economies. Furthermore, the trading patterns vary depending on the African region. North Africa exports most of its goods to Europe, while sub-Saharan

Africa’s primary trading partner is the United States. Also, in sub-Saharan Africa, the inter-regional trade is particularly important (Giovannetti & Sanfilippo, 2009).

Generally, the African countries’ export is very dependent on its natural resources. This is because of the small, undeveloped and non competitive manufacturing sector. Sub-Saharan Africa in particular, is struggling with its manufacturing export and consequently, the countries in the region rely heavily on primary product exports. Furthermore, a clear majority of the African manufacturing exports include resource-based manufactures, which in contrast to East Asia, has a high share of pure manufactures, such as technology products. (Lall & Kraemer-Mbula, 2005).

Fig 2. African product export to the world.



Source: UNCTAD, 2017b

Figure 2 highlights the significant role that natural resources play in the African exporting industry. Furthermore, approximately 40 percent of the world’s resource-rich countries are African (IMF, 2007). IMF considers a country resource-rich when hydrocarbons or minerals constitute a significant share of a country’s economy. More

specifically it means that a country that fulfills one of the two following criteria is considered resource-rich:

- (i) An average share of the fiscal revenues from hydrocarbon and/or minerals makes up no less than 25 percent of the total fiscal revenue during the period 2000-2005.
- (ii) An average share of the hydrocarbon and/or mineral export makes up no less than 25 percent of the total export.

IMF's resource-rich criteria could be interpreted as a measure of the dependency on the primary sector rather than the amount of natural resources that a country possesses. This is because the share of natural resources in the economy is considered instead of the access to them. Accordingly, a country with an abundance of natural resources does not necessarily meet IMF's criteria, and is therefore not considered resource rich by IMF.

The African countries' reliance on natural resources has been observed and studied previously. For instance, Lall and Kraemer-Mbula (2005) argue that the importance for Africa to diversify its exports and to become less dependent on unstable primary products is crucial for their economic growth. However, many African countries face challenges in doing so. Unfortunately, corruption is a widespread issue and many African countries belong to the most corrupt in the world (Broadman, 2006). As discussed earlier, the problematic relationship between natural resources and corruption is likely to impede economic growth and the development of new African export industries. In addition, the African manufacturing industry has been affected by the increased international competition. The Chinese low cost manufacturing sector has displaced African manufactures both in the African domestic market but also in the export market (Renard, 2011). This is especially true within the apparel and textile industry where the increasing Chinese exports have replaced African production (Giovannetti & Sanfilippo, 2009). Therefore, following from the theories of resource-dependency, it is important for many African countries to find substitutes to their primary exports. This issue concerns both the economic and political stability and thus, the African welfare in whole.

With this as background, it is of importance to further investigate and understand if China's FDI in Africa affects the African countries' export performance. Initially, the expected effects of China's OFDI on the African export is discussed.

4. Hypothesis

According to the theory of FDI, one would expect IFDI to enhance the exports for the host country¹. Regarding the direct effects of IFDI, the MNE is thought to contribute to the host country's export thanks to its capabilities in productivity, management, and networking etc. This is expected to happen as the MNE starts exporting from the foreign plant to new markets. It could also be the case that the foreign plant replaces the parent plant's exports to already existing export markets. Both situations are examples of the direct effects of horizontal FDI and both contribute to the host country's export. Since this study examines the African countries' export to all countries but China, the hypothesis for the direct effects concerns horizontal FDI only. The direct effects of China's vertical FDI regards the affiliates' exports back to China and therefore, it is not considered. This implies that the direct effects of the majority of China's FDI, which is assumed to vertical and resource-seeking, is not observed.

Turning to the indirect effects of IFDI, the presence of the Chinese MNEs in Africa are expected to increase the African export thanks to spillover effects. Spillover effects are expected to make the African firms more competitive and efficient as they lower their production costs and improve their business network. This may happen as local firms learn from Chinese MNEs about new technology (technological spillover effects). Also, the foreign MNEs may improve the infrastructure and possibilities to transport which also facilitates exports for local firms. The spillover effects are expected to take place both when a MNE fragments and duplicates its production in the host country. Thus, both vertical and horizontal FDI is expected to have a positive indirect effect on local African firms. Subsequently, since most of China's FDI in Africa is directed to the primary sector it is thought to create more spillover effects there, even though the local manufacturing sector also is expected to benefit from this.

¹ Hereafter, African export and African export to the world refer to the export to all countries excluding China.

To conclude, the direct effects of horizontal IFDI and the indirect effects of both horizontal and vertical IFDI are expected to have a positive impact on the African countries' export. Finally, the resource-rich African countries are believed to experience a less positive impact from China's FDI on their export. This is because these countries are expected to have more issues with economic instability and corruption, which may harm the export sales.

5. Previous research

Previous research has to some extent examined if IFDI has an effect on the productivity and the export performance in the host country. In a study on Australia and Canada, Caves (1974) examines if IFDI increases the productivity of local firms in the manufacturing sector. He does so by analyzing if the share of MNEs in the host country has affected the productivity in the local industry. Increased productivity implies improved efficiency which consequently is expected to make a firm more competitive. Therefore, improved productivity in the host country is thought to contribute to the country's export. The study concludes that in Australia, a higher level of foreign ownership correlates with higher domestic productivity. However, no significant results are shown for Canada. Thus, technological spillovers are found in the Australian manufacturing sector, but not in the Canadian. On the same topic, Chuang and Hsu (2004) investigate if the presence of MNEs have a positive impact on the local firms' productivity in China. The authors find positive significant effects on local productivity from the presence of foreign ownership both when the technology gap between their industries is high and low. However, the technological spillover effects are greater when the technology gap is low, which imply that the technological spillovers from IFDI are greater when the MNE and the domestic firm are more equal in terms of technology. In summary, they find that IFDI in the labor-intensive industries has played an important role in promoting the creation of a Chinese export market.

Furthermore, on the subject of FDI and export, Aitken, Hanson, and Harrison (1997) study if the presence of MNEs promotes the host country's export in the Mexican manufacturing sector. More specifically, the authors examine if non-exporting plants

that are closely located to exporting plants have a tendency to start exporting. They separate between exporting MNEs and domestic exporters and find that locating near MNEs do increase the probability of exporting while locating close to domestic exporters do not. This suggests that MNEs reduce the domestic firms' costs associated with exporting through spillover effects, which motivates them to become exporters. Similarly, Sharma (2000) evaluates in a study on India, if IFDI has had an impact on India's export. Sharma finds no significant impact from IFDI on the export performance, but his study suggest that the demand of Indian exports rise as world prices increase relatively to India's export prices.

In conclusion, previous research has found mixed results for the effects of IFDI on the host economy's productivity and export performance. As this paper examines the role of China's FDI in Africa on the African countries' product export, it aims to increase the general knowledge about the relationship between IFDI and the host country's export performance.

6. Method

To test for the given hypothesis about the effects of China's OFDI on the African product export (excluding China), several econometric regressions are performed. The study uses panel data on aggregated statistics for an African country (i) over time (t). Model 1 relies on an earlier model by Zhang and Song (2001) and examines the more general question at issue, that is, if China's FDI flows to African countries affects these countries' total product export.

$$\begin{aligned} \log Total_export_{it} = & \alpha + \beta_1 \log Total_export_{i(t-1)} + \beta_2 \log FDI_China_{i(t-1)} + \\ & \beta_3 \log FDI_rest_world_{i(t-1)} + \beta_4 \log Domestic_investment_{i(t-1)} + \\ & \beta_5 GDP_growth_{it} + \beta_6 Manufacturing_value_GDP_{it} + \varepsilon \end{aligned} \quad (1)$$

In model 1, the logarithm of the total product export (excluding China) is the dependent variable, where $i = 1 \dots 31$ and $t = 2004 \dots 2015$. Among the explanatory variables are the logarithms of the previous year's; total product export, IFDI flows from China, IFDI flows of from the rest of the world, and domestic investments. The reason to take the logarithm of these variables follow from previous research (Zhang

& Song, 2001). Furthermore, these variables are lagged one year since they are not expected to have an immediate effect on the export. Instead, it is likely that it takes time to implement a FDI-project or domestic investment, e.g. to open a new plant or improve technology. Also, by lagging the variables for FDI and domestic investments, a potential causality problem is treated. For instance, if not using lags for the FDI variables, ambiguity could arise whether the explanatory variable really affects the dependent variable. One may reason that increasing exports would attract FDI, meaning that the export variable affects the FDI variables. That is, the effect is going the other way from what this paper aims to examine. However, by lagging these variables with one year, I make sure that the model examines what impact FDI and domestic investments from the previous year have on the next year's export, and thus, this issue is considered. Lastly, the annual percentage growth in GDP, and the annual percentage share of added manufacturing value relative to GDP are included explanatory variables in the model.

The reason to use control variables is to make sure that the causality between the inflow of Chinese FDI and the African countries' export performance is true. In other words, using control variables reduce the risk of getting spurious relationships in the regression. First, previous year's export performance is taken into consideration (*logTotal export lag*). It is likely that a given year's export performance depends on the previous year's exports. In other words, previous export performance is expected to correlate positively with the next year's export performance. The previous year's FDI flows from the rest of the world is also considered (*logFDI rest world lag*). This is in order to distinguish between the potential effects from the rest of the world's FDI and China's FDI on African export. Hypothetically, as follows from the theory of FDI, the rest of the world's OFDI in Africa is thought to increase the African export. Furthermore, an African country's domestic investments are included in the model (*logDomestic investment lag*). It is likely that domestic investments in infrastructure, technology, equipment etc. facilitate and enhance export and thus, a positive correlation between the variable and the export is expected. A control variable is also added for the percentage growth rate in GDP (*GDP growth*). GDP is a measure of a country's economic performance and it is expected that increasing GDP results in growing exports, implying a positive correlation (Zhang & Song, 2001). Finally, a control variable is added for the percentage share of a country's added manufacturing

value in relation to its GDP (*Manufacturing value GDP*). Zhang and Song (2001) show that the rise of the manufacturing sector have played an important role in China's increasing exports. Hence, it is expected that a higher percentage share of the added manufacturing value relative to GDP, would increase a country's total product export and manufacturing export. However, it is not expected to have a positive effect on the export of primary goods, since an expanding manufacturing sector may reduce the activity in the primary sector.

Model 1 is to be regarded as a benchmark model from which alternative models are developed. To examine if different export sectors are differently affected, two new models are used. This enables further and more specific discussion about the impact of China's FDI on the African export. Model 2 examines if China's FDI flows to Africa affects the primary product export sector. Therefore, in model 2, the dependent variable is the logarithm of the primary product export (*logPrimary export*). Consequently, Model 2 includes the logarithm of the lagged primary product export (*logPrimary export lag*) as an explanatory variable instead of *logTotal export lag* as in Model 1. Otherwise, the explanatory variables are the same in both models.

Model 1 and 2 investigate if there are any effects from China's FDI on Africa's total product export and primary export. To examine if the manufacturing export has been affected, Model 3 is used. In Model 3, the dependent variable is the logarithm of the manufacturing export (*logManufacturing export*). Consequently, Model 3 includes the logarithm of the lagged manufacturing product export (*logManufacturing export lag*) as an explanatory variable instead of *logTotal export lag* as in Model 1, or *logPrimary export lag* as in Model 2. Otherwise the explanatory variables are the same in the models.

Model 1, 2, and 3 examine if China's FDI in African countries has affected the African countries' total product export, primary export, and manufacturing export. However, these models do not recognize if the African country is resource-rich. To test if the IFDI has a different impact on the African countries who are defined as resource-rich by IMF, an interaction variable is added to the original models in separate regressions. The interaction variable includes the already used variable for the lagged logarithm of China's FDI and a dummy variable that takes the value of 1 if

the country is defined as resource-rich by IMF. The interaction variable looks like the following:

$$\log FDI_China_{i(t-1)} \times Resource_rich_dummy$$

and captures if China's FDI has a different impact on the export performance for the resource-rich African countries. Thus, three new models are created that are extended versions of the original models. The new models are identical to their originals with the only exception that they include the interaction variable. Model 1's extended model is called 1.1, Model 2's extended model is called 2.1, and Model 3's extended model is called 3.1.

Table 1. List of variables.

Name of variable	Definition	Source
<i>logTotal_export</i>	The logarithm of the total product export (excluding exports to China), expressed in constant 2015 million US\$.	UNCTAD
<i>logPrimary_export</i>	The logarithm of the primary exports (excluding exports to China), expressed in constant 2015 million US\$.	UNCTAD
<i>logManufacturing_export</i>	The logarithm of the manufacturing exports (excluding exports to China), expressed in constant 2015 million US\$.	UNCTAD
<i>logFDI_China</i>	The logarithm of China's FDI flows to an African country expressed in constant 2015 million US\$.	SAIS-CARI
<i>logFDI_rest_world</i>	The logarithm of the world's (excluding China) FDI flows to an African country expressed in constant 2015 million US\$.	The World Bank
<i>logDomestic_investment</i>	The logarithm of an African country's domestic investments, including investments in infrastructure, machinery, buildings and land improvements etc. Expressed in constant 2015 million US\$.	The World Bank
<i>GDP_growth</i>	The annual percentage GDP growth rate.	The World Bank
<i>Manufacturing_value_GDP</i>	The percentage share of manufacturing value added in relation to GDP. Manufacturing value added implies the net output of the manufacturing sector.	The World Bank
<i>Resource_rich_dummy</i>	Dummy variable depending on whether a country is considered resource-rich by IMF.	IMF

For processing of variables, see appendix.

7. Data and Descriptive statistics

The data in this study is gathered from different online databases. The data for China's FDI in Africa is collected from SAIS China Africa Research Initiative, a department centered at the Johns Hopkins University School of Advanced International Studies (SAIS-CARI) in Washington D.C., United States. This institute conduct research (data collections, field research etc.) about the relationship between China and African countries. The data for the African countries' total product export, primary product export, and manufacturing export is gathered from UNCTAD, a department of the United Nations. Furthermore, the statistics for the African countries' total inflow of FDI, domestic investments, percentage GDP growth, and percentage share of added manufacturing value relative to GDP are collected from the World Bank. Lastly, the list of resource-rich African countries is retrieved from IMF.

The time period examined in this study is between the years 2004-2015. The reason for this time interval is the limited availability of data for Chinese FDI in African countries. Thus, since China's FDI in Africa is the explanatory variable of main interest, the examined time period is restricted to the years for which China's FDI in Africa is available. Furthermore, the exports analyzed in this study are the total product export, primary product export, and manufacturing export. Exports of primary commodities and manufacturing goods constitute for the outermost part of the total product export (UNCTAD, 2017b). These two subgroups are analyzed since they lay the foundation for further discussion about dependency on natural resources and diversification of exports.

There exist some limitations in the collected data that is used in this study. First, the export data is only for product export, and thus excluding other sectors, such as the service export sector. Data for service export is, to my knowledge, not easily available on bilateral country level, which is necessary in this study. That is because the study considers African export to the world excluding China, which is calculated by subtracting the export to China from the export to the world. Since the size and development of the service export sector also tells about a country's export performance, including this sector would have benefitted the study. Also, as Sharma (2000) suggests, a country's efficient exchange rate is thought to affect its export

performance, but again, due to limited data a control variable for the exchange rate is not included in the model. Furthermore, the statistics for China's FDI in Africa may be slightly inaccurate. According to UNCTAD (2007) China's FDI statistics deviate from international standards and it is therefore reasonable to question the precision of China's FDI data in general. Subsequently, in order to create a control variable for the rest of the world's FDI to African countries, China's FDI flows to African countries are subtracted from the world's FDI flows to African countries. The limitation arises because the FDI data are collected from different sources (World Bank and SAIS-CARI). Consequently, the FDI data would probably be more precise if it was available from the same source. Lastly, this paper examines if Chinese OFDI affects the African export performance and optimally, all African countries were to be included in order to get the most accurate results. However, due to the lack of public statistics for many African countries, 31 countries are observed (see appendix for the list of countries). These limitations in data are important to keep in mind when analyzing the results.

7.1 Descriptive statistics

The general statistics of the collected panel data for the period 2003-2015, are presented in table 1 (see appendix for correlation matrix). Data is collected one year prior to the study's examined time period since several variables are lagged with one year. First, statistics for the number of observations, mean value, and standard deviation are given for the resource-rich African countries, followed by the remaining African countries. Thereafter, statistics for the whole sample is presented, including numbers for minimum and maximum values. The sample consists of 13 resource-rich countries and 18 non resource-rich, which make a total of 31 countries. A country is considered resource-rich if it fulfills IMF's previously described criteria. IMF's list of resource-rich countries is based on calculations from 2000-2005 and if a country is on this list it is considered resource-rich throughout the whole examined period. The numbers for *Total export*, *Primary export*, *Manufacturing export*, *FDI China*, *FDI rest world*, and *Domestic investment* are presented without the logarithm and are expressed in constant 2015 million US\$. This is done in order to increase the comprehension for the numbers. The variables *GDP growth* and *Manufacturing value GDP* are expressed in percentage.

Table 2. Descriptive statistics.

Variable	Resource-rich			Other African countries			Total				
	N	Mean	Sd	N	Mean	Sd	N	Mean	Sd	Min	Max
Total_export	169	15062,03	27331,02	234	4734,62	6937,84	403	9065,47	19133,89	5,53	131366,90
Primary_export	169	12055,57	22707,83	233	2500,02	3276,17	402	6517,16	15637,93	4,02	129896,00
Manufacturing_export	169	2950,79	8939,89	234	2161,51	4070,67	403	2492,50	6569,35	1,33	43181,74
FDI_China	169	76,90	422,87	234	31,83	76,55	403	50,73	280,40	- 855,66	5336,73
FDI_rest_world	169	1461,92	2115,08	234	1589,63	4020,05	403	1536,08	3352,67	- 8719,72	28204,02
Domestic_investment	169	11181,98	21080,91	234	6337,62	9890,90	403	8369,13	15752,85	0,00	84380,44
GDP_growth	168	4,97	5,86	234	4,91	4,25	402	4,93	4,98	- 30,15	38,00
Manufacturing_value_GDP	165	9,42	5,47	226	11,66	5,10	391	10,72	5,37	0,24	25,10

In table 2, the column of the number of observations indicates that a few data observations are missing for the variables (totally balanced data would imply 169 observations for each variable for the resource-rich countries and 234 observations for the remaining African countries). Furthermore, the statistics show a higher mean value of primary export for the resource-rich countries than for the non resource-rich countries. Also, the mean value of primary export is higher than the one of manufacturing export for both groups, although the share of the mean manufacturing export is higher for the non resource-rich countries. The large share of primary exports is not very surprising as the graph in figure 2 shows the dominant role of primary exports for Africa in whole. Subsequently, the numbers show that China's mean FDI flows to Africa is noticeably lower than the mean flows from the rest of the world. The minimum values for the FDI variables are negative which imply that at least one of the components that FDI consists of (equity transactions, earning reinvestments, and intra-company debt transactions) is negative and greater than potential positive components. Lastly, the clear differences in minimum and maximum values (e.g. for total product export) indicate that the countries in the sample vary greatly in their characteristics.

7.2 Econometric discussion

Before the regressions are run and analyzed, several econometric tests are performed on the models in order to secure that they can be correctly estimated. The results presented in this section are from the benchmark model, however all models get very similar results. First, all variables are tested for unit-roots with a Fischer-test. The null

hypothesis of the test says that all panels contain unit roots. The highest p-value is 0,006 for *logManufacturing export*, which imply that the data is stationary to a large extent. Thereafter, multicollinearity is tested for by applying a VIF-test. Multicollinearity refers to the linear relationship between the explanatory variables in the model and VIF-values above 10 imply that multicollinearity is a problem in the tested model (Baum, 2006). The highest VIF-value is 6,01 for *logDomestic investment lag*, which implies that multicollinearity is not a not a problem. The correlation, however, is relatively high between the variable for domestic investments and the variables for product exports (see correlation matrix). Although, since these variables are included in previous research by Zhang and Song (2001) and because the VIF-test shows good values, these variables are kept in the model. Subsequently, after performing a Hausmann-test the models are estimated with fixed effects instead of random effects. The p-value from the Hausmann-test is 0,000, which implies that the fixed effect model is the most appropriate. The fixed effect model is a linear regression model where the intercept varies over the individuals (*i*) in the sample (Verbeek, 2012). Since the models are estimated with fixed effects, the resource-rich dummy variable is not included alone as an explanatory variable. That is because a dummy variable, without interaction with another variable, is omitted from the model when estimating with fixed effects.

Heteroscedasticity and autocorrelation are also considered in the models. Heteroscedasticity implies that the error term's variance changes between the observations. Consequently, heteroscedasticity leads to inaccurate estimations of the variables. The models are tested for heteroscedasticity with a Modified Wald test with the null hypothesis that there is no heteroscedasticity in the model. The p-value of 0,000 implies that the null hypothesis is rejected and that heteroscedasticity is present. Subsequently, autocorrelation is tested with the Wooldridge-test. Autocorrelation implies that the observations in the sample are dependent of each other. The consequences of having autocorrelation in the model are similar to the ones of heteroscedasticity, which implies that the estimations are not optimal. The p-value is 0,000 which rejects the null hypothesis that autocorrelation is not present in the model. Since heteroscedasticity and autocorrelation is present in the models, the regressions are run and adjusted with robust standard errors.

Finally, it should be mentioned that some observations are omitted when the variables are logarithmized. This is because it is not possible to take the logarithm of the value of 0 or a negative number. However, there are few omitted observations, and thus, it is not expected to have a meaningful impact on the results.

8. Results

In table 3, the results for Model 1, 2, and 3 are presented. The robust standard errors are shown in parentheses below each variable's coefficient. The R^2 values imply that Model 1 explains for 35,34%, Model 2 explains for 42,91%, and Model 3 explains for 64,07% of the variance in their respective dependent variable. This implies that the variables have the highest degree of explanation on the dependent variable in Model 3.

Table 3. Results.

Variable	(1) <i>logTotal_export</i>	(2) <i>logPrimary_export</i>	(3) <i>logManufacturing_export</i>
<i>Constant</i>	7,041151 *** (0,5903031)	6,615587 *** (0,5382322)	4,760572 *** (0,722527)
<i>logTotal_export_lag</i>	0,2380506 *** (0,0843796)		
<i>logPrimary_export_lag</i>		0,3368133 *** (0,0796727)	
<i>logManufacturing_export_lag</i>			0,1758262 (0,1288331)
<i>logFDI_China_lag</i>	0,0452973 ** (0,0168583)	0,0452409 ** (0,0171064)	0,0670231 ** (0,0255442)
<i>logFDI_rest_world_lag</i>	0,0078154 (0,0238558)	0,0074181 (0,0223402)	0,0226683 (0,0365497)
<i>logDomestic_investment_lag</i>	- 0,0733116 (0,0776165)	- 0,1424251 (0,0972446)	0,0021645 (0,1198752)
<i>GDP_growth</i>	0,0133819 * (0,0069532)	0,0205693 * (0,0112087)	0,0152836 ** (0,0063288)
<i>Manufacturing_value_GDP</i>	- 0,0507312 ** (0,0227681)	-0,0560907 ** (0,0228774)	- 0,0126141 (0,0287401)
R²	0,3534	0,4291	0,6407
N	339	337	339

Significance Level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Robust standard errors in parentheses

First, in order to determine if China's FDI to African countries has affected the African countries' total product export, Model 1 is examined. The variable of main interest, that is *logFDI China lag*, is positive and significant on a two-star level. The result fit the theoretical hypothesis that IFDI promotes the overall product export. Furthermore, its coefficient shows that an increase in Chinese FDI with one percent increases the next year's total product export with approximately 0,045 percent. Thus, China's FDI to African countries has positively affected these countries' next year's total product export. Turning to the control variables, *logDomestic investment lag* and *Manufacturing value GDP*, have unexpected negative coefficients. The former variable is insignificant, while the latter is significant on a two-star level, which implies that an increasing share of added manufacturing value in relation to GDP lowers the total product export. Furthermore, *logTotal export lag*, *GDP growth*, and *logFDI rest world lag*, all show expected positive coefficients. *logTotal export lag* is significant on a three-star level, *GDP growth* is significant on a one-star level, and *logFDI rest world lag* is insignificant.

Even though China's FDI to African countries has promoted the total product export, there may be various effects from China's FDI in the different export sectors. As Model 2 focuses on the primary export and Model 3 on the manufacturing export, this question is further analyzed with these models. In both models, *logFDI China lag* is positive, which is in line with the hypothesis. Furthermore, the variable is significant on a two-star level for both models. In Model 2, the coefficient implies that an increase in Chinese FDI with one percent, increases the next year's primary export with approximately 0,045 percent, which is very similar to the result in Model 1. Likewise, in Model 3, the coefficient indicates that an increase in Chinese FDI with one percent, increases the next year's manufacturing export with approximately 0,067 percent. Thus, China's FDI to African countries has increased the African countries' exports in both the primary and manufacturing sector the next year. The coefficients imply that the percentage positive impact, has been slightly higher in the manufacturing sector, which is a bit surprising. However, since the descriptive statistics shows that the mean manufacturing export is noticeably smaller than the mean primary export, a smaller increase in absolute values for manufacturing exports is required in order get a similar percentage impact. Turning to the control variables in Model 2, the coefficient of the *logPrimary export lag* is positive, which is

expected. Furthermore, the variable is significant on a three-star level. The other control variables coefficients are of the same sign, and significance-level as in Model 1. However, in Model 2, it is expected that the coefficient of *Manufacturing value GDP* is negative. That is because an expanding manufacturing sector is likely to reduce the activity in the primary sector. Looking at the control variables in Model 3, the coefficients of *logManufacturing export lag* and *logDomestic investment lag* are positive which is expected. However, both variables are insignificant. The insignificance of *logManufacturing export lag* implies that last year's manufacturing export does not affect the next year's export of manufactures. Furthermore, it is surprising that the coefficient of *Manufacturing value GDP* is negative as it suggests that an increasing share of the manufacturing sector in relation to GDP would have a negative impact on the manufacturing export. Although, the variable is insignificant.

The results from table 3 all indicate that Chinese FDI in African countries has increased these countries' total product export, by promoting the exports of both primary goods and manufactures. However, these regressions do not consider if a country is resource-rich. In order to capture if a resource-rich African country experiences any different effects from China's FDI, the interaction variable between *logFDI China lag* and *Resource rich dummy* is added to the original models. The results for the extended models are presented in table 4. The inclusion of the interaction variable in the models, changes the estimated coefficients and the significance of the other variables slightly. Furthermore, the new R^2 values imply that Model 1.1 explains for 36,24%, Model 2.1 explains for 43,49%, and Model 3.1 explains for 63,10% of the variance in their respective dependent variable. These values are similar to the R^2 values in table 3.

Table 4. Results - extended models including interaction variable.

Variable	(1.1) <i>logTotal_export</i>	(2.1) <i>logPrimary_export</i>	(3.1) <i>logManufacturing_export</i>
<i>Constant</i>	7,016379 *** (0,601729)	6,593304 *** (0,552912)	4,766987 *** (0,7187505)
<i>logTotal_export_lag</i>	0,243657 *** (0,0845746)		
<i>logPrimary_export_lag</i>		0,3422826 *** (0,0825449)	
<i>logManufacturing_export_lag</i>			0,1747114 (0,1261884)
<i>logFDI_China_lag</i>	0,0520691 ** (0,0226095)	0,0508727 ** (0,0203131)	0,0629438 * (0,0334699)
<i>logFDI_rest_world_lag</i>	0,0084156 (0,0241935)	0,0077813 (0,0225913)	0,0222124 (0,0359793)
<i>logDomestic_investment_lag</i>	- 0,0762029 (0,0777916)	- 0,1452401 (0,0980623)	0,0023219 (0,1191033)
<i>GDP_growth</i>	0,0130858 * (0,0068294)	0,0203582 * (0,0111747)	0,0155075 ** (0,0060949)
<i>Manufacturing_value_GDP</i>	- 0,0501589 * (0,0229718)	- 0,055507 ** (0,0231115)	- 0,0128548 (0,0289304)
<i>logFDI_China_lag * Resource_rich_dummy</i>	- 0,0176772 (0,0268174)	- 0,0146966 (0,0273695)	0,0108328 (0,0411957)
R²	0,3624	0,4349	0,6310
N	339	337	339

Significance Level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Robust standard errors in parentheses

To examine if a resource-rich African country has been particularly affected in its total product export, Model 1.1 is examined. The coefficient of *logFDI China lag* is now slightly higher than in Model 1, with the same significance level. The coefficient implies that an increase in Chinese FDI with one percent, increases the next year's total product export with approximately 0,052 percent. The interaction variable is interpreted as the extra slope of the variable *logFDI China lag*. The result shows a small negative coefficient, which indicates that a resource-rich country is less positively affected in its total product export than other African countries. This is in line with the hypothesis that China's FDI has greater impact on the non resource-rich African countries. However, the variable is insignificant.

Even though, no different effect is found on the total product export, there may be dissimilar effects on the export performance in the primary and manufacturing sector for resource-rich countries. In order to determine if that is the case, Model 2.1 and 3.1 are further analyzed. In Model 2.1 the coefficient of *logFDI China lag* is now slightly higher than in Model 2 with the same significance level. The coefficient implies that an increase in Chinese FDI with one percent, increases the next year's primary export with approximately 0,051 percent. Similar to Model 1.1, Model 2.1 has a small negative coefficient for the interaction variable, which suggests that Chinese FDI contributes less positively to the primary export in a resource-rich country than in a non resource-rich country. The sign of the coefficient is expected, although, the variable is insignificant.

In Model 3.1 the coefficient of *logFDI China lag* is now slightly lower than in Model 3. The coefficient indicates that an increase in Chinese FDI with one percent, increases the next year's exports of manufactures with approximately 0,063 percent. The variable is significant on a one-star level, which is less than in Model 3. Surprisingly, in Model 3.1 the coefficient of the interaction variable is positive. This indicates that China's FDI has a greater positive impact on a resource-rich country's manufacturing export than on a non resource-rich country. The sign of the coefficient is surprising as the hypothesis suggests that resource-rich African countries would have a lower positive impact from China's FDI on its manufacturing export than other African countries. However, the variable is insignificant.

9. Discussion and concluding remarks

The debate about China's potentially harmful investments in Africa has intensified over the last years. For instance, *The New York Times* (2017) questions whether China is colonizing Africa. In this study, I examine if China's FDI in African countries has affected these countries' product export (excluding the export to China). More specifically, it is investigated if there are different effects from China's FDI on the primary and manufacturing export sector. This is analyzed by using panel data for 31 African countries in the period of 2004-2015.

The results show that inflow of Chinese FDI has a positive and significant effect on the next year's product export for African countries. This finding is in accordance with the theoretical aspects of FDI's effects on the host country's export. These results are interesting as they show that China's increasing FDI in the African economy has contributed to the African product export. Furthermore, this result is consistent and significant for the primary export sector as well as the manufacturing export sector. The positive percentage impact is indeed slightly higher for the manufacturing export than for the primary export (although model 3.1 only is significant on a one-star level). This finding is surprising as it suggests that the FDI flows from China, which are assumed to mainly go to the primary sector, has promoted the manufacturing export more. Consequently, this indicates that China's FDI in Africa has contributed to a slight diversification of the African product export, as the share of the manufacturing export has benefitted more than the primary export. Although, since the descriptive statistics shows that the mean manufacturing export is noticeably lower than the mean primary export, a smaller increase in absolute values for manufacturing exports is required in order to get a similar percentage impact. Furthermore, the results imply that Chinese FDI increases the African manufacturing exports, which is crucial for many African countries as it helps developing substitutes to primary exporters. These findings are of importance since previous scholars stress that the growth of the manufacturing sector stabilizes the export revenues and the domestic governance, and thus, contributes to the African welfare.

Subsequently, the results indicate the same positive effects on the export for resource-rich African countries. The interaction variable's coefficient suggests that the resource-rich African countries have a slightly lower positive impact from China's FDI on the total product export and the primary export, but a greater impact on the manufacturing export. However, the conclusion that these groups experience the same effects is drawn since the interaction variable is insignificant for all models. This suggests that China's FDI in resource-rich African countries promotes the manufacturing exports and the primary exports to the same degree as in the other African countries. Thus, these findings go against the thought that the effects of Chinese FDI in Africa would be harmful for the African product export. In addition, the results deny that Chinese FDI would be less positive for the resource-rich African countries. Hence, no evidence is found that the Chinese FDI hinders the African

countries from increasing or diversifying its export. Whether these results stem from an increase in exports from Chinese MNEs, local African firms, or both, remain unknown. In other words, the degree of the direct effects and indirect effects of China's FDI on African export is not observable. However, since, this study examines the African countries' export to all countries but China, the direct effects of China's vertical FDI is ignored. This implies that the results are not affected by the vertically integrated Chinese MNEs (or the domestic firms) who export, mainly natural resources, back to China. Consequently, the results are based on the direct horizontal effects from China's FDI and the indirect effects (spillover effects) from both the horizontal and vertical FDI. Since China's horizontal FDI in Africa is assumed to be small, this suggest that spillover effects could be the underlying reason to the result of the positive impact from Chinese FDI. That would imply that local African firms have benefitted in its export sales from the presence of Chinese MNEs. However, in order to truly distinguish between these effects, more research regarding China's involvement in Africa is needed.

The finding of the positive effect on host countries' export from IFDI is in contrast to Sharma (2000), who does not find any effect on India's export in his study. However, the conclusion that China's FDI has promoted African manufacturing exports is in line with the work of Zhang and Song (2001), who find a similar, although stronger, correlation between IFDI and manufacturing export in China. Contrary to these authors, this study finds a negative significant relationship between the share of added manufacturing value relative to GDP and the total product export. This suggests that an African country that improves the size of its manufacturing sector relatively to its GDP, will experience a decrease in total product export. The results indicate that this happens since the primary export is negatively affected by the relative growth of the manufacturing sector, while the manufacturing export is unaffected. However, hopefully this finding do not discourage African countries from diversifying its product export, since the exports of natural resources have shown to contribute little to Africa's economic growth (Meyersson, i Miquel, & Qian, 2008).

Interestingly, no significant effects are found for the rest of the world's FDI on African export. Although, caution is needed when trying to reason why the effects are different to China's FDI, it may imply that the FDI from China and the FDI from the

rest of the world differ in their characteristics². Earlier research, for instance by Caves (1974), shows that IFDI has dissimilar effects in different countries, but little research has examined if different types of FDI gives diverse effects in the host economy. Therefore, it would be of interest for future research to try to clarify if IFDI of different sorts (e.g. horizontal or vertical) affects the local industries differently.

Finally, since this study uses a limited sample of African countries, one should be careful to jump to quick conclusions about the general impact of IFDI on a host country's export performance. This is especially true due to some limitations in the collected data. Furthermore, aspects such as a country's exchange rate, trade-policies, geographic location etc. are also likely to influence the export performance, and thus, it would be encouraging for future research to consider. This is also likely to explain the relatively low R^2 values in the models. Thus, the findings of this paper suggests that IFDI improves a country's total product export to all countries, excluding the source country of the FDI, by promoting the exports of primary goods and manufactures. Though, further examination is needed in order to conclude whether this relationship is general for other regions and countries.

In conclusion, this paper contributes to the research about China's FDI in Africa and its effects on the African product export. The results show that China's FDI flows to African countries have improved African product export, by increasing the exports in the primary and manufacturing sector. Finally, these findings contradict the beliefs that China's FDI in Africa would be harmful for the African countries in terms of product export.

² It should be emphasized that the variables for China's FDI and the rest of the world's FDI are not completely comparable. The variable for Chinese FDI measures the effect of IFDI on the export performance excluding the source country of the FDI. The variable for the rest of the world's FDI measures the effect of IFDI on the export performance including the source countries of the FDI, but excluding China.

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Appendix

List of countries

Benin, Botswana*, Cameroon*, Chad, Democratic Republic of the Congo*, Egypt, Equatorial Guinea*, Gabon*, The Gambia, Ghana*, Guinea*, Kenya, Liberia*, Malawi, Mauritania*, Mauritius, Morocco, Mozambique, Namibia*, Niger, Nigeria*, Republic of the Congo*, Rwanda, Senegal, Seychelles, South Africa*, Tanzania, Togo, Tunisia, Uganda, Zimbabwe.

* for resource-rich

Correlation matrix

Variable	Total_export	Primary_export	Manufacturing_export	FDI_China	FDI_rest_world	Domestic_investment	GDP_growth	Manufacturing_value_GDP
Total_export	1.0000							
Primary_export	0.9473	1.0000						
Manufacturing_export	0.6509	0.3736	1.0000					
FDI_China	0.2392	0.1877	0.2495	1.0000				
FDI_rest_world	0.3513	0.3294	0.2297	0.0829	1.0000			
Domestic_investment	0.8854	0.7434	0.8011	0.2569	0.3429	1.0000		
GDP_growth	0.0074	0.0479	-0.0931	0.0055	0.0985	-0.0362	1.0000	
Manufacturing_value_GDP	0.0616	-0.0669	0.3316	0.0448	-0.0737	0.2146	-0.1320	1.0000

Processing of variables

LogTotal export: Total product export from an African country (excluding China) for a specific year. Calculated by subtracting an African country's total product export to China from its total product export to the world. All numbers converted with GDP deflator into constant US\$ with base year 2015. Finally, the variable is logarithmized.

LogPrimary export: Primary product export from an African country (excluding China) for a specific year. Calculated by subtracting an African country's primary product export to China from its primary product export to the world. All numbers converted with GDP deflator into constant US\$ with base year 2015. Finally, the variable is logarithmized.

LogManufacturing export: Manufacturing product export from an African country (excluding China) for a specific year. Calculated by subtracting an African country's manufacturing export to China from its manufacturing product export to the world. All numbers converted with GDP deflator into constant US\$ with base year 2015. Finally, the variable is logarithmized.

LogFDI China: China's FDI flow into an African country for a specific year. All numbers converted with GDP deflator into constant US\$ with base year 2015.

LogFDI rest world: The world's (excluding China) FDI flows into an African country for a specific year. Calculated by subtracting China's FDI to an African country from the world's FDI to the same African country. All numbers converted with GDP deflator into constant US\$ with base year 2015. Finally, the variable is logarithmized.

LogDomestic investment: An African country's domestic investments, including investments in infrastructure, machinery, buildings and land improvements etc. All numbers converted with GDP deflator into constant US\$ with base year 2015. Finally, the variable is logarithmized.

GDP growth: The annual percentage GDP growth rate for an for an African country, computed on the constant local currency. No adoptions or calculations made.

Manufacturing value GDP: An African country's percentage share of manufacturing value added in relation to its GDP for a specific year. The manufacturing value added means the net output of the manufacturing sector. This implies adding all manufacturing outputs and then subtracting for the input of intermediate goods. No adoptions or calculations made.

Resource rich dummy: A dummy-variable that represents if an African country is considered resource-rich by IMF. If the country is resource-rich the variable takes the value 1, and if it is not, the variable takes the value 0.