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Essays on the Determinants and Effects of Foreign Direct Investments in Africa

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Essays on the Determinants and Effects of Foreign Direct Investments in Africa

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Contents

List of Tables v

List of Figures vii

Declaration of Co-Authorship 1

Introduction 3

Chapter 1. Is this time for Africa?
Determinants and effects of foreign direct investments 7

1. Introduction 8
2. Theories of FDI 9
3. Evidence on the determinants of FDI in Africa 12
3.1. Traditionally investigated determinants 12
3.1.1. General evidence 12
3.1.2. Evidence for African countries 14
3.2. Underinvestigated determinants 20
3.2.1. Agglomeration economies 20
3.2.2. International investment and trade agreements 22
3.2.3. FDI policies: fiscal incentives, Investment Promotion Agencies and Special Economic Zones 24
3.2.4. Bilateral variables: distance and migration 29
4. Evidence on the effects of FDI in Africa 30
4.1. FDI effects on economic growth, productivity, entrepreneurship and employment 30
4.1.1. Economic growth 30
4.1.2. Productivity and knowledge spillovers 32
4.1.3. Entrepreneurship 34
4.1.4. Employment, wages and working conditions 35
4.1.5. Structural change 41

4.2. Policies as mediating factors 43
4.2.1. Trade and investment measures influencing linkages 43
4.2.2. Policies for the creation and deepening of linkages and the increase of absorptive capacity 47
5. Concluding remarks 51

Chapter 2. Foreign Direct Investments in Africa: Are Chinese Investors Different? 55
1. Introduction and Background 56
2. Theoretical framework 58
2.1. Theoretical framework for Chinese FDI in Africa 58
2.2. Hypotheses development 60
3. Empirical application 65
3.1. Empirical model 65
3.2. Sample and variables 67
3.3. Descriptives 69
4. Results 75
4.1. Baseline estimates 75
4.2. Additional analyses 79
4.3. Robustness checks 84
5. Concluding remarks 93
Appendix 98

Chapter 3. Foreign direct investment, structural transformation and employment: evidence from Ghana 107
1. Introduction 108
2. Literature on FDI and structural change 109
3. Empirical Application 112
3.1. Model and variables 112
3.2. Descriptive statistics 115
4. Results 120
4.1. Robustness checks 124
5. Concluding remarks 128
Appendix 132

Conclusions 137

Bibliography 143

List of Tables

Chapter 2

1 Variable description and data sources 68

2 Summary statistics 75

3 Correlation matrix 75

4 Baseline results 77

5 Heterogeneity by activity 80

6 Heterogeneity by origin country 83

7 Robustness to restricting the interactions to Chinese state-owned enterprises 87

8 Robustness to splitting by firm size 88

9 State ownership beyond China 89

10 Differences among emerging countries 90

11 Robustness to destination subregions: North Africa vs. SSA 91

12 Robustness to additional control variables 92

A.1 Empirical cross-country studies of the determinants of Chinese FDI in Africa 104

A.2 Destination countries 105

Chapter 3

1 Variable description 114

2 Summary Statistics 120

3 Baseline results 121

4 Sector heterogeneity 122

5 Sector heterogeneity - female workers 122

6 Sector heterogeneity - educated workers 123

7 Sector heterogeneity - female educated workers 123

8 Paid employees 127

9 Paid employees - female workers 128

10 Paid employees - educated workers 128

11 Paid employees - female educated workers 128

A.1 ISIC sectors 135

List of Figures

Chapter 2

1 FDI destinations by origin-country group (destination shares, 2004-2017) 70

2 Main investor origin countries in Africa (2004-2017) 70

3 Chinese share of total FDI in Africa (2004-2017), percentage 71

4 Distribution of Chinese FDI across 3 periods. 72

5 Distribution of FDI across industry activities. 74

6 Distribution of FDI across manufacturing, services, and resource activities - main investors. 74

7 Elasticities of the main variables of interest. 78

Chapter 3

1 Distribution of employment across ISIC sectors (main sectors) 116

2 Greenfield FDI in Ghana, 2003-2017 inflows 118

3 Greenfield FDI in Ghana, 2003-2017 inflows - top 4 industries 118

4 Distribution of FDI across ISIC sectors (2006 and 2017 stock) 119

5 Distribution of firms across ISIC sectors (2006 and 2017 %) 119

6 Robustness: Coefficient of FDI for manufacturing and services when removing one ISIC at a time (Y=ΔEmp40) 126

A.1 Distribution of formal employment (paid employees) across ISIC sectors (main sectors) 136

Declaration of Co-Authorship

The chapters of this thesis are a joint work with Prof. Luigi Benfratello and Anna D'Ambrosio (Politecnico di Torino).

Introduction

Foreign direct investments (FDI) have increased dramatically in the last decades. This increase has been especially sharp in developing countries, where FDI inflows moved up from 34 billion USD in 1990 to reach 837 billion in 2021.[1] Notwithstanding, in the Addis Ababa Action Agenda the United Nations *"note with concern that many least developed countries continue to be largely sidelined by foreign direct investment that could help to diversify their economies, despite improvements in their investment climates"* (United Nations, 2015). In Africa, FDI inflows have been 30 times higher in 2021 compared to 1990, reaching the highest point after the Covid-19 pandemic with more than 80 billion USD. In spite of this substantial increase, FDI in Africa still account for only 5% of global FDI. Openness and liberalization policies, as well as favourable tax regimes and other incentives put in place by several African governments to attract increasing amounts of foreign capitals only had limited effects, and foreign firms are still reluctant to choose Africa as a destination for their investments. Introducing capital and better technologies in the destination country, FDI be central especially for the development of African countries, most of which keep living on low productivity agriculture and informal services, with generally low levels of domestic entrepreneurship and capital accumulation.

The purpose of this thesis is to contribute to shed some light on the factors that prevent African countries to become consolidated FDI destinations and on the effects that FDI have, or may have, in these countries. To this end, this thesis is composed of three essays analysing the determinants and impacts of foreign direct investments in Africa.

The first chapter is a comprehensive literature review aimed at organising the evidence available on the location factors that drive FDI to Africa and the role that these investments have in promoting economic growth and development. Moving from Asiedu (2002) uncovering that "Africa is different", this review brings to light several gaps in the research on FDI in Africa that were not addressed in previous surveys. Risk-

[1] UNCTAD, World Investment Report 2022, Annex tables, available at: https://unctad.org/topic/investment/world-investment-report?tab=Annex%20Table.

and information-related factors such as international investment agreements and different types of agglomerations, special economic zones, fiscal incentives and investment promotion emerge as promising but underinvestigated determinants of FDI and call for more empirical analyses on their effectiveness in attracting FDI flows to Africa. Furthermore, this review shows that the effects of FDI are not univocal and that more efforts should be directed at identifying the factors allowing for positive spillovers.

The second chapter investigates whether the drivers behind FDI location in Africa differ for Chinese multinational enterprises (MNEs hereafter) compared to traditional investors, such as the United Kingdom and the United States, and other emerging investors, such as India and South Africa, focusing on their different reaction to risk. The analysis applies a conditional logit model to the examination of the different weight given by Chinese and non-Chinese MNEs to risk-reducing factors in shaping their decisions of where to invest in Africa. Such an analysis was currently missing, since most studies focused on host country-level determinants, which may fail to capture the different sensitivities to risk of investors in African countries, or addressed the issue from a more theoretical perspective. Conditional logit is the most suitable model to this end, since it allows to evaluate the impact of country-specific factors on the choice of a specific destination country taking into account all the alternative destinations. Here, investment-level data on greenfield FDI are matched with a set of risk-related variables, namely international investment agreements and different types of agglomerations, and several controls, and interacted with the investment country of origin. Using such a rich and comprehensive dataset, the analysis finds that Chinese investors rely less on prior firm experience in the country, country-of-origin agglomeration and investment agreements when investing in Africa compared to MNEs from both advanced and other emerging economies. Furthermore, Chinese FDI do not emerge as distinctively targeting politically unstable resource-rich destinations in Africa, while they show to be more market-seeking and manufacturing-oriented, and more resolutely pursuing knowledge spillovers through industry agglomeration.

The third chapter investigates the impact of FDI in terms of employment and structural change focusing on a specific African country, Ghana, which is a prominent example of how FDI and economic growth do not automatically translate into more jobs in productive sectors. The analysis matches employment data from three different waves of the Ghana Living Standard Survey (GLSS) with information on greenfield FDI at a detailed

sectoral level. In fact, the purpose of the study is to understand the contribution of FDI to structural change by analysing their "horizontal", intra-industry, effect on employment and see whether FDI induce labour reallocations from low to higher value-added industries and assess the role of FDI in the "premature deindustrialization" (Rodrik, 2016) of African countries. In doing so, the analysis considers different categories of workers and disentangles the effect on female and educated workers. Results show that FDI have a positive effect on the weight of service employment, especially for the more educated workforce, while no effect is detected for manufacturing industries, providing evidence of a role of FDI in deindustrialization processes.

CHAPTER 1

Is this time for Africa?
Determinants and effects of foreign direct investments

Luigi Benfratello, Anna D'Ambrosio, Alida Sangrigoli*

This work provides a comprehensive and updated review of the literature on the determinants and the effects of foreign direct investments (FDI) in Africa. We highlight that the evidence on these topics presents several gaps for African countries, leaving potentially important determinants underinvestigated. We also show that the effects of FDI are far from univocal. Research efforts should be directed at analysing the determinants and the effects of FDI from an heterogeneous perspective, to disentangle which factors affect the importance of specific determinants and mediate the impact of FDI. In particular, more targeted analyses are required to assess the effectiveness of a variety of policies that, if well designed and integrated within broader industrial strategies, can influence the capacity of host countries to attract more and better FDI.

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1. Introduction

Foreign direct investments (FDI) have increasingly drawn the attention of researchers in the last decades. Developing countries, and especially African ones, generally characterized by low levels of domestic entrepreneurship and capital accumulation, may benefit from FDI in terms of economic growth, new and more productive employment and enhanced domestic investment (Blomström and Kokko, 1998). For this reason, it is crucial to shed light on the factors that prevent African countries from becoming consolidated destinations for FDI and the measures to be implemented to significantly affect foreign investors' location choices. While several authors within different strands of literature engaged in the analysis of FDI location over the years, evidence on the specific determinants of FDI in Africa is still very scarce. As Asiedu (2002) pointed out in her seminal paper, some of the main factors leading foreign investors to non-African countries are not or to a much lesser extent significant for African ones. In the author's words, "Africa is different" from other FDI destinations and, as such, needs some specific analysis to explore what are its real assets, its strengths and weaknesses when it comes to attract foreign investment.

Besides, although substantial efforts are directed towards the attraction of FDI in the belief that it brings the abovementioned positive outcomes, the severe scarcity of data characterizing most African countries makes it hard to collect evidence on the actual impacts of FDI, which, as a result, is scant and ambiguous. Furthermore, since information is not uniformly collected across African countries and comprehensive datasets including all African destinations are most often lacking, existing empirical analyses are highly sensitive to which countries are excluded as well as to other measurement differences. What is clear is that FDI do not automatically translate into growth nor into more or better job opportunities. A wide number of factors, such as the motivations leading foreign firms to invest in Africa, the sector of investment and the capacity of host countries to reap its benefits, affect the potential effects and spillovers of FDI. In this sense, scarce human capital endowments and low technological skills in several African countries may prevent these destinations to fully benefit from FDI and, conversely, exacerbate the adverse effects that these may carry in terms of domestic firms crowding out and inequalities.

Some authors have previously undertaken macro-level reviews of the evidence on FDI in Africa. Ajayi (2006) collected the findings on the determinants and main impacts of FDI in Sub-Saharan Africa (SSA hereafter) identified until early 2000s. Among more

recent works, Farole and Winkler (2014) focus on FDI spillovers and mediating factors in different sectors, while Chen et al. (2015) provide a review of FDI determinants and effects in Sub-Saharan Africa focusing on the manufacturing sector. The aim of this survey is to expand these works and provide a comprehensive picture of the main determinants and impacts of FDI in Africa, addressing also less investigated factors and bringing to light the drivers behind the heterogeneity in results.

The goal of this study is not to provide a quantitative (meta-)analysis of the evidence, which would require restricting the focus on the most analysed variables, but rather to provide a picture as much comprehensive as possible of the location determinants and the economic effects identified by the international business and economic literature at the host country level. In particular, in both parts we include an analysis of the main host country policies affecting the attractiveness to and the impacts of FDI in African countries. The main object of investigation is greenfield FDI, which represents the great part of FDI in Africa. In fact, the continent received a little less than 13,000 greenfield FDI from 2003 to 2021, amounting to one thousand billion USD, compared to only 2,000 M&A, for a total amount of 128 billion USD, in the same period.[1]

The rest of the paper is organized as follows. After providing a brief overview of the theories behind the location and spillovers of FDI in Section 2, the following chapters highlight the main findings of the literature concerning the determinants (Section 3) and the effects (Section 4) of FDI, whereas Section 5 provides some final comments.

2. Theories of FDI

Economists of the New Trade Theory (Krugman, 1979) and the early International Business (IB) literature (Buckley and Casson, 1976; Rugman, 1981; Hennart, 1982) originally identified FDI as a strategy to reduce the costs of international trade by internalizing phases of production when transportation costs, tariffs but also information, enforcement and bargaining costs in market transactions are significant. Internalization and transaction cost theories predict that firms will engage in FDI if the advantages of internalizing the production phases exceed those of sourcing inputs in international markets (Buckley and Casson, 1976; Rugman, 1981; Hennart, 1982) and labelled "liability of foreignness" (LOF) the greater costs faced by foreign firms when investing abroad

[1]UNCTAD, World Investment Report 2022, Annex tables, available at: https://unctad.org/topic/investment/world-investment-report?tab=Annex%20Table.

(Hymer, 1976; Zaheer, 1995; Nachum, 2003). Since then, the economic and IB literature uncovered a number of factors that affect the costs of running business in a foreign country, such as agglomeration economies and the quality of host country institutions (e.g., Head et al., 1995). The assessment of these costs plays a key role in the decision to internationalize.

Dunning's Ownership-Location-Internalization (OLI) paradigm (Dunning, 1977) emerges as one of the most widely used frameworks to explain FDI location choices (Paul and Feliciano-Cestero, 2021). It predicts that firms will locate their foreign investments where they maximise their expected ownership, location, and internalization advantages, each type of advantage taking place at a different level. Ownership advantages refer to a firm's tangible and intangible assets to be exploited internationally, such as superior technological or managerial competences. Location advantages relate to host country characteristics allowing the firm to exploit its ownership advantages. Internalization advantages connected to a specific industry make it more profitable to make an FDI rather than to rely on market transactions. In turn, location advantages are strongly related to the underlying FDI motives, that Dunning (1993) classified in: market-seeking, pursuing access to large local and regional markets and distribution networks; efficiency-seeking, aimed at rationalizing the value chain and improve MNEs' competitive position in international markets due to factors such as lower labour costs and taxes; resource-seeking, exploiting natural resources and production inputs, such as raw materials and energy, at cheaper prices in the host economy; strategic asset-seeking, pursuing specific intangible assets such as latest technologies, brands, specialised human capital or R&D capacity.

Over the years, this paradigm has been used to explain the location choice of FDI in developing countries such as African ones, seeking to attract increasing flows of capital. According to Anwar et al. (2022), the resource-seeking motive is the strongest behind FDI in Africa, followed by the market- and asset-seeking. Other studies, instead, find greater importance of efficiency-seeking motives while not much scope for asset-seeking investments (Chen et al., 2015). The underlying motives for investment also affect the impact that these may have on destination countries. For instance, market-seeking and efficiency-seeking labour-intensive FDI are associated to greater linkages and spillovers than resource-seeking ones (Wälde, 2003; Mayer-Foulkes and Nunnenkamp, 2009; Farole and Winkler, 2014; Sánchez-Martín et al., 2015; Colen et al., 2016).

On the whole, FDI are deemed to be beneficial to host countries since the ownership advantages driving MNEs abroad are likely to be transferred to the FDI destinations (Dunning, 1977; Paul and Feliciano-Cestero, 2021). Furthermore, as an injection of capital, FDI may positively impact both developed and developing countries by reducing the gap between investment needs and domestic savings, potentially having a catalyst effect on host country's economic growth and providing new and better employment opportunities (Blomström and Kokko, 1998). FDI can positively influence host countries' economies directly, by opening new plants and hiring local workforce, introducing improved technologies that can increase output and exports, ultimately bringing economic growth. Furthermore, and most importantly, FDI may have a positive impact on destination economies indirectly, by creating linkages with local firms and bringing productivity spillovers, as MNEs tend to enjoy technological and productivity advantages over domestic firms (Hoekman and Javorcik, 2006).

If foreign firms are more technologically advanced, their superior knowledge may be transferred, intentionally or not, to domestic firms and workers and may lead to important increases in skills, productivity and output. Spillovers may spread from MNEs to domestic competitors in the same industry (horizontal or intra-industry spillovers) or to connected industries through backward and forward linkages (vertical or inter-industry spillovers). Spillovers may diffuse from a variety of channels, primarily imitation, competition, collaboration and labour mobility between foreign and domestic firms (Görg and Greenaway, 2004; Görg and Strobl, 2005; Farole and Winkler, 2014). In addition, MNEs in vertically integrated sectors generally ask for better and more differentiated inputs than domestic firms do, thus exerting an upward pressure on product quality and diversification (Farole and Winkler, 2014). On the other hand, the increased competition caused by the entry of superior foreign competitors may push less productive domestic firms out of the market, leading in some cases to the creation of foreign monopolies in host countries and possibly having detrimental effects, hindering welfare and increasing inequality in destination countries (Reiter and Steensma, 2010).

Overall, the extensive empirical literature has failed to provide conclusive evidence on the actual effects of FDI on host countries, and several gaps remain to be addressed on both the determinants and the effects side. The next sections of this paper report this evidence. Furthermore, the increasing importance and the peculiarities of investors from emerging countries, China in the first place, brought up the question of whether a new

or "special" theory of FDI is needed to explain the motivations behind FDI from these countries, or whether these can be inscribed into the same paradigms that have been used to explain Western MNEs internationalization patterns. MNEs from emerging countries (EMNEs) carry some specific ownership advantages when investing in Africa (Buckley et al., 2007), which may result in lower risk aversion and more aggressive internationalization strategies (Benfratello et al., 2023b). In turn, the peculiarities of FDI originating from these countries are also likely to result in differences in their effects, as Section 4 will illustrate.

3. Evidence on the determinants of FDI in Africa

This section reports the main findings of the literature on FDI determinants. It distinguishes between general and Africa-specific evidence, looking first at traditionally investigated factors and then focusing on less studied ones.

3.1. Traditionally investigated determinants

3.1.1. General evidence

Several studies examined the determinants of FDI flows. Among the first attempts to systematize the stock of empirical evidence, the papers by Chakrabarti (2001) and Blonigen (2005) identify exchange rates, taxation, market size, trade openness, labour cost and the quality of institutions as major host country features potentially affecting MNEs location choices. Blonigen (2005) points at firm-level variables such as investor's origin country, technology level, investment motives and activities as crucial heterogeneity factors, while according to Chakrabarti (2001) only the market size has a robust positive effect on FDI inflows. Subsequent reviews identify other important factors determining FDI location globally (Franco et al., 2008; Nielsen et al., 2017; Paul and Feliciano-Cestero, 2021) or in/from specific regions and markets (Bellak et al., 2008; Fetscherin et al., 2010; Koepke, 2019; Anwar and Iwasaki, 2022).

The most investigated factors can be classified into four categories:

Market size and macroeconomic environment. Investors undertaking market-seeking FDI are attracted by the demand potential of large and growing markets (Chakrabarti, 2001; Bevan and Estrin, 2004; Nielsen et al., 2017; Paul and Feliciano-Cestero, 2021), typically proxied by measures of host country GDP and/or population size. Furthermore, the literature identifies a whole set of macroeconomic variables and policies

affecting FDI location decisions, including exchange rates, inflation rates and openness to trade (Chakrabarti, 2001; Blonigen, 2005; Nielsen et al., 2017; Paul and Feliciano-Cestero, 2021). The relationship between FDI and trade is not forgone. On the one hand, they can complement each other, with more trade openness associated to greater market size and integration in global value chains; on the other hand, FDI may function as a substitute for trade in MNEs internationalization strategies. According to Conconi et al. (2016), MNEs experiment through exports when they have little knowledge of the foreign country, increasingly engaging in FDI while gaining export experience in the country. Furthermore, tariff-jumping FDI is undertaken when tariff barriers to trade are imposed in the host economy, which has been the case of the African countries interested by the Multi-Fibre Arrangement quota regime in the textile sector (Farole and Winkler, 2014; Morris and Staritz, 2017).

Cost-efficiency factors. Investors seeking to improve their competitive international position through FDI by minimizing their operational costs are attracted by the availability of large pools of labour as well as cost-minimizing factors such as a favourable taxation and adequate infrastructure (Blonigen, 2005; Bellak et al., 2008; Nielsen et al., 2017). The relationship between FDI and labour cost, however, is not univocal, since higher wages are usually associated with better skilled and more productive labour force. Indeed, part of the literature finds evidence of a positive relationship between FDI and wages (Walkenhorst, 2004; Bénassy-Quéré and Lahrèche-Révil, 2005; Estrin and Uvalić, 2014) and human capital emerges as a key determinant of FDI in developing countries (Nunnenkamp, 2002; Miyamoto, 2003; Noorbakhsh et al., 2001). According to Carr et al. (2001), knowledge-based activities locate where skilled labour has lower costs, while production activities search for cheaper unskilled labour, therefore suggesting that labour costs will be negatively related to FDI especially for manufacturing activities. As for taxation, its relationship with FDI is not univocally assessed, as it will be further detailed.

Natural resources. The availability of natural resources, either extractive ones such as oil, gas, and minerals or agricultural land and crops, has long been considered a major comparative advantage of resource-abundant countries including African ones (Buckley et al., 2007; Ross et al., 2015; Shan et al., 2018). These factors have been argued to be especially important for newly developed and emerging markets investors strategically

attempting at securing the resources necessary for their sustained growth (Cheung and Qian, 2009; Sanfilippo, 2010), although the empirical evidence in support of this argument is rather limited (Cheung and Qian, 2009; Chen et al., 2018; Anwar and Iwasaki, 2022; Benfratello et al., 2023b).

Institutional factors. A large number of studies point at the key role of both home and host country institutions as major factors affecting FDI location choices (Chakrabarti, 2001; Aleksynska and Havrylchyk, 2013; Nielsen et al., 2017; Paul and Feliciano-Cestero, 2021, among others). Political instability, ineffective governments and weak rule enforcement in host countries discourage FDI flows by increasing the liability of foreignness and raising the costs associated to the investment. The role of corruption is, instead, more ambiguous, with some studies finding evidence of no or even a positive relationship with FDI (Egger and Winner, 2005). Again, this seems to be especially so for investors from less developed countries, which may be better used and able to operate in institutionally weak environments (Buckley et al., 2007; Cuervo-Cazurra and Genc, 2008; Darby et al., 2010) and also eager to invest in countries with more similar institutional settings (Bénassy-Quéré et al., 2007; Habib and Zurawicki, 2002).

3.1.2. Evidence for African countries

The seminal paper by Asiedu (2002) points out that some of the main factors leading foreign investors to locate in non-African countries are not or to a much lesser extent significant for African ones and that higher returns do not translate in greater FDI inflows to SSA. While the factors identified in the previous paragraphs have a global relevance, the peculiar context characterizing many African countries makes it important to analyse the specific determinants for Africa, which we do in this section.

A number of studies on FDI focus on specific regions, and an increasing number focus on FDI from or to emerging areas. For example, Bellak et al. (2008) conduct a review of the determinants of FDI in Central and Eastern European countries (CEECs). Koepke (2019) focuses on emerging markets as FDI destinations, while Anwar and Iwasaki (2022) considers FDI from the BRICS (Brazil, Russia, India, China and South Africa). Fetscherin et al. (2010), instead, provides a review on FDI to China. On the contrary, the attractiveness to FDI has been underinvestigated for the African continent, for long time considered appealing only to foreign investors mainly for its richness in natural resources.

Natural resource availability is a key comparative advantage for several countries in Africa (Asiedu, 2006; Ndikumana and Verick, 2008; Anyanwu, 2012; Anyanwu and Yameogo, 2015; Rodriguez-Pose and Cols, 2017; Anwar et al., 2022). However, Asiedu (2002) and other authors (Morisset, 2000; Jenkins and Thomas, 2002; Bende-Nabende et al., 2002; Basu and Srinivasan, 2002; Asiedu, 2006, among others) pointed out since early phases of the research on FDI in Africa that natural resources are just one the factors that make foreign MNEs choose an African country for their cross-border investments. In line with the general literature, these studies, also included in one of the first attempts to review the literature on FDI in Africa (Ajayi, 2006), identify the size of and access to local markets, openness of the economy and adequate exchange rate policies among the main determinants. At the same time, macro-economic and political stability, institutional quality, infrastructure and human capital availability emerge as especially important factors for the African continent. Scarce infrastructure, corruption, limited access to global markets and high inflation are identified as factors specifically hindering the choice of African countries as FDI locations. Asiedu (2006) shows that a decline in corruption from the level of Nigeria (the most corrupted) to that of South Africa has the same positive effect on FDI inflows as increasing the share of fuels and minerals in total exports by about 35 per cent, suggesting that small and non-resource rich countries can attract FDI by improving their institutions and policy environment. Through the same benchmark analysis, the author finds that an increase in literacy from the level of Nigeria to that of South Africa would have the same positive effect of a substantial increase in the availability of natural resources. Interestingly, Asiedu (2002) finds that SSA attracts less FDI than other developing areas, even after controlling for macroeconomic, market, institutional and other relevant variables, identifying an African specificity in the higher risk perceived by foreign investors.

The main findings from Asiedu (2006) and the few other studies from the earlier period are generally confirmed in subsequent analyses, although some ambiguities emerge. Most studies show the central role of domestic market size (Cleeve, 2008; Suliman and André Varella Mollick, 2009; Sichei and Kinyondo, 2012; Cantah et al., 2013; Nwaogu and Ryan, 2014; Asamoah et al., 2016), although others fail to identify a significant relationship (Krugell, 2005; Ezeoha and Cattaneo, 2012; Gossel, 2017; Rodriguez-Pose and Cols, 2017) and few studies even find a negative one (Anyanwu and Yameogo, 2015; Soumaré et al., 2016). Jaumotte (2004) and Fiodendji and Evlo (2015) find a positive

and significant effect of market size growth on FDI, and not of the absolute domestic market size. As for other macro-economic variables, higher real interest rates are deemed to increase the return on investment, but only few authors assess a positive impact on FDI for African countries (Sane, 2016; Dondashe and Phiri, 2018).

Openness to trade, generally measured by the share of trade on GDP, is found to positively affect FDI by most analyses (zu Selhausen, 2009; Lederman et al., 2010; Anyanwu, 2012; Fiodendji and Evlo, 2015; Dondashe and Phiri, 2018, among others). Asiedu (2002) finds that openness to trade has a greater effect on FDI directed to non-SSA countries, whereas Lederman et al. (2010) show that this factor is especially important for the Southern African Development Community (SADC) compared to the rest of the world. Economic openness is also identified by Badr and Ayed (2015) as a major FDI determinant in North African countries. The openness of a country to trade and FDI also emerges looking at the trade agreements and economic partnerships in which it is involved. Evidence available on the role of these kinds of policies is quite scant and will be addressed in the next section.

In line with Blonigen (2005), several studies find a negative relationship between high and volatile exchange rates and FDI (Kyereboah-Coleman and Agyire-Tettey, 2008; Kodongo and Ojah, 2013; Suliman et al., 2015). There is substantial agreement in considering the lack of economic stability affecting several African countries, mostly measured by high inflation rates, as a crucial deterrent to the attraction of more FDI flows (Asiedu, 2006; Naudé and Krugell, 2007; Henley et al., 2008; Bartels et al., 2009; Rodriguez-Pose and Cols, 2017; Dondashe and Phiri, 2018). Several studies point at the low financial development of African countries as a major constraint to the attraction of both foreign and domestic investment (Desbordes and Wei, 2017; Nkoa et al., 2018; Kinda, 2010), although Anyanwu (2012) provides opposite evidence that higher financial development hinders FDI. Furthermore, there is evidence pointing at a positive relationship between the government size, commonly measured as the share of government expenditures on GDP, and FDI (Naudé and Krugell, 2007; Hailu, 2010; Anyanwu, 2012; Dondashe and Phiri, 2018), although the sign of this relationship is not forgone. Higher government expenditures can be allocated to and improve the institutional functioning and the general level of education, creating the basis for attracting FDI as well as to increase domestic investment (Ajayi, 2008). On the other hand, the massive presence of the government in host country economies may crowd out business opportunities for private investors and

be associated to cumbersome regulations, heavy bureaucracy and less business-conducive environments (Ajayi, 2008; Anyanwu, 2012).

Several studies assess the positive role of human capital in determining FDI location choices in Africa, be it proxied by measures of literacy rate, school attainment or other standards (Jaumotte, 2004; Asiedu, 2006; Checchi et al., 2007; Suliman and André Varella Mollick, 2009; Cleeve et al., 2015; Rodriguez-Pose and Cols, 2017; Benfratello et al., 2023b). Benfratello et al. (2023b) use the human capital index from the Penn World Tables, combining average years of schooling and returns to education, and find that human capital is especially important for the attraction of FDI in services. Although several studies point at the availability of low-cost labour force as a major FDI determinant seeking to minimize production and operational costs (Jaumotte, 2004; Lederman et al., 2010; Anyanwu, 2012; Mijiyawa, 2015; Sane, 2016; Mourao, 2018), others fail to find significant or sizeable effects for African countries (Bartels et al., 2009; Hailu, 2010; Zhang et al., 2013) and point at the key role of the quality of labour in attracting FDI, ultimately associated with lower productivity-adjusted labour costs. In their meta-analysis, Anwar et al. (2022) find that the impact of wages is lower than that of per capita GDP for both global and emerging countries FDI in Africa.

Other central elements in cost-reduction are the quality of infrastructure and a favourable taxation available in the host country. A good infrastructure plays a substantial role in guaranteeing efficient production and distribution processes of goods and services reducing operational costs. Several studies assess its positive relationship with FDI in Africa (zu Selhausen, 2009; Khadaroo and Seetanah, 2007; Bartels et al., 2009; Lederman et al., 2010; Nwaogu and Ryan, 2014), while others identify the lack of it as a major deterrent of FDI especially in Sub-Saharan Africa (Cotton and Ramachandran, 2001; Jenkins and Thomas, 2002; Bende-Nabende et al., 2002; Kinda, 2010). Ndikumana and Verick (2008) find infrastructure to be a significant determinant only for non resource-seeking FDI. As for the role of taxation, this will be specifically addressed in a following section dedicated to FDI-specific policies.

Finally, better governance and more effective institutions are generally included among the main factors that could increase FDI flows to Africa. In particular, political stability and law enforcement are associated with lower investment risk and, in case of negative scores, may even outweigh factors such as market size, openness to trade and the availability of natural resources (Asiedu and Lien, 2011; Fiodendji and Evlo, 2015; Farole and

Winkler, 2014; Landry, 2019). As mentioned in the previous section, the relationship between corruption and FDI is more ambiguous. In fact, as Gossel (2018) points out, corruption is often used by foreign investors to deal with ineffective institutions in less democratic African countries. Nonetheless, the majority of studies assess the existence of a negative relationship between FDI and corruption in Africa (Asiedu, 2006; Cleeve, 2008; Teka, 2014; Rodriguez-Pose and Cols, 2017, among others). Along with political stability and rule of law, good business regulations, including streamlined procedures and efficient labour market structures, facilitate foreign investment by improving the business climate and decreasing operational costs, and have proved to be especially important in the location decisions of investors in African countries (Morisset, 2000; Bartels et al., 2009; Teka, 2014; Moran, 2014, among many others).

Factors of heterogeneity. Some more recent works try to empirically explore the different role of specific determinants according to FDI motives, sectors, origin and destination areas.

Motives and sectors of investment. FDI in services generally respond to market-seeking purposes, while foreign investors in manufacturing are also sensitive to cost-efficiency factors, such as labour costs (Riedl, 2010). The location of market-seeking FDI in Africa is highly influenced by the quality of human capital and the access to finance, whereas efficiency-seeking FDI rely more on the presence of an adequate infrastructure (Chen et al., 2015). According to Kinda (2018), taxation is not a key driver for either type. The scant sector-disaggregated evidence suggests that specific factors attract foreign investors in manufacturing and those in services in Africa. According to Lemi and Asefa (2003), US manufacturing FDI seek for political stability, whereas these factors appear not significant for non-manufacturing FDI from the same origin country. Benfratello et al. (2023b) find that only FDI in services are positively and significantly affected by the level of human capital in African countries, while manufacturing and resource-related FDI are not. Generally speaking, resource-seeking FDI appear to be less affected by factors other than the availability of natural resources compared to other kinds of investments, as found by Ndikumana and Verick (2008) in relation to infrastructure. The lower reliance on other location determinants for resource-rich countries emerges in particular in relation to the institutional factors. In fact, most developing countries endowed with natural resources have poor institutions and are more exposed to macroeconomic and political instability

(Brollo et al., 2013; Bhattacharyya and Hodler, 2010; Vicente, 2010; Aleksynska and Havrylchyk, 2013; Nwaogu and Ryan, 2014). Burger et al. (2016) show that political instability negatively affects FDI in the Middle East and North Africa region only in the non-resource tradable goods sector. Similarly, Asiedu and Lien (2011) find that democracy promotes FDI only for non-resource rich countries, in Africa as in other developing contexts. Kolstad and Wiig (2011) show that investors in Africa target destinations that are rich in natural resources and poor in institutional quality, whereas findings from Benfratello et al. (2023b) show that they are consistently attracted by political stability, be the investment in resource-related activities, in manufacturing or services.

Investment origin. As mentioned, a number of studies have addressed the different behaviour of traditional (mainly Western) and emerging investors in African countries. Through a meta-analysis, Anwar et al. (2022) try to understand how the motives behind FDI in Africa differ for firms from developed and emerging markets and find that both are similarly attracted by resource- and market-seeking motives. Aleksynska and Havrylchyk (2013) find consistent evidence that large institutional distance between FDI origins and destinations deters investors from advanced countries, while results for emerging economies are more ambiguous. In line with these results, although not specifically targeting African destinations, Anwar and Iwasaki (2022)'s meta-analysis of studies considering FDI from BRICS find that investors from these countries tend to prefer risky markets in their search for low-cost natural resources, also being better able to cope with poor institutional environments. Several studies assess the existence of a comparative advantage of investors from emerging contexts, such as China, in dealing with corruption, bribery and other institutional dysfunctions (Cuervo-Cazurra, 2006; Buckley et al., 2007). Nonetheless, only few studies empirically compare traditional and emerging investors in Africa and they fail to identify a distinctive attraction of the latter for politically unstable destinations (Zhang et al., 2013; Chen et al., 2018; Benfratello et al., 2023b), although there is some evidence that Chinese MNEs are less reluctant to target also unstable countries when this aligns with their strategic objectives (Kolstad and Wiig, 2011; Fiodendji and Evlo, 2015; Chen et al., 2018; Landry, 2019; Benfratello et al., 2023b).

Investment destination. Finally, a major source of heterogeneity is related to the destination of FDI. North and Sub-Saharan Africa are substantially different regions and may attract different investments (Ghafar and Jacobs, 2019). While some studies target specific groups of African countries (see for example Lederman et al., 2010 for a

focus on Southern Africa, Anyanwu and Yameogo, 2015 for West Africa, Badr and Ayed, 2015 for North Africa, Rjoub et al., 2017 for specific evidence on landlocked countries), North Africa is most often analysed together with Middle Eastern countries (Rogmans and Ebbers, 2013; Okafor et al., 2015) and comparative intra-African analyses are scant. Benfratello et al. (2023b) find that market size growth is positively and significantly related to FDI in SSA but negatively in North Africa. On the contrary, they show that infrastructure attracts FDI flows to North Africa while hindering FDI in SSA. In both regions, FDI appear to be encouraged by higher levels of human capital, large markets and the availability of natural resources. Anyanwu (2012) finds that Eastern and Southern Africa attract more FDI than expected in relation to their location factors. According to Okafor et al. (2015), FDI in those regions are mainly driven by an efficiency-seeking motive, whereas FDI in West and Central SSA countries are motivated by both market- and efficiency-seeking factors.

3.2. Underinvestigated determinants

Along with the widely researched location determinants discussed in the previous paragraph, a set of factors are less often included in the analysis of location choices and, although they have assumed increasing importance in the last decades, they remain largely underinvestigated especially for African countries. Some of these factors, i.e. agglomeration economies and international investment agreements, may mitigate the risk connected to investing in unstable contexts. The ratification of preferential and regional trade agreements, instead, offer foreign investors new and enlarged market outlets, while favourable tax regimes and the institution of special economic zones and investment promotion agencies may impact location decisions by setting up FDI-specific incentives. Finally, the role of a set of dyadic variables such as bilateral tariffs, migration and aid have emerged in last decades to better take into account the bilateral relationship between FDI origin and destination countries.

3.2.1. Agglomeration economies

Agglomeration economies refer to the externalities deriving from the geographic concentration of business operations (Krugman, 1991). On the whole, the existence of previous investments is an indicator of investment profitability and a strategy to mitigate the risks, both actual and perceived ones, connected to the investment, reducing the cost of information about the destination area, and improving the access to international

business networks. For this reason, agglomeration economies may play an especially important role in attracting FDI flows to African destinations, as assessed by several studies (Ndikumana and Verick, 2008; Sichei and Kinyondo, 2012; Anyanwu, 2012; Kariuki, 2015; Mijiyawa, 2015). Most of these measure agglomeration as the stock of FDI already present in the destination. However, different types of agglomerations may give rise to different kinds of externalities ("Marshallian" vs "Jacobian") and can have different impacts in terms of FDI attraction (Nielsen et al., 2017).

Intra-industry "Marshallian" agglomerations have been widely theorized in the economics literature (Marshall, 1920; Krugman, 1991; Fujita et al., 2001). Firms in industrial clusters have easier access to specialized labour and input suppliers and customers, facilitating the creation of backward and forward linkages especially in presence of large local markets. At the same time, geographical proximity with other MNEs in the same industry may facilitate the exchange of industry-specific information and knowledge spillovers, reducing information costs especially for latecomers MNEs from emerging countries (Benfratello et al., 2023b). Despite a wide theorization, the evidence on the role of these economies in attracting FDI is still limited for developing and especially African countries. Some authors have analysed it in relation to transition economies, generally finding a positive and significant effect (Riedl, 2010; Tokunaga and Iwasaki, 2017; Kinoshita and Campos, 2002). Benfratello et al. (2023b) find that firms from both advanced and emerging countries rely on intra-industry agglomeration when investing in Africa. The authors also show that Chinese MNEs investing in manufacturing – where the potential gains from knowledge spillovers are highest (Krugman, 1991; Fujita et al., 2001; Nielsen et al., 2017) – rely more on intra-industry agglomeration than other investors, who instead appear to avoid the competition of other MNEs in the same activity.

A less theorized and investigated form of agglomeration is the one deriving from the co-location of firms from the same country of origin (Head et al., 1999). This type of agglomeration may mitigate the "liability of outsidership" of new investors (Johanson and Vahlne, 2009) by building trust relationships between newcomers and local businesses and providing better understanding of the local context, partly substituting for direct firm experience or government support (**Haveman1993**; Head et al., 1999; Johanson and Vahlne, 2009; Tan and Meyer, 2011; Quer et al., 2018; Benfratello et al., 2023b).

Finally, recent literature has addressed the propensity of firms to locate new investments where they had previously invested, be it in the same or in different activities

and sectors (Defever, 2012; Lu et al., 2014; Alcácer and Delgado, 2016; Castellani and Lavoratori, 2020; Benfratello et al., 2023b). Agglomeration economies and information advantages deriving from intra-firm co-location may be seen as firm-specific assets (Lu et al., 2014) decreasing the LOF and reducing the fixed costs of investing abroad.

Alcácer and Delgado (2016) analyse both intra-firm and external agglomerations in the United States and find a strong effect of the former, both within and across activities, on firms' location choices. Benfratello et al. (2023b) find that both types of agglomerations attract foreign investors from advanced and emerging economies to African countries, with a strong effect of intra-firm co-location. They find that the effect of intra-firm agglomeration is strongest for FDI in manufacturing, the risk of doing business raised in some of these industries by higher sunk costs and capital intensities. The authors also show that Chinese MNEs diverge from other emerging investors in that they rely significantly less on the risk mitigation of country-of-origin and intra-firm agglomerations, compared to both advanced and other emerging countries.

3.2.2. International investment and trade agreements

MNEs can rely on International Investment Agreements (IIAs), Bilateral Investment Treaties (BITs) in the first place, to mitigate the uncertainty and overcome the information frictions arising when investing in developing countries (Kerner, 2009). The empirical evidence on the role of IIAs in attracting FDI, however, does not lead to univocal conclusions (Sauvant and Sachs, 2009; Bellak, 2015; Brada et al., 2021). Several studies find a positive relationship between BITs and FDI (e.g. Neumayer and Spess, 2005; Kerner, 2009; Busse et al., 2010; Egger and Merlo, 2012; Sirr et al., 2017), while many others find a null or weak relationship (Hallward-Driemeier, 2003; Tobin and Rose-Ackerman, 2005; Yackee, 2007), especially after controlling for endogeneity (Falvey and Foster-McGregor, 2018; Peinhardt and Allee, 2012). Overall, the meta-analyses from Bellak (2015) and Brada et al. (2021) conclude that the promotion effect of IIAs on FDI is negligible. Some studies point at IIAs and good institutions as possible substitutes in attracting FDI flows, as both function as signals of trustworthiness to foreign investors (Busse et al., 2010; Neumayer and Spess, 2005; Sirr et al., 2017; Li et al., 2021). Others, instead, identify a complementary role of IIAs with respect to institutional quality, the investment provisions contained in IIAs gaining more credibility in presence of more effective institutions in destination countries (Hallward-Driemeier, 2003; Tobin and Rose-Ackerman, 2005; Siegmann, 2007).

The combination of high returns on investment and credibility problems associated with FDI in African countries make IIAs a potentially crucial factor in promoting FDI location in the continent. The scant evidence available for African countries, however, is ambiguous. Lejour and Salfi (2015), Beri and Nubong (2021) and Sichei and Kinyondo (2012) do not find any robust effect of BITs, while Bankole and Adewuyi (2013) find these agreements to be positively and significantly related to FDI in the Economic Community of West African States (ECOWAS). Benfratello et al. (2022b) find IIAs to attract especially FDI in services, in line with findings from Colen et al. (2016) showing that the political sensitivity of the financial sector makes BITs an important protection instrument in service activities. Furthermore, they find a complementarity between BITs and institutional quality in attracting FDI in manufacturing and services, whereas for FDI targeting African natural resources IIAs seem to act as substitutes for well-functioning institutions.

The role of IIAs other than BITs in the attraction of FDI has also been object of investigation. Having a more heterogeneous structure compared to BITs, the function and impact of these agreements on FDI depend on their specific content. Treaties including specific investment provisions (TIPs) may, just as BITs, provide protection against expropriation and other investment risks. Frenkel and Walter (2019) find that the inclusion of dispute settlement provisions in international treaties have a positive effect on FDI, whereas Allee and Peinhardt (2011) and Aisbett et al. (2016) show that being involved in a dispute settlement process neutralizes the positive effect of BITs for host countries and even decreases the amount of FDI received. Sichei and Kinyondo (2012) find a positive effect of Double Taxation Treaties (DTTs) on FDI in Africa, set up to prevent double taxation in borderline cases in which the source of income is under dispute.

Furthermore, economic partnerships, preferential and free trade agreements and frameworks aimed at removing barriers to free trade and investment between countries may encourage FDI from investors in search for large markets and export platforms (Jaumotte, 2004; Broadman, 2007; Sanfilippo, 2010), as found by MacDermott (2007) in relation to the North American Free Trade Agreement (NAFTA). Some authors addressed the role of international trade agreements and arrangements, such as the African Growth and Opportunity Act (AGOA), the Everything-but-Arms (EBA) initiative and the Multi-Fibre Arrangement (MFA) in promoting FDI flows to Africa (Dupasquier and Osakwe, 2006;

Besada et al., 2011; Kaplinsky and Morris, 2009), although few empirically assess their effectiveness (Bartels et al., 2009; Sanfilippo, 2010).

In Africa, where market-seeking is a prominent motive for investment (Chen et al., 2015), Regional Trade Agreements (RTAs) setting up economic and trade partnership and cooperation areas may be especially effective in attracting FDI by enlarging participants' market size and improving access to the whole region. On the other hand, if the members are highly heterogeneous in terms of FDI attractiveness, investors may end up targeting only the best performing countries and RTAs having a negligible or even a deterring effect on FDI in the less attractive ones (Jaumotte, 2004). Overall, the effectiveness of these agreements in attracting FDI to African countries is not univocally assessed (Asamoah et al., 2016). Furthermore, findings from Te Velde and Bezemer (2006) and Berger et al. (2013) tie the effectiveness of RTAs in attracting FDI to African countries to the presence of a fair level of investment provisions in the agreements.

3.2.3. FDI policies: fiscal incentives, Investment Promotion Agencies and Special Economic Zones

African governments have been trying to attract foreign investors through measures and policies more specifically targeting foreign investors, such as tax incentives and holidays and the institution of Investment Promotion Agencies (IPAs) and Special Economic Zones (SEZ). These measures are often interrelated, since registering to an IPA or in a SEZ is most often associated to tax exemptions and other fiscal incentives. For example, tax exemptions were indicated as among the main reasons for undertaking the investment registration process by the almost 2500 foreign firms surveyed in the UNIDO's African Investors Survey (UNIDO, 2012). Although this interrelation makes it hard to isolate the effect of one specific determinant over the other, in this section we review the evidence available for each of these factors.

Fiscal incentives. The role of taxation policies in attracting FDI have been investigated since the early phases of the research on FDI determinants. Lower taxes may be an incentive for the location of foreign firms seeking to minimize their operational costs. Specifically, high corporate tax rates are associated to lower FDI inflows (Bénassy-Quéré and Lahrèche-Révil, 2005; Bellak and Leibrecht, 2009; Egger and Raff, 2015, among others). When it comes to Africa, evidence is mixed. For example, Kinda (2010) finds that high tax rates discourage FDI in developing countries but not in Sub-Saharan Africa.

According to the meta-analysis from Anwar et al. (2022), taxes have a negligible impact in attracting FDI to Africa compared to other cost-reducing factors, such as lower wages and costs associated to poor physical infrastructure.

Much less evidence is available on the effectiveness of fiscal incentives specifically designed to attract foreign investors. According to the report from Andersen et al. (2018), these incentives – tax holidays and preferential tax rates being the most widely used – are unlikely to shift the location choices of foreign investors, who attach to them less importance than other investment climate characteristics such as government transparency, investment protection and ease of establishing a business, although they can play a role in the final decisions between previously shortlisted locations (Freund and Moran, 2017). The review from Munongo et al. (2017) shows that there is no univocal evidence on the effectiveness of tax incentives on FDI location, with results strongly varying according to the region of investment.

Both qualitative (Andersen et al., 2018) and quantitative evidence point at efficiency-seeking FDI as those benefiting more from fiscal incentives. Tax incentives appears only limitedly effective in attracting foreign investment (Louis et al., 2001; Hassett and Hubbard, 2002; James, 2009; James and Van Parys, 2010; Klemm and Van Parys, 2012; Van Parys, 2012), while stronger effects are found for greenfield, export-oriented and vertical FDI (Hebous et al., 2011; James, 2009; Overesch and Wamser, 2009). Nonetheless, incentives in developing countries are often offered indiscriminately, trying to compensate for malfunctioning investment climates and other shortcomings that, instead, are among the same factors neutralizing their potential effectiveness. Fiscal incentives are, in fact, often considered as necessary by governments in developing countries to compete for FDI, although they impose a series of considerable costs including fiscal losses, tax evasion and rent-seeking behaviour (Andersen et al., 2018).

Although these costs may be especially heavy to carry for developing countries, only few studies focus on developing countries and even less consider African ones (James and Van Parys, 2010; Klemm and Van Parys, 2012; James, 2009). According to James (2009), findings for developing and OECD countries are similar and show that foreign investors react to lowering the corporate income tax rate and extending tax holidays, with a smaller effect in developing countries. James and Van Parys (2010) show that providing more generous tax holidays did not have any effect on FDI in 12 Central and West African countries, whereas reducing the number of incentive regimes and increasing the number

of guarantees for investors had a positive impact. Klemm and Van Parys (2012) find that longer tax holidays attract FDI in Latin America and the Caribbean but not in Africa. On the contrary, Cleeve (2008) finds a strong positive effect of tax holidays on FDI inflows in SSA. At the same time, he shows that offering too many concessions may have the opposite effect and suggests that fiscal incentives should selectively target the right types of investments. In Côte d'Ivoire, the construction sector has been receiving the 15% of total incentives while accounting for only about 5% of FDI in the country. Furthermore, evidence from investor motivation surveys in selected African countries shows that the redundancy rate, that is, the share of investors who declared they would have invested even without an incentive, was 92% in Guinea and 98% in Rwanda (Andersen et al., 2018).

In line with the general findings, the evidence available for African countries suggest that fiscal incentives are limitedly effective in increasing FDI flows and the positive effects are mainly related to tax holidays. As most policies specifically targeting foreign investors, these can be really effective only if inscribed in a broader strategy to improve investment climate (Munongo et al., 2017; Narula and Zhan, 2019). Furthermore, as Narula and Zhan (2019) point out in relation to the specific incentives offered in Special Economic Zones, these are easy to imitate and can turn the competition for FDI among countries and regions into a "race to the bottom" (Jauch, 2002) that can neutralize its effectiveness in attracting FDI and, even worse, lead to a situation of "immiserizing growth" (Kaplinsky and Morris, 2000).

Investment Promotion Agencies. Increasing attention has been devoted in the last decades to the role of Investment Promotion Agencies, which have flourished in several African countries to promote foreign investment by providing information and support to potential investors. Getting sound and correct information on business opportunities and investment policies in host countries reduces the liability of foreignness and the risk of investing abroad and make IPAs especially helpful for less experienced investors and for those approaching a new destination (UNIDO, 2012; Crescenzi et al., 2021). As a study of the World Bank reveals in relation to the COMESA region (World Bank and IFC, 2009), when positive information is not readily available, foreign companies tend to exclude a location in the very first stages of their decisional process.

According to Morisset and Andrews-Johnson (2004), compared to measures such as fiscal incentives, investment promotion can provide substantial benefits with lower resource expenditure, although adequate budgets are necessary for IPAs to be effective. The same authors suggest that IPAs should orient their efforts and resources on improving the general business environment through policy advocacy activities, to increase both foreign and domestic investments. In Africa, IPAs activities range from the construction of images and brands to advertise the country abroad to the provision of information and investment facilitation services, including assisting foreign firms in dealing with the procedures and regulations governing the setting up of new investments (UNIDO, 2012; OECD, 2019). More advanced and structured IPAs are also active in the identification of potential sources of investment and in the follow-up of the undertaken projects, which is especially important for African countries characterized by very low rates of operationalisation and completion of greenfield FDI (Chen et al., 2015). The most pro-active IPAs may exert substantial pressure in terms of policy advocacy, working to shape more effective business environments and clearer regulatory framework for investment and often acting as an intermediary between investors and governments.

The available evidence suggests that investment promotion has a key role in determining the amount of FDI flows and that the higher the quality of the IPA the more its effectiveness in attracting FDI. Harding and Javorcik (2011) find that investment promotion works in attracting US FDI to developing countries but not to developed ones and that it is more effective in presence of greater information asymmetries, cumbersome business regulations and wider language and cultural distance. Similarly, Crescenzi et al. (2021) find that sub-national IPAs operating in closer proximity to investors' operations in European countries attract FDI in particular towards areas where markets and institutions are weaker. In a subsequent study, Harding and Javorcik (2013) show that results strongly depend on the quality of the assistance offered by the IPA (Harding and Javorcik, 2013).

Some studies have pointed out the key role of investment promotion in Africa. Teka (2014) associates the prevalence of firms from Asia and Europe in Ethiopia to the efforts of the Ethiopian Investment Authority (EIA) in attracting FDI from those countries and highlights the importance of specific information on the destination area. The UNIDO's AIS Report (UNIDO, 2012) provides a deep understanding of the quality of investment promotion in Africa as perceived by foreign investors, as well as of the most rated services

and investors' priorities. The survey findings indicate that investment promotion is especially important for newcomers who cannot rely on information from previous investors. Furthermore, in line with results from Harding and Javorcik (2011), the respondents rated IPA services as especially important in presence of compulsory investment registration. At the same time, the report indicates that long and inefficient registration processes have a negative impact on investors' decisions. Even though empirical evidence on the effects of investment promotion in Africa is lacking, the report by UNIDO (2012) provides some key indications. First, it stresses the importance of quality investment promotion and the need that IPAs work proactively to attract increasing amounts of quality investment. In line with previous findings (World Bank and IFC, 2009; Harding and Javorcik, 2011), the report identifies the need of a targeted investment promotion, directed at attracting FDI in sectors in which the greatest spillovers can be generated. As fiscal incentives, IPAs are rated especially important by efficiency-seeking investors (Andersen et al., 2018), which are also those most likely to create positive spillovers, as Section 4 on FDI effects will show.

SEZ. Special Economic Zones such as Export-Processing Zones (EPZ), Free-Trade Zones (FTZ) and Multi-Purpose Zones (MPZ) can attract FDI by offering more liberal business rules and customs regimes, fiscal incentives and better infrastructure to its member firms.[2] Established in the 1970s and enormously increased in number in the last decades, SEZ have proved to be an important tool to increase FDI and bring structural transformation to East Asian "tigers" (Bräutigam and Xiaoyang, 2011; UNCTAD, 2019). African governments have been seeking to replicate this model, the majority of SSA countries today having active SEZ programs, mostly EPZ and industrial parks. Evidence on the effectiveness of SEZ in attracting FDI is predominantly qualitative, since the lack of separate data for FDI inside and outside the SEZ makes it hard to measure their impact (UNCTAD, 2019). The qualitative evidence available reports how SEZ programmes have generally failed in attracting FDI inflows and bringing structural transformation in SSA (Farole, 2011; Farole and Sharp, 2017; Gakunu et al., 2015; Zeng, 2016) and identifies the lack of adequate infrastructure and of effective institutional and legal frameworks as major factors discouraging foreign investors to locate in African SEZ (Auty, 2011; Zeng, 2016). According to Farole and Sharp (2017), the poor performance of African

[2]For a broad description of the different types of SEZ, their differences and functioning see UNCTAD (2019).

SEZ is due to political economy problems mainly related to inadequate knowledge of policy makers in relation to the best combination of features that will attract investors and to rent-seeking behaviours of politicians incentivizing malfunctioning SEZ to obtain electoral gains. What seems clear is that, to attract FDI and enable spillovers, SEZ have to be well designed and fit in the country's long-term development strategy (UNCTAD, 2019; Narula and Zhan, 2019), leveraging on its comparative advantages and acting in concert with traditional location determinants. Further evidence of SEZ and their local impact is reported in Section 4.

3.2.4. Bilateral variables: distance and migration

Bilateral variables capturing the role of geographic, cultural and institutional distance between the origin and the destination country, borrowed from gravity models for international trade (Anderson and van Wincoop, 2003; Head and Mayer, 2014), are increasingly included in the analysis of MNEs location choices (Blonigen, 2005; Ramasamy et al., 2012; Nielsen et al., 2017; Quer et al., 2018). Physical and cultural distance, the latter commonly measured by the existence of language and/or colonial ties between the origin and the destination country, are associated to increasing uncertainty and costs of running business in a foreign country, including transportation, coordination and administrative costs, and increasing liability of foreignness (Hofstede, 1984; Eden and Miller, 2004; Tihanyi et al., 2005; Nielsen et al., 2017). The few studies including these variables for African countries find that lowering these forms of distance significantly increases FDI inflows (Benfratello et al., 2022b, 2023b). Aleksynska and Havrylchyk (2013) show that large institutional distance between FDI origin and destination deters MNEs from advanced countries. MNEs from emerging economies, instead, tend to be driven by the institutional distance when investing in countries with better institutions, whereas they are deterred by greater distance in destinations with worse institutions. The authors also show that this effect decreases when the destination country is rich in natural resources. While not targeting specifically African countries, these findings appear especially relevant for the African context and relate to the distinctiveness of emerging (especially Chinese) investors in Africa when dealing with natural resources and institutional quality (Benfratello et al., 2023b). Finally, a recent study from Landry (2019) finds a positive role of the voting alignment of origin-destination country pairs at the United Nations in determining the location of FDI in Africa.

Part of the literature emphasized the role of migration in reducing cultural distance and promoting transnational business opportunities (Gould, 1994; Head and Ries, 1998; Rauch and Trinidade, 2002; Burchardi et al., 2019; Javorcik et al., 2011; Benfratello et al., 2022a). Javorcik et al. (2011) and Foad (2012) find a positive relationship between US FDI and the presence of migrants from the destination country, which is stronger for more skilled immigrant communities. The diaspora of developing countries can promote investments in their origin countries, helping comply with regulations and identify investment opportunities by leveraging destination-specific knowledge, thus reducing the uncertainties and costs associated with outward investments (Plaza and Ratha, 2011; Parsons, 2012). African emigrants may facilitate the flow of information about business opportunities in their home countries, and the enforcement of contracts in their home countries (Riddle et al., 2008; Rodriguez-Montemayor, 2012)[3]. The scant evidence available shows that both African emigration and immigration networks are effective in promoting FDI (Benfratello et al., 2023b), especially when it deals with skilled migrant workers (Hoxhaj et al., 2015).

4. Evidence on the effects of FDI in Africa

We turn now to the analysis of the main findings on the impact and spillovers of FDI in terms of economic growth, productivity, entrepreneurship, employment and structural change, and on the policies enabling the positive outcomes of FDI. The evidence available for African countries is complemented and compared to the evidence at the global level, with an emphasis on other developing areas.

4.1. FDI effects on economic growth, productivity, entrepreneurship and employment

4.1.1. Economic growth

As a capital inflow, FDI can directly contribute to economic growth by expanding the capital stock and raising the overall level of knowledge and technology in host countries. Compared to other sources of capital, FDI may carry higher levels of technology, know-how and managerial capacity and may therefore contribute to domestic growth more strongly than domestic investment. As already mentioned, however, this is based on the assumption that foreign firms are more technologically advanced and more efficient than

[3]See also www.investmentmonitor.ai and www.fdiintelligence.com

domestic ones, which is not necessarily true for all kinds of investments (Hausmann and Fernandez-Arias, n.d.; Driffield and Taylor, 2005; Benfratello and Sembenelli, 2006).

Empirical evidence on this point is not conclusive and, especially when the endogeneity deriving from simultaneous or reverse causality between FDI and growth as well as country-specific effects are taken into account, results often indicate a null or even a negative effect of FDI (Carkovic and Levine, 2002; Borensztein et al., 1998; Adams, 2009). As shown by several reviews carried out on the topic (Colen et al., 2012; Alfaro, 2017), in general, the relationship between FDI and host countries' economic growth is highly heterogeneous across destinations. Some studies show that less developed countries benefit more from FDI in terms of growth (Bende-Nabende et al., 2003), although the gap between home and host country does not appear to have a univocal effect on the relationship between FDI and growth (Blomstrom et al., 1994; Carkovic and Levine, 2002; Li and Liu, 2005; Hansen and Rand, 2006; Hsu and Wu, 2009; Baiashvili and Gattini, 2020). The convergence theories of Findlay (1978) and Wang and Blomström (1992) predict that host country relative backwardness lead to higher productivity growth through the adoption of foreign technology. At the same time, relative backwardness may be a deterrent to the absorption of technology spillovers from FDI (Glass and Saggi, 1998; Girma, 2005; Danquah and Ouattara, 2014).

Part of the evidence available for African countries shows a positive relationship between FDI and growth (Hansen and Rand, 2006; Sukar et al., 2007; Sharma and Abekah, 2008; Calderón and Nguyen, 2015; Kunle et al., 2014; Sakyi and Egyir, 2017). Other studies, however, find no significant effect of FDI after controlling for country-specific factors, such as macroeconomic conditions and governance quality (Ajayi, 2006; Adams, 2009; Badr and Ayed, 2015) or even a negative impact (Edrees et al., 2015). Evidence for North Africa is especially ambiguous. Badr and Ayed (2015) find no effect of FDI on growth in Algeria, Egypt, Morocco and Tunisia, while Soumaré (2015) shows that FDI have fostered growth in North Africa, with investment flows towards Libya and Tunisia especially contributing to per capita GDP growth in the region. Omri and Sassi-Tmar (2015) attest the existence of a two-way relationship between FDI and economic growth in Tunisia, Morocco and Egypt.

A number of factors concur to determine the effect of FDI on economic growth in African countries. Adams and Opoku (2015) find that FDI is positively related to economic growth in SSA countries only in presence of an effective regulatory framework,

including business and labour market regulations. Shittu et al. (2020) find that FDI stimulate economic growth in West Africa, and good political governance enhances their impact. Generally speaking, institutional quality and governance are identified as major mediating factors for economic growth at the country level (Balasubramanyam et al., 1996; Wang, 2013; Baiashvili and Gattini, 2020), together with the level of education and human capital (Borensztein et al., 1998; Xu, 2000; Lee and Vivarelli, 2006), the presence of sufficiently strong financial institutions (Alfaro et al., 2010; Azman-Saini, Law et al., 2010), the market structure (Alfaro et al., 2010; Prasad et al., 2007), as well as trade policy regimes, labour regulations and other relevant policies (Harrison and Rodríguez-Clare, 2010; Kose et al., 2010; Echandi et al., 2015).

Furthermore, the broader empirical literature identifies a series of firm- and investment-level factors as especially able to determine a positive effect of FDI on economic growth, such as the sector and motive of investment (Alfaro, 2003; Alfaro and Charlton, 2007; Doytch and Uctum, 2011), the entry mode (Bayar, 2017; Neto et al., 2010) and the MNE's origin country (Fortanier, 2007). Efficiency-seeking and strategic asset-seeking FDI, especially those in manufacturing, are most often associated with economic growth, since they increase exports and positively affect the balance of payments (Aitken et al., 1997; UNCTAD, 2002). On the contrary, resource-seeking FDI can have negative effects on host countries' economies appreciating exchange rates and profit repatriation (Nunnenkamp, 2004; UNCTAD, 2007). Despite some exceptions (Nunnenkamp and Spatz, 2003), FDI in manufacturing are generally reported to have growth effects whereas FDI in the primary sector are most often associated with negative impacts. The impact of services FDI is instead more ambiguous (Alfaro, 2003; Chakraborty and Nunnenkamp, 2008).

4.1.2. Productivity and knowledge spillovers

If foreign firms are more technologically advanced, their superior knowledge may be transferred, intentionally or not, to domestic firms and workers through FDI, leading to an increase in their skills, productivity and output. Productivity spillovers are potentially the most important indirect effect of FDI. Unsurprisingly, they have been object of empirical investigation since a long time (Caves, 1974). The empirical literature traditionally concentrated on horizontal rather than vertical (both backward and forward) spillovers to local firms although, following the seminal paper of Saggi and Javorcik (2004), the latter have become object of intense investigation.

The meta-analysis from Havranek and Irsova (2011) shows the very large heterogeneity in empirical findings for any kind of spillovers. Overall, they find that foreign presence leads to large and significant knowledge transfers to domestic firms in supplier sectors (backward spillovers) but small effect for firms in the customer sectors (forward spillovers) and no effect on firms in the same sector (horizontal spillovers). The finding of at best weak horizontal spillovers is shared by some meta-analyses conducted on empirical analyses performed before 2010 (Gorg and Strobl, 2001; Görg and Greenaway, 2004). By using a much larger set, the meta-analysis from Meyer and Sinani (2009) shows that horizontal spillovers display a positive effect and that this effect appears to be U-shaped with respect to the level of development, the human capital and some institutional factors (transparency and economic freedom) of the host country. The more recent meta-analysis from Bruno and Cipollina (2018) on EU countries confirms that FDI induce positive horizontal spillovers, suggesting that positive effects might be more pronounced in developed rather than developing countries. This is in line with the available evidence showing that, when the technological gap between home and host country is too wide, it is less likely that the technological transfer takes actually place (Markusen and Venables, 1999; Girma, 2005; Fons-Rosen et al., 2017). As regards as backward spillovers, they seem to depend positively on the distance between host and home country (Havranek and Irsova, 2011; Javorcik and Spatareanu, 2011) and, as found for horizontal spillovers, they appear larger if the technological gap is not too wide (Havranek and Irsova, 2011). Furthermore, larger vertical spillovers are associated to more openness to international trade and to underdeveloped financial systems, the former related to the higher absorptive capacity of local firms having experience in international markets, the latter probably due to the larger gains achievable when financial systems are still at a developing stage. The ownership mode and the sector appear to matter as fewer spillovers are generated by fully owned foreign affiliates compared with joint ventures and fewer spillovers are received by domestic firms in services compared to manufacturing (Havranek and Irsova, 2011).

In a meta-analysis on FDI productivity spillovers, Demena and van Bergeijk (2017) find that analyses targeting Asian countries usually find positive spillovers, while results from studies targeting other developing regions are very contradictory. In relation to Africa, Bwalya (2006) and Mebratie and Bedi (2013) do not find any productivity spillovers respectively for Zambia and South Africa, while Waldkirch and Ofosu (2010) find a negative impact for Ghana. Haddad and Harrison (1993) do not find evidence

that FDI accelerated productivity growth in Morocco. On the contrary, Managi and Bwalya (2010) find evidence in support of both intra- and inter-industry productivity FDI spillovers in Kenya and Zimbabwe, while no significant effect is found in Tanzania. Considering a panel of 45 African countries, Malikane and Chitambara (2017) find only an overall weak positive effect of FDI on productivity growth, which does not appear to increase with the technology gap with origin countries. In line with what found by Havranek and Irsova (2011), joint ventures tend to generate greater spillovers in Africa compared to fully owned foreign affiliates (Abraham et al., 2010; UNIDO, 2012). Furthermore, Bwalya (2006) shows that regional concentration facilitates rapid technology spillovers from foreign to domestic firms in manufacturing in Zambia. Finally, Görg and Strobl (2005) find evidence of intra-industry productivity spillovers through workers mobility in the manufacturing sector in Ghana conditional to the owner's multinational experience in the same industry.

4.1.3. Entrepreneurship

A further potentially important effect of FDI is to stimulate entrepreneurial activity in host countries. FDI can be a boost for domestic entrepreneurship, which can be stimulated by increased labour demand and benefit from voluntary and involuntary technological transfer and knowledge spillovers. Hong et al. (2021) provide a meta-analysis of 47 studies showing that, also in this case, the heterogeneity of results is large. The overall mean effect of FDI on entrepreneurial activity is close to zero and statistically insignificant, while turning significantly negative when considering only studies controlling for endogeneity. Pathak et al. (2015) find that FDI inflows are negatively related to domestic entrepreneurial activities and suggest that the cause of divergent results with other studies finding positive effects (Kim and Li, 2014; Ayyagari and Kosová, 2010) lies in empirical factors rather than in theoretical ones such as different measures of entrepreneurship used. Contrary to the findings of Danakol et al. (2017), Pathak et al. (2015) also show that the negative effect of FDI on entrepreneurship is only significant for the developing countries in the sample. Consistently, Agosin and Machado (2005) show that FDI has crowded out domestic investment especially in Latin America, while they find milder results in relation to Asia and Africa. A negative effect is also found by Rani and Kumar (2022) for FDI in BRICS countries. Berrill et al. (2020) show that the interaction between FDI and the education level of the destination negatively affects the rate of entrepreneurial activity, suggesting that FDI raise the opportunity costs of

starting an independent entrepreneurial activity by increasing the supply of better paid jobs in countries with higher education levels. Consistently, according to Kim and Li (2014) the positive relationship between FDI and business creation is strongest in countries with poorer institutional quality and lower human capital. This latter finding is in line with the evidence available for African countries where, differently from other developing areas, a positive relationship emerges between FDI and domestic investment (Ndikumana and Verick, 2008; Nxazonke and van Wyk, 2020; Munemo et al., 2015). According to Munemo et al. (2015), FDI significantly crowds in new domestic firms when business start-up regulations are lower. Furthermore, Munemo (2018) finds that FDI enhances entrepreneurship in African countries with more developed financial institutions and markets, which increase their absorptive capacity. The author assesses the existence of a threshold level of financial market development, which he proxies with the domestic credit available to the private sector as a share of GDP and estimates to range between 42% and 57%, above which FDI crowds in new businesses. As Pathak et al. (2015), Munemo (2018) explores different dimensions of financial development (depth, access, and efficiency) and, differently from the former, he finds a positive relationship between FDI and new entrepreneurial activity across all the dimensions considered. Finally, and differently from the other cited studies on African countries, Adams (2009) finds a net crowding out effect of FDI on domestic investment, with a positive effect only in the later periods.

4.1.4. Employment, wages and working conditions

FDI can impact host countries' labour markets directly, by hiring local workforce and paying higher wages, or indirectly through multiplier and crowding-in effects deriving from vertical and horizontal linkages with local firms. The entry of foreign MNEs affects the demand for labour and therefore the employment rate, labour force composition, productivity and wages. Furthermore, foreign firms from advanced countries are often reported to increase wages and improve labour standards. On the other hand, crowding-out effects due to increased competition may cause job losses and lead to an overall decline in employment. At the same time, if foreign firms' labour demand is concentrated in specific industries and/or specific categories of workers, such as the highest skilled, wage inequality is likely to increase in the host country. Finally, the increase in labour standards as a consequence of FDI from more advanced countries is based on the assumption that firms coming from those countries will operate in host countries as they would do in their

home contexts. However, foreign MNEs may decide to take advantage and cut labour costs by exploiting the lower levels of labour and social protection in host countries. While the effects of FDI on host countries' labour markets may be many and variegated, in this section we take into consideration three main categories of labour market measures, namely the creation of new employment and the effect on wages and on labour standards.

Employment. As reported by Narula and Van der Straaten (2020), direct employment effects of MNEs at an aggregate level tend to be quite modest. In 2018, MNEs directly employed only less than 76 million people (UNCTAD, 2019), which corresponds to a 2.2 per cent of the global labour force.

According to Hale and Xu (2016), FDI in more advanced destinations may decrease the number of jobs in the short run by introducing labour-saving technologies, whereas in the long run the effect turns positive thanks to the increases in labour productivity. This is also in line with results from Jude and Silaghi (2016) in relation to Central and Eastern European countries.

As for developing and emerging countries, Hale and Xu (2016)'s meta-analysis identifies a general positive effect of FDI on employment (Lipsey et al., 2013; Peluffo, 2015; Waldkirch et al., 2009, among others). Some studies, however, show opposite results (Wang, 2013; Nguyen et al., 2020). Karlsson et al. (2009) find that the increased employment in Chinese manufacturing firms does not depend on foreign ownership itself, but rather on other foreign firm characteristics such as productivity. Evidence of FDI raising employment levels is quite weak for African countries. Abor and Harvey (2008) and Osei et al. (2019) find that FDI has a positive and significant impact on employment growth in Ghana. Cotton and Ramachandran (2001) reported 12,000 jobs created in the Maputo Corridor within the Mozal project, in Mozambique. Evidence available, however, show that not all FDI bring new jobs. Qualitative evidence from Jenkins and Thomas (2002) reveals that only 27% of surveyed foreign firms in the secondary and tertiary sector in Southern Africa reported an increase in employment over the previous five years, whereas 37% reported no significant change and 35% a decrease in employment. FDI in non labour-intensive sectors may lead to increases in labour productivity and, especially in the short-run, reduce employment levels. According to Abor and Harvey (2008), a 1% increase in productivity caused a 0.19% reduction in employment following the entry of foreign investors in Ghana. The authors explain the positive relationship they find between FDI flows and employment in the country to the jobs created via FDI

in more labour-intensive sectors such as textiles, wood, furniture, metals and chemicals. Jenkins and Thomas (2002) find the negative effect of FDI on wages to interest especially brownfield FDI in the manufacturing sector. On the contrary, and more in line with Abor and Harvey (2008), Chen et al. (2015) associate the higher gains in employment in Ethiopia to the substantial flows of FDI in manufacturing and compare it to the situation in Rwanda, where FDI mostly directed to ICT and financial services are associated with lower job creation. Generally speaking, evidence on both advanced and emerging countries shows that the main gains in employment are associated with FDI in knowledge and skill intensive sectors (Cortinovis et al., 2020; Amoroso and Moncada-Paternò-Castello, 2018), especially in manufacturing (Liu, 2012; Nguyen et al., 2020; Saucedo et al., 2020). High skilled workers are generally identified as those gaining from FDI-induced employment increases (Hijzen et al., 2013; Nguyen et al., 2020), although this finding does not seem to be stable across destinations (Nunnenkamp, Bremont et al., 2007; Lipsey et al., 2013; Coniglio et al., 2015). For example, Coniglio et al. (2015) find that foreign firms in Sub-Saharan Africa generate more employment than domestic ones, but this is associated with less skill intensive jobs. They also show that foreign firms from developing origin countries employ less skilled workers compared to MNEs from advanced countries. In particular, Chinese firms appear to employ more workers and pay lower wages to both low and high skilled workers compared to other foreign and domestic investors. This may be attributed to the heterogeneity in investment motivations of investors from emergent countries (China, India and South Africa) and advanced countries in Sub-Saharan Africa, where the former are more manufacturing- and export-oriented and the latter are mostly market-seeking (Henley et al., 2008).

According to Narula and Van der Straaten (2020), the skill bias in FDI-related employment creation is attributable to the de-industrialization of mostly efficiency seeking investments – the most effective in creating linkages and job opportunities for domestic workers – in developing countries: especially since the 2008 crises, FDI have been increasingly demanding high shares of administrative jobs, therefore increasing the demand for better skilled labour at the expense of the least educated. Among the least educated, many are female workers and a number of studies have, indeed, pointed at the decline of female employment in many developing countries, the so-called "defeminisation" of FDI (Aguayo-Tellez, 2012).

The relationship between FDI and female employment, however, has not been sufficiently investigated and results are not univocal. Braunstein (2006)'s review of the evidence of the impact of FDI on female workers shows that FDI significantly increase female employment in semi-industrialized countries, where FDI are mainly in labour-intensive and export-oriented sectors. Conversely, as the industrial structure upgrades, women tend to be substituted by more skilled men and to be relegated to subcontracted and often informal work when firms are forced to cut costs to avoid being crowded out from the market. A more recent review by Aguayo-Tellez (2012), mostly based on case studies, concludes that it cannot be claimed that FDI have benefited women's employment and income, suggesting that more research is to be done.

Again, among the main factors mediating the employment effects of FDI, along with the sector of investment and the level of skills, there are the technology gap between home and host country, the business environment, the quality of institutions and the trade regime. Higher levels of labour market flexibility and institutional development are associated with larger employment gains from FDI (Rong et al., 2020; Wang, 2013). As discussed for economic growth and entrepreneurship, the relationship with the technology gap is more ambiguous, with some studies highlighting a negative role of large gaps (Ezemenari et al., 2017) and others finding no role (Jude and Silaghi, 2016). Ezemenari et al. (2017) find that FDI from BRICS countries have a positive effect on employment in Africa, whereas the effect of flows from G7 countries is negative, and they relate this result with a too wide technological gap between home and host countries, which makes it hard for African destinations with low levels of absorptive capacity to reap the benefit of the investment. Consistently, Coniglio et al. (2015) show that Chinese firms in Sub-Saharan Africa employ more (mostly low-skilled) workers than both other foreign and domestic investors.

Wages. While evidence of a positive relationship between FDI and employment creation is weak and conditional to a number of factors, the effect of FDI on wages in domestic economies seems to be somewhat less controversial. The meta-analysis from Hale and Xu (2016) confirms that there is a positive direct effect of FDI on productivity and wages in target firms and industries, including when endogeneity is controlled for. Furthermore, the authors report some consensus in literature of positive spillovers on connected domestic firms' productivity and wages following horizontal FDI (same industry), but not for vertical FDI (related industries), where analyses are more limited in number

and results are mixed. The positive effect of FDI on wages appears relatively consolidated for developing countries (Javorcik, 2015; Arnal and Hijzen, 2008). In Africa, foreign MNEs are found to pay higher wages than domestic firms (Te Velde and Morrissey, 2003; Coniglio et al., 2015). Nonetheless, while they find a significant and positive relationship between FDI and employment creation in Ghana, Abor and Harvey (2008) do not find a significant effect on country wages. Throughout studies, high skilled workers appear to benefit from the highest increases in wages (Hale and Xu, 2016; Hale and Long, 2011b; Lipsey and Sjöholm, 2004). Indeed, even when engaging in labour-intensive projects, MNEs tend to be more capital- and skill-intensive that domestic firms, thus increasing the wages for skilled workers. According to Narula and Van der Straaten (2020), MNEs have reduced to some extent inequality between countries but have exacerbated within-country inequality. In fact, the "skill-bias" embodied in MNE activities may have the effect of reducing low-skill employment opportunities, as mentioned above, and increasing the wage gap between skilled and unskilled labour force, and may explain the null or negative effects identified by some of the analyses dealing with FDI and wage levels in developing countries (Aitken et al., 1996; Chen et al., 2011).

Again, the determinant factors of spillovers act at various levels. van der Straaten et al. (2020) find that the higher the host country level of property rights protection, the lower the MNE wage premium, while they find no effect of a change in labour flexibility. Girma et al. (2019) point at the role of foreign firm agglomeration, with a U-shaped total effect reaching its maximum at around 25%. In African countries, the MNE premium is found to vary considerably according to the origin of the investment. MNEs from more advanced countries tend to pay higher wages than those from emerging countries, although this is partly due to their preference for higher skilled workers (UNIDO, 2012; Coniglio et al., 2015).

A number of studies have focused on the gender wage gap, being female workers often the lowest-skilled workers (Braunstein, 2006; Aguayo-Tellez, 2012; UNCTAD, 2014; Narula and Van der Straaten, 2020). Among others, van der Straaten et al. (2020) find that the gender wage gap is larger in MNEs than in domestic firms when considering developing countries, while the gender wage premium is smaller in more developed destinations. In line with this result, Oostendorp (2009) finds that trade and FDI tend to decrease the occupational gender wage gap in richer countries, while the effect is not univocal for poorer countries. Contrary to the evidence presented so far, Vargas Da Cruz

et al. (2018) show that greenfield FDI in selected emerging economies are associated with higher employment rates and higher wages especially for unskilled women workers. This points to the need of further investigating the effects of FDI on the gender wage gap in different settings. This appears especially true for African countries, where the evidence available is very scant and shows a negative impact of trade liberalization and globalization on gender equality (Baliamoune-Lutz, 2007; Aguayo-Tellez, 2012).

Labour standards. Finally, FDI are often looked at as possible sources of better labour standards in host countries compared to domestic firms. However, our review offers the least encouraging results in this regard. Indeed, the effects on aspects of labour quality other than wages are most often neglected, and the assumption that firms coming from more advanced countries will introduce better conditions in host countries labour markets is not adequately supported. For example, Ngai (2004) reports that the jobs created for young female workers in the light manufacturing industries for the Shenzhen Special Economic Zone in China, producing for European and North American MNEs, often do not comply with decent work standards. This seems to be especially true in the textiles and apparel sectors, in line with results from Blanton and Blanton (2009) and Perman and David (2004), among others. Cling, Letilly et al. (2001) collect evidence on the impact of Export Processing Zones on developing countries and show that trade unions are often prohibited or their freedom is largely restricted in EPZ (see Subsection 4.2.1 for a more in-depth discussion of EPZ and other special economic zones).

Overall, empirical studies have failed in finding positive effects of FDI on workers' and children rights (Colen et al., 2012; Kolk, 2016; Giuliani and Macchi, 2014) are among the few to analyse the effects of FDI from both an economic and a human rights perspective, including workers' rights. For example, they collect evidence pointing at the criticism surrounding labour practices in the food industry, including the use of child labour, or at the importance of unions in guaranteeing labour well-being in presence of foreign MNEs. In this framework, the abundance of natural resources and the unstable and corrupt governments make African countries especially vulnerable to MNEs complicity in human rights violations, as reported by Papaioannou (2006) in relation to the human rights abuses in the Democratic Republic of Congo.

Although Corporate Social Responsibility (CSR) policies and provisions have been adopted in the last decades by investing firms, especially those operating in developing countries, involving in some cases broad partnerships for host country development, the

actual outreach and impact of these projects is not established. For example, Pegler (2009) finds that CSR policies have ambiguous effects in Brazil, where these measures have been used in some cases as substitutes for workers' unions and representation bodies.

Some studies also analysed the opposite relation, aiming to assess if FDI are deterred or incentivized by poor working conditions in host economies, and results are again ambiguous. For example, Busse et al. (2011) find that fundamental labour rights foster foreign investment in developing countries, while Braun (2006) and Kucera (2002) found only small or volatile positive relationships with FDI.

While the direct effects of FDI on labour standard may not be encouraging, their indirect effects may point in a more positive direction. Indeed, as reported by Giuliani and Macchi (2014), a better treatment of the workforce is also associated with higher training of workers, whose skills are a form of empowerment and an opportunity to leave exploiting job situations to seek for better working conditions. A number of authors associate foreign firms with more and better training to their employees (Javorcik, 2015), although the causality between FDI and better training is unclear (Arnal and Hijzen, 2008) and their contribution to skill development seems conditional on the initial level of human capital (Te Velde and Xenogiani, 2007). If MNEs increase the level of training of the host countries' employees, they may establish the longer-run conditions for these workers to claim better labour standards, an issue which we recommend future research to focus on.

Finally, Narula and Van der Straaten (2020) focus on services FDI and identify as a potential criticality the increase in demand for "pink-collar" jobs, such as those in cleaning or other low-paid services typically reserved to female workers, since there is evidence indicating even worse labour conditions in foreign firms than those in domestic ones.

4.1.5. Structural change

FDI may enable structural transformation in African economies, leading the transition from mostly rural to industrialized and service-based systems (McMillan and Headey, 2014). When labour moves from lower to higher productive sectors, structural change will positively contribute to economy-wide productivity growth (McMillan et al., 2014; Rodrik, 2016).

According to Rodrik (2016), globalization processes are especially helpful in explaining structural transformation patterns in developing countries. Foreign investing firms

establish linkages with domestic actors, bring productivity gains and create new employment opportunities in the manufacturing sector (Pineli et al., 2019). On the other hand, as mentioned above, increased productivity and technological change could cause a reduction in manufacturing employment, especially in the short and medium term, and pull low skilled workers back to agriculture or into low pay services (Atolia et al., 2020).

In this setting, female workers are the most vulnerable, often employed in less secure jobs (Braunstein, 2006), although the increasing importance of services and the decreasing request for physically demanding labour may have a positive effect on their participation and wages (Rendall, 2013; Ngai and Petrongolo, 2017).

Among the few to address the contribution of FDI to structural change, Mühlen and Escobar (2020) find a positive effect for Mexico and find that this effect takes place through the reallocation of labour towards more productive sectors. On the contrary, Pineli (2022) finds that FDI negatively affects employment growth in high productivity industries in European post-communist economies. Some studies have addressed the FDI-structural change relationship by focusing on the impact of FDI on sectoral productivity or output (Damijan et al., 2013; Mijiyawa, 2017; Mamba et al., 2020) or in terms of export and product diversification (Amendolagine et al., 2017; Neffke et al., 2018; Elekes et al., 2019). In relation to African countries, Mijiyawa (2017) finds no significant effects of FDI on manufacturing development. Similarly, Mamba et al. (2020) finds a positive effect of FDI inflows only on service productivity in WAEMU countries, not in agriculture and manufacturing.

Pineli et al. (2021) analyse the impact of FDI on the share of modern sector employment according to the development stage of developing host countries. They find that structural change is brought by FDI in manufacturing in countries at initial stages of development, whereas the FDI-structural change nexus is stronger in the non-manufacturing modern sector for more advanced destinations. Among the few studies focusing on African countries, Mensah (2020) analyses the share of manufacturing employment to investigate the determinants of structural transformation in Sub-Saharan Africa and finds an overall positive effect of FDI. On the contrary, using a higher level of sectoral disaggregation Benfratello et al. (2023a) show that FDI have an employment-enhancing effect in all the service industries in which they enter, whereas they find no significant impact in manufacturing. This effect appears especially pronounced for educated workers and particularly women, pointing at the key role of education in structural change processes.

What seems clear at this point is that FDI do not have a univocal effect on host country development and growth, which, in turn, depends on a large number of different factors at the country-, firm- and investment level. While we have already listed some of those factors, the next section will provide an overview of the main policies that may facilitate positive spillovers in host economies.

4.2. Policies as mediating factors

Based on the analysis of the determinants of linkages, it is possible to identify the set of policies that governments can introduce to promote and deepen linkages between foreign and local firms. These can be classified into shorter-term, specific trade and investment measures influencing linkages, and longer-term, broader measures aiming at increasing absorptive capacity to FDI spillovers but also the competitiveness of the system as a whole.

4.2.1. Trade and investment measures influencing linkages

Tariffs and trade policy. The analysis of the interaction between tariff policies and FDI is to be linked to the literature on trade liberalization and its impact on productivity, growth and employment (Harrison and Rodríguez-Clare, 2010; Trefler, 2004; Bustos, 2011). According to Brecher and Alejandro (1977), FDI induced by high tariffs are detrimental to growth, since they exacerbate the production and consumption distortions created by tariffs and, by repatriating profits abroad, foreign firms further reduce domestic welfare. Sub-Saharan Africa has seen a boom of FDI in the textile and apparel sector at the beginning of 2000s, as a joint effect of the Multi-Fibre Arrangement quota regime, setting quota limits on the volume of imports of apparel products permitted to each country, and the introduction of the U.S. African Growth and Opportunity Act, giving qualifying SSA countries preferential access to the US market. The introduction of these agreements led many firms that had already reached their quota limits, mainly from Asian countries such as China, Taiwan, Hong Kong, Japan and Republic of Korea, to locate in Southern African countries with developed export-oriented apparel sectors. However, the end of the quota system, at the beginning of 2005, and the 2008/2009 economic crisis caused a decline in FDI and export in these countries, which the introduction of fiscal incentives and export processing zones could not offset (Kaplinsky and Morris, 2009; Farole and Winkler, 2014).

More generally, open trade regimes relieve the constraints imposed by the size and efficiency of the local market and make smaller countries more attractive for foreign

investors (Crespo and Fontoura, 2007). In an open setting, foreign investors are also likely to be more export-oriented, increasing chances that local suppliers themselves become exporters. Openness to trade also affects the technological content of production, as integration in global value chains tends to give easier access to state-of-the art technologies (Crespo and Fontoura, 2007; Meyer and Sinani, 2009). Trade policy also affects domestic firms. Local firms in an open trade regime are more exposed to competitive pressures through international trade competition which may better prepare them to absorb FDI spillovers (Wälde, 2003).

Tariff reductions have increasingly being introduced in the context of the various regional trade and investment agreements and economic partnerships that have interested African countries over the years, including the AGOA, the EBA, the MFA and the agreements setting up regional cooperation areas such as the SADC, the COMESA, the ECOWAS and the EAC (see Section 3). Furthermore, the African Continental Free Trade Area (AfCFTA) has been set up to be the world's largest free trade area, creating a single market for the whole African continent. The implementation of this ambitious project is still ongoing, as well as the evaluation of its potential and actual effects.

Generally speaking, most studies confirm that FDI spillovers are larger in countries that are more open towards trade (Meyer and Sinani, 2009; Du et al., 2014; Havranek and Irsova, 2011). Arnold et al. (2016) find that both local firms and foreign MNEs productivity in India increased following the 1990s liberalization of the Indian service sectors and Lipsey et al. (2013) find that foreign takeovers of manufacturing firms in Indonesia had a positive effect during the trade liberalization period, while no effect during the import substitution period.

On the other hand, liberalization policies do not appear to work in any case and under any conditions and their impact change according to the outcome variable considered. Ackah et al. (2012b) show that tariff reductions brought by the liberalization reforms had large positive effects on firm productivity in Ghana, while Aryeetey (2005) and Ackah and Baah-Boateng (2012) observed that formal employment started to decline in Ghana after 1991 and even more after 1994, when the new Investment Code and the Ghana Investment Promotion Centre (GIPC) were established with the stated aim of encouraging foreign investments through the provision of fiscal and legal incentives. The liberalization reform period in Ghana is also associated with greater inequality, since poverty declined for some categories such as those engaged in export farming while not for others, as food

crop farmers, with poorly educated workers being the most affected by wage declines (Ackah et al., 2012a; Ackah et al., 2012c).

Rules of origin and local content requirements. Rules of origin determine the national origin of a product to grant preferential treatment to particular countries, and can have important effects on FDI and linkage creation in these countries (Sauvant and Roffe, 1999). The higher the preferential margin and the lower the administrative costs associated with origin compliance, the greater the effects of these policies. The most important type of rule of origin is represented by local content requirements, which mandate that a proportion of inputs employed by foreign firms derives from the domestic economy (Belderbos and Sleuwaegen, 1997). These policies have been the object of prominent theoretical contributions (Lahiri and Ono, 1998; Qiu and Tao, 2001), and are advocated by civil society groups, policy think-tanks and international development partners. According to Moran (2014), the economies of scale achievable in large developing markets could compensate investing MNEs for the possible loss of superior technologies deriving from the content requirements.

Nonetheless, as suggested by Carrillo (2004), these policies do not necessarily lead to deeper linkages with local firms and we are aware of little systematic evaluations of their effects in host countries (Koopman et al., 2012). Echandi et al. (2015) list some of these and most of them find negative effects on output and exports.

The evidence available for African countries, where local content policies have been often enforced in extractive sectors, indicate a failure of these policies to effectively create linkages with the local economy (Hansen et al., 2016; Teka, 2011). According to Hansen et al. (2016), the effectiveness of these policies in Africa is hindered by market failures, weak institutions, and ruling elites' political self-interest. Teka (2011) finds that the interaction between the local content policy and the low human capital endowment in Angola constrained the creation of spillovers from FDI in the oil sector, where local value-added activities are mostly limited to basic and mid-skill labour. Furthermore, the author reports a disjuncture between the mentioned policy for the oil sector and the national industrial policy, failing to address the weaknesses of the Angolan manufacturing sector and to recognize the need to invest in education and human capital. As suggested by Hufbauer et al. (2013), who conducted an extensive review of 117 local content requirement policies globally, this kind of policies is more likely to be successful for economies

with relatively higher GDP, which is not the case of most African ones, and less reliant on foreign investment.

Special Economic Zones. As detailed in Section 3, SEZ are contained geographic regions within a country with more liberal laws and economic policies to encourage foreign-invested manufacturing and services for export (Shah, 2009). Special economic zones initially attracted MNEs into developing countries with the aim of exploiting cost advantages, mainly labour costs, which also raised concerns about the low labour standards employed in these areas (ILO, 1998). More recently, the presence of skilled human capital is playing an increasingly important role in the location choice of MNEs and the advantages that SEZ seek to promote include the provision of an infrastructure facilitating firm interactions that increase productivity in dense areas, pursued by building clusters or attracting technologically advanced industrial facilities. In turn, the catalyst effect of SEZ and especially export processing zones on the rest of the economy may operate via different channels, e.g., knowledge transfer by workers in the zones to subsequent employers, imitation of production and organisational methods applied by foreign firms, as well as access to the distribution networks of foreign MNEs (Romer and Romer, 2007). The effectiveness of SEZ in creating employment depends on the extent to which linkages are created with the local suppliers, and on the extent to which production is conducted according to basic labour and environmental standards (Cling, Letilly et al., 2001; Bräutigam and Xiaoyang, 2011; Giuliani and Macchi, 2014). Experiences with SEZ in developing countries are quite variegated. Mexico's maquiladoras, introduced in 1965, are associated to extreme exploitation of low-cost labour with limited spillover effects (Cling, Letilly et al., 2001; Altenburg and Meyer-Stamer, 1999), while SEZ in China are considered to represent a success story to build up industrial capacity, although they also carry relevant social and environmental costs (Bräutigam and Xiaoyang, 2011). In their systematic review of the effectiveness of export processing zones, Cirera and Lakshman (2017) highlight mixed results for most outcomes considered: employment, wages, gender wage gap, and health and safety conditions of workers. Moreover, they highlight the problem of the lack of a robust counterfactual against which to evaluate the employment effects of EPZ. The latter weakness is addressed in a few recent studies focusing on the effectiveness of SEZ on the host economies, e.g. Busso et al. (2013) for the US, Wang (2013) for China, Ciżkowicz et al. (2017) for Poland and Alkon (2018) for India,

with encouraging findings about the effectiveness of SEZ to promote spillovers. In Sub-Saharan Africa, SEZ have failed to attract significant investment, promote exports, and create sustainable employment, due to a variety of factors such as inadequate knowledge and distorted incentives in the implementation of these zones (Farole, 2011; Farole and Moberg, 2017), poor regulatory and institutional frameworks, ineffective planning and governance, weak implementation capacity and inadequate infrastructure (Zeng, 2015). China's positive experience with domestic SEZ stimulated, since 2006, a new declination of SEZ as a policy tool, that changed from an instrument to support Chinese inward investments to one that supports the country's outward FDI (Brautigam, 2010). Among the Chinese-sponsored overseas SEZ, a significant number are targeting African economies (Bräutigam and Xiaoyang, 2011; Zeng, 2015) and serve the objective of supporting China's own offshoring of labour-intensive, less competitive, 'mature' industries. While the first overseas SEZ were government-backed and launched as part of the "Go Global" policy, Chinese MNEs play an increasing role in shaping these zones and some of the currently established SEZ have been spontaneously launched by firms based on their own assessment of business feasibility. Moreover, a variety of ownership structures are observed for these zones, with some being fully Chinese-owned and others being joint ventures, usually with host country national or state-level governments as minority partners. The evolution of these zones and of their effects on host African economies represents some of the most interesting trends to monitor in the coming years, not only from the point of view of labour market effects of FDI, but also considering their potential in affecting global geopolitical equilibria.

4.2.2. Policies for the creation and deepening of linkages and the increase of absorptive capacity

The above review indicates that, for positive spillovers to take place, FDI need to enable the creation of linkages with domestic firms and economies. This, in turn, can only happen if the technologies and skills that are transferred through the investment are adequately absorbed by local firms (Blomström et al., 2003). Constraints deriving from ineffective regulatory environments and institutions and unfavourable macroeconomic conditions reduce the attractiveness of the host economy together with its absorptive capacity and the ability to activate linkages from foreign investors. Hence, efforts to enhance these aspects and improve the overall business climate should be considered as

parts of the investment promotion policy (Wälde, 2003; Blomström et al., 2003; Morris et al., 2012; Farole and Winkler, 2012; Farole and Winkler, 2014; Hansen et al., 2016).

Labour market regulations and institutional quality. A number of studies have established a positive relationship between institutional and regulatory quality and FDI spillovers: weak institutional functioning affects the ability of firms to profitably exploit competitive advantages (Alguacil et al., 2011), negatively affecting FDI flows and hindering positive spillovers.

Labour market regulations affect the level of wages, the conditions for hiring and laying off workers, the role of collective bargaining practices and the administrative and financial consequences of dismissals (Alimov, 2015; Young et al., 2018; van der Straaten et al., 2020). In highly regulated labour markets, MNEs have little discretion in setting wages and compensation mechanisms (Farndale et al., 2017). Accordingly, labour market flexibility is generally considered to increase the inflows of FDI (Javorcik and Spatareanu, 2005; Farole and Winkler, 2012). Rong et al. (2020) show that labour market flexibility positively moderates FDI employment effects in Chinese provinces. Busse and Groizard (2008) find that FDI does not stimulate growth in economies with excessive business and labour regulations.

As for Africa, Adams and Opoku (2015) find that FDI is positively related to the economic growth of countries in Sub-Saharan Africa only in presence of an effective regulatory framework, including business and labour market regulations. Findings from Munemo (2018) show that FDI increases domestic investment in African countries when business start-up regulations are lower, while excessive regulation raises the costs of doing business and dissuade new potential investors. According to Becker et al. (2020), rigid labour markets may be especially detrimental for developing countries. In fact, the authors assess a fall in the employment of high-tech sectors for those countries where both labour flexibility and absorptive capacity are low, whereas low labour flexibility is associated to less negative or null employment effects in countries in which the level of absorptive capacity is high. van der Straaten et al. (2020) challenge this interpretation, finding no significant interaction between MNE status and labour flexibility on the MNE wage premium, but a significant effect of property rights protection that leads to smaller gaps between MNE's and domestic wages.

In turn, labour market flexibility affects the quality of jobs and the skill levels within firms. According to Olney (2013) and Davies and Vadlamannati (2013), the global competition for FDI drives a "race to the bottom", where firms competitively undercut wages in an attempt to grasp efficiency gains from lower wages. This also affects the absorptive capacity of local firms and the transmission of spillovers (Hale and Long, 2011a, 2011b; Farole and Winkler, 2012). Specifically, very flexible labour markets accelerate labour turnover and lower the ability of domestic workers to acquire skills and knowledge in foreign firms; on the other hand, they increase the probability that information spillovers arise across firms (Farole and Winkler, 2012).

As for the mediating role of institutional quality, although its positive influence on FDI effects seems straightforward Gorodnichenko and Peter (2007) find no evidence that the extent of FDI spillovers is affected by the degree of corruption or red tape. Moreover, some challenges to this basic argument are posed by the growing role of emerging countries MNEs globally. More substantially, studies on emerging countries' MNEs, particularly Chinese and Indian ones, suggest that the strong role of state ownership, centralized strategic planning, and soft power relationships decrease the importance of institutional quality as a driver of FDI (Buckley et al., 2007). The empirical evidence of the spillover effects associated with FDI from this type of MNEs is still very limited, and concerns may be raised that the lack of concern for institutional quality may limit the ability of host countries to reap the benefits from FDI and the establishment of linkages with local producers.

Evidence for Africa shows that institutional quality and better governance amplify the positive effects of FDI on growth and welfare in North Africa (Soumaré, 2015). Pérez-Villar and Seric (2015) analyse the impact that the institutional distance between home and host country has on the share of local sourcing in SSA for manufacturing firms and find out that foreign firms investing in countries with worse contract enforcement compared to the home country create less domestic linkages, especially for Northern investors. On the other side, the relationship is more complex when considering public sector institutional indicators, such as control of corruption, and shows some evidence of the "guidance role" of local suppliers to Northern investors in more corrupt environments. Recent evidence from Amendolagine et al. (2017) shows that more intense participation of SSA countries in global value chain is associated with higher levels of local sourcing and that these effects are larger in countries with stronger rule of law and better education.

Finally, a strong legal system can be argued to affect MNEs compliance with human rights (De Schutter, 2006; Giuliani and Macchi, 2014) and the ability of the host countries' states to negotiate business terms with MNEs that protect human rights, labour conditions, and enforce industrial and environmental policies (Ruggie, 2014; Cole et al., 2017). In this context, some studies highlight the role of civil society organizations in bringing MNEs' conduct into the spotlight, therefore increasing their pressure to comply with human rights standards, and in developing strategies for improving such compliance (Giuliani and Macchi, 2014; Calvano, 2008; Lee et al., 2012).

Financial markets and financial development. Multinationals can have an ambivalent impact on access to finance for local firms. Countries with better financial systems and financial market regulations can alleviate their capital constraints and exploit the capital inflows arising FDI more efficiently, achieving a higher growth rate (Alfaro et al., 2004, 2010; Havranek and Irsova, 2011). The review by Hsu and Wu (2009), however, do not find evidence in support of a positive effect of financial market development for FDI effects. Azman-Saini, Law et al. (2010) find that the positive impact of FDI on growth "kicks in" only after financial market development exceeds a threshold level. Munemo (2018) finds that developed financial institutions and markets increase the absorptive capacity and maximise the spillovers from FDI in African countries. Specifically, the author assesses the existence of a threshold level of three different dimensions of financial market development (depth, access, and efficiency), above which FDI crowds in new local businesses.

On the other hand, more developed financial markets may bring multinationals to borrow substantial amounts from local financial institutions, possibly increasing local firms' financing constraints. This, in turn, may also affect the ability of local firms to self-select as suppliers for multinationals (Harrison et al., 2004).

Donaubauer et al. (2020) find that, for FDI targeting developing countries, financial market development in source and host countries functions as substitutes for each other. The issue is relevant for developing countries that typically score low in financial markets development and suggests that poor financial markets in the destination can be compensated for by highly developed financial markets in the FDI source countries. This framework is consistent with the recent findings in the literature on emerging countries MNEs that stress the important role of mergers and acquisitions of firms in advanced

countries that score high in financial market development indicators, as opposed to greenfield FDI in developing countries with weak financial markets, and imply differentiated potential for spillover effects (Buckley et al., 2014).

Specific information promotion by governments. In addition to these general policy measures, Wälde (2003) identifies specific measures that governments may be willing to enact to overcome the market failures that hinder the creation of linkages. These measures relate to host governments efforts in promoting access to information on linkage opportunities, information about prices paid for particular components, quality standards and even the products and processes used. Furthermore, the host government can play a proactive role in matching the skills of foreign and domestic firms, and in providing specialized training targeted to technology upgrading along the standards required by MNEs. Similar objectives are pursued by Investment Promotion Agencies in developing and developed countries (Echandi et al., 2015; Iammarino, 2018).

Using a sample of 105 countries, Harding and Javorcik (2013) find that FDI targeting by IPAs can be used to attract efficiency seeking FDI and thus increase the probability of spillovers. Furthermore, the authors observe increases in exports from sectors considered priorities in efforts to attract FDI. These results suggest that host countries can use foreign investment to raise the quality of exports both in absolute terms as well as in terms of bridging the distance to the frontier of higher quality.

Overall, the growing body of evidence on the mediating factors for FDI effects emphasize the need for a "new" industrial policy that is context-specific, considers the diversity of low and lower-middle-income countries in terms of their factor endowments, institutions, geography, labour composition, market size and political power (Narula and Dunning, 2010; Buzdugan and Tuselmann, 2018). According to Buzdugan and Tuselmann (2018), this new industrial policy should facilitate upgrading and spillovers from FDI, by means of micro-levels interventions directed at making domestic suppliers more compliant to investing firms' needs, as well as macro-level interventions for the development of skills and infrastructure and the improvement of the business environment.

5. Concluding remarks

Foreign direct investments may be a powerful tool for the development of African countries. Notwithstanding, very few studies on FDI focus on Africa, where the flows of

foreign investment have increased in the last decade but still remain substantially lower than in other developing areas.

The present review is an attempt to collect the empirical evidence produced so far on the determinants and impacts of FDI in Africa, as well as on the mediating factors that can enable positive spillovers. To our knowledge, this is the first recent attempt to systematize the empirical literature on both these dimensions of FDI, namely determinants and effects, in such a comprehensive way for the African continent. Furthermore, this study also contributes to the literature by recognizing and collecting the evidence on the mediating role of host country policies in influencing the diffusion of FDI spillovers.

On the determinants side, our review shows that Africa has a great potential to attract foreign investment flows thanks to the size and the fast growth of its markets and the presence of unexploited business opportunities. In this sense, the implementation of a unique African market following the AfCFTA may further increase these opportunities together with FDI in the region. When it comes to turn this potential into actual investment inflows, however, the mix of poor infrastructure, high corruption, macroeconomic instability, limited access to global markets and low education hinders the choice of African countries as profitable FDI destinations, increasing the uncertainty and reducing the expected return of investment. This is especially true for countries in Sub-Saharan Africa, where the severe lack of infrastructure is a huge obstacle to both foreign and domestic economic activity. Furthermore, the critically low level of education in many SSA countries is a major impediment for foreign firms pursuing a more balanced mix of low wages and adequate skills as the technological content of their activities increases.

Along with the more widely researched determinants, our review also deals with a set of underinvestigated factors and finds some evidence of a positive relationship between the ratification of international investment agreements and FDI inflows in the destination country, as well as of a negative role of geographical, institutional and cultural distance. On the contrary, the efficacy of other measures specifically targeting foreign investors, such as the set-up of favourable fiscal regimes, Special Economic Zones and Investment Promotion Agencies, in attracting increasing amounts of FDI is not assessed. Beyond being scarcely investigated, these factors are interrelated and their effectiveness in influencing location choices also strongly depends on major macroeconomic and institutional factors. For example, the evidence available on IIAs shows that these are generally more effective in attracting FDI in destinations with better institutional quality, while the poor

performance of SEZ in African countries has been associated to pervasive institutional malfunctioning and lack of adequate infrastructure. Tax holidays and other fiscal incentives are found to have a negligible impact compared to and in absence of other investment climate features, such as easier business regulations and better government transparency. Since fiscal incentives, SEZ and IIAs may carry high costs for the destination countries and not only in monetary terms, as testified by the numerous studies reporting human rights violations in SEZ, governments in African destinations should carefully evaluate whether and under what circumstances it is profitable to invest in these relatively expensive measures which may end up being neutralized by the malfunctioning of other more basic but fundamental dimensions of the economy.

As for the effects of FDI, the evidence available shows that FDI do not automatically translate into growth nor into more or better jobs in Africa. Overall, there is weak evidence that FDI bring economic and employment growth to African countries. While developing economies are those who can potentially benefit the most from productivity spillovers and knowledge transfer from more advanced countries foreign MNEs, the technology gap is often too wide with African destinations, where limited absorptive capacities and backlog productive systems limit the creation of linkages and the diffusion of spillovers, leaving local economies harmless in front of the introduction of labour-saving processes and the crowding out of less productive domestic firms. There are, instead, clearer indications that FDI positively affect wages and local entrepreneurship in destination countries, although results are not univocal. Similarly, the relationship between FDI and structural change in destination countries is not clearly assessed and calls for more disaggregated analyses at the industry level.

Generally speaking, a wide number of factors influence the investigated outcomes. Efficiency-seeking FDI in manufacturing are those associated with the greatest productivity spillovers and employment gains, although this is especially so when they take place in skill-intensive sectors, which are less developed in several African countries. MNEs from advanced origin countries bring more positive effects on wages, while firms from emerging areas are associated with larger employment gains, which is in line with the consideration that large origin-destination gaps in technology and productivity levels are likely to carry more adverse effects on host countries. The negative impact of large technology gaps between origins and destinations, in turn, points again at the crucial role of human capital, not only in attracting FDI but also in increasing absorptive capacities

and positive spillovers and reducing crowding out effects. Furthermore, analyses at the firm and individual worker level reveal that educated workers are those benefiting from the highest employment and wage increases and are less vulnerable to labour cuts. In countries where FDI are associated to skill-biased technological change, the demand for skilled workers has increased at the expense of the least educated, many of which are women, making the implementation of broad and effective education policies an urgent matter.

Finally, our review reveals that, beside education, the policies that are more likely to facilitate the realization of positive spillovers from FDI are those acting on the business environment of the destinations. Liberalization policies as well as measures directed at strengthening political, economic and financial institutions, simplifying bureaucratic processes and clarifying the regulatory frameworks are associated to more positive effects of FDI, whereas more FDI-specific policies such as the formulation of local content requirements and the establishment of SEZ have often proved to be of little effectiveness for African countries. On the other hand, many of these policies are also associated with potentially negative outcomes for destination countries. The literature empirically addressing these topics is very scarce for Africa, also given the difficulties in finding consistent and comparable data for this area, thus not allowing to draw clear conclusions on the actual impacts of these policies.

As a matter of fact, the constructive assessment of both the determinants and the effects of FDI is hindered, in Africa, by the scarce availability of consistent information at the national, sub-national and regional level and for the whole continent. Reliable and comparable firm-level data, in particular, are very much lacking for African countries and their collection should be a priority for African and international institutions seeking to leverage FDI to improve the well-being in those territories.

CHAPTER 2

Foreign Direct Investments in Africa: Are Chinese Investors Different?*

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In light of the upsurge in Chinese investments in Africa since Deng's "Go Global" policy, we study whether the location choices of greenfield investors in Africa differ between Chinese and non-Chinese firms. We focus on risk- and information-related factors, i.e., investment protection provided by investment agreements and country-of-origin, industry, and internal agglomeration. We argue that Chinese firms enjoy ownership advantages that reduce their concern for risk. Our results show that Chinese firms are less sensitive to risk-mitigating factors compared to firms from advanced and other emerging economies. A lower reliance on internal agglomeration emerges as their distinctive trait in internationalization. We attribute this result to the systemic engagement of the Chinese government, which goes beyond state ownership and reduces the "liability of foreignness". Chinese firms also appear more market-seeking and manufacturing-oriented, aggressively pursuing knowledge spillovers. Contrary to common perceptions, they do not seem distinctively resource-seeking or to pursue unstable countries.

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1. Introduction and Background

The expanding influence of China in Africa is one of the most unprecedented and dramatic manifestations of how Deng Xiaoping's 1999 "Go Global" policy has incepted a new era for China and the world economy (Ghafar and Jacobs, 2019; Li et al., 2022). In just a couple of decades after its first oil-seeking investments in post-war Angola, China has become the top trade partner and one of the top 5 investors in most African countries (Burgis, 2014; UNCTAD, 2014), consolidating its strategic presence in North Africa—especially in Egypt, Algeria and Morocco (Ghafar and Jacobs, 2019)—and developing preferential ties with Sub-Saharan partners such as Ethiopia and Zambia (Kaplinsky and Morris, 2009; Lin and Xu, 2019). Chinese corporations such as the Huajian Industrial Holding Company, offshoring shoe production in Ethiopia and pioneering the first wave of relocated Chinese plants in Africa, are instances of a new generation of investors that are redefining global value chain relations, where previous FDI recipients turn into major sources of capital.

In this process, Chinese multinational enterprises (CMNEs henceforth) have relied on ownership advantages arising from government support and the ability to navigate opaque institutional environments via interpersonal and diplomatic networks (Buckley et al., 2007; Ramasamy et al., 2012). As aggressively market-seeking as they are resource-seeking (Child and Rodrigues, 2005; Alon et al., 2018), CMNEs in Africa are gaining economic, diplomatic, and cultural influence while eroding the competitive ground of Western multinationals in the continent (Hung and Tseng, 2017; Mazé and Chailan, 2021). As Africa's fast-growing markets raise the interest of investors worldwide (The Economist, 2019), Chinese state capitalism in Africa stands out as an instance of "what is still emerging about emerging markets" that bears strategic implications for global economic and geopolitical equilibria.

Many studies have analyzed Chinese foreign direct investment (FDI) determinants, strategies, and ownership advantages. The results highlight that government support reduces investment risk, and some scholars have even argued that CMNEs have a preference for riskier environments (e.g., Buckley et al., 2007; Ramasamy et al., 2012; Lu et al., 2014; Quer et al., 2018). In African contexts, where political risk and corruption have long limited FDI (Asiedu, 2002; Bräutigam, 2003), government support may represent a critical competitive advantage (Buckley et al., 2007). However, it remains unclear whether Chinese state capitalism indeed translates into different FDI determinants in

Africa. Only a few of studies have systematically compared Chinese FDI determinants to those of other source countries (e.g., Kolstad and Wiig, 2011; Chen et al., 2018), and these did not find support for CMNE risk propensity in African contexts (Buckley et al. (2007) find similar results for the subset of developing countries). Hence, the centrality of these factors may be less representative of a Chinese specificity than of the African context. Faced with political instability and expropriation risk, investors may have to adapt their strategies (Asiedu, 2002) and resort to interpersonal networks, diplomatic relationships, and government support (Child and Rodrigues, 2005; Sutherland et al., 2020), regardless of their country of origin (Andreff, 2016; Financial Times, 2016).

The ambiguity of previous results may be an empirical issue. Host country-level factors may fail to capture the differential sensitivity of investors to risk (Helpman et al., 2004; Duanmu, 2012). For this reason, in this paper we study whether Chinese FDI determinants differ from those of other source countries, focusing on firm- and investment-level factors that mitigate investment risk. Among these, we consider legal measures of investment protection, i.e., international investment agreements (IIAs), and less formalized ways of coping with uncertainty, i.e., prior firm experience in the country, country-of-origin agglomeration, and sectoral agglomeration. We expect government support to reduce the sensitivity of CMNEs to these factors. In fact, previous literature on the internationalization of CMNEs shows that home government support and pressure to go global reduces CMNEs' sensitivity to risk when investing abroad and influences their location choices, including agglomeration (Luo and Tung, 2007; Lu et al., 2014; Quer et al., 2018). In Africa, top Chinese greenfield investors such as Huawei and ZTE Corporation resort significantly less to intra-firm colocation compared to the main UK and French investors (fDi Markets).

The second contribution of our study is to distinguish whether this Chinese distinctiveness arises from a different evaluation of the same determinants, due, for example, to lower perceived risk (Duanmu, 2012; Amighini et al., 2013; Lu et al., 2014; Quer et al., 2018), or from a different composition of the investment portfolio (Duanmu, 2012; Lv and Spigarelli, 2016). To this end, we single out whether the operations run by a foreign subsidiary are resource-related, manufacturing, or market-related.[1] This allows us to compare the determinants of Chinese and non-Chinese investments within subsets of investments that pursue similar motives.

[1]We interchangeably refer to the type of operation run by a foreign subsidiary as "industry activity", "activity", "function", or "sector".

A side contribution of this paper is to compare CMNEs with MNEs from both advanced and emerging economies. Most studies have focused on China to study a prominent example of emerging-country MNEs (e.g., Buckley et al., 2007; Wang et al., 2012). However, we can argue that CMNE characteristics are not immediately comparable to those of other emerging economies (e.g., Holtbrügge and Kreppel, 2012; Andreff, 2016).

Our empirical application draws on investment-level data from fDi Markets on 8,892 greenfield FDI into 43 African destinations over the 2004-2017 period. We study their location choices via conditional logit models. In a context marked by severe data quality and completeness issues, we build a remarkably rich dataset that covers many investments, has specific information about their functions, and includes a comprehensive range of possible determinants.

Our results indicate that CMNEs rely significantly less on risk-mitigating factors such as previous experience in a country and investment agreements. This lower sensitivity mainly concerns FDI in services and manufacturing. Manufacturing FDI also appear to pursue knowledge spillovers from other firms in the same industry. CMNEs as a whole are distinctively market-seeking but align with other countries when it comes to resource-seeking FDI.

The rest of this paper is structured as follows. The next section provides a theoretical framework and reviews the literature on Chinese FDI determinants in Africa, formulating testable hypotheses. Section 3 illustrates the empirical model and the data and Section **??** provides some descriptive statistics. Section 4 reports the results of the analysis and discusses their robustness. Section 5 presents some concluding remarks. In the Appendix, we provide detailed information on variable definitions and sources, as well as additional statistics and information.

2. Theoretical framework

2.1. Theoretical framework for Chinese FDI in Africa

Dunning's OLI paradigm (Dunning, 1977) predicts that firms will locate their foreign investments where the expected Ownership, Location, and Internalization advantages best serve their strategic objectives.[2] Ownership advantages refer to investors' tangible and intangible assets, which are more or less effectively exploited internationally depending on the characteristics of the host country, i.e., location advantages. Internalization

[2]For a recent review of theories and findings on the drivers behind FDI, see Nielsen et al. (2017).

advantages concern the relative profitability of FDI over market transactions. In turn, the effect of particular location advantages depends on the underlying FDI motives. Market-seeking FDI react to large local and regional markets and distribution networks; efficiency-seeking FDI pursue factors (such as labor costs) that rationalize the value chain and improve MNE competitiveness; resource-seeking FDI pursue access to natural resources, such as raw materials and energy. Strategic asset-seeking FDI pursue intangible assets in the host country to realize their strategic objectives. Internalization and transaction-cost theories emphasize the specific costs of running a business transnationally and the role of the "liability of foreignness" in internationalization choices (Buckley and Casson, 1976; Hymer, 1976; Rugman, 1981; Nachum, 2003).

Over the years, this paradigm proved helpful in explaining the location choices for FDI in developing countries, and particularly in Africa. We summarize the main contributions to the determinants of Chinese FDI in Africa in Table A.1 in the Appendix. Consistent results on the role of market size and human capital, driven by the growing middle and upper classes, confirm the importance of market-seeking and efficiency-seeking motives in these economies (see, for example, Nunnenkamp, 2002; Asiedu, 2006; Lederman et al., 2010; Cleeve et al., 2015). The literature on Africa also emphasizes resource-seeking motives relating to the abundance of oil, copper, gas, and mineral ores, as well as agricultural land (Zhang et al., 2013; Ross et al., 2015; Shan et al., 2018), while also pointing out that natural resources alone are not enough to attract FDI (e.g., Asiedu, 2006; Rodriguez-Pose and Cols, 2017).

In developing economies, factors relating to the liability of foreignness, such as low infrastructure development and unsafe business environments, often represent significant location disadvantages (Asiedu, 2002; Kok and Acikgoz Ersoy, 2009; Kinda, 2010). According to Asiedu (2002, 2006), foreign firms with high levels of asset exposure and superior technology perceive African countries—especially Sub-Saharan ones—to be too risky as destinations, fearing capital and property rights appropriation (Brouthers, 2002; Duanmu, 2014; Jiang et al., 2014).

Initially devised to explain FDI from advanced-country MNEs, the OLI paradigm may be less accurate in predicting the particularities of MNEs from emerging countries (EMNEs henceforth), especially when they invest in emerging and developing countries (Mathews, 2006; Buckley et al., 2007). In particular, CMNEs enjoy ownership advantages that traditional approaches tend to neglect. In Africa, the Chinese government actively

promotes the internationalization of MNEs in strategic industries, such as natural resources and ICT (Davies, 2013; Barbieri et al., 2019). It also exerts control over private firms going abroad via a careful approval system of FDI projects (Luo et al., 2010; Lu et al., 2014; Li et al., 2022) and supports FDI with ambitious infrastructure plans like the Belt and Road Initiative (Sutherland et al., 2020).

These ownership advantages imply that CMNEs—and particularly state-owned enterprises (SOEs)—investing in Africa face less uncertainty than other investors (Duanmu, 2012; Amighini et al., 2013). For instance, SOEs can count on government bailout if they encounter financial difficulties and use political relationships and diplomacy to reduce the risk of expropriation (Li and Liang, 2012; Duanmu, 2014; Quer et al., 2018). Sutherland et al. (2020) and Mazé and Chailan (2021) highlight that elites in institutionally fragile countries can be more easily corrupted and aligned with the home-country government's objectives, especially in the context of major infrastructure projects. More broadly, private Chinese firms investing abroad enjoy preferential treatment in terms of taxes and funding when they comply with centrally planned strategic objectives, which is likely to reduce risk aversion and credit constraints for investors as a whole, and not only for SOEs (Luo et al., 2010; Lu et al., 2014; Gaur et al., 2018).

2.2. Hypotheses development

If government support reduces risk, CMNEs may react differently to risk-mitigating location factors. Previous studies on the African context neglected that the perception of risk can be substantially different across investors in different sectors with different characteristics (Helpman et al., 2004; Duanmu, 2012, see Table A.1 in the Appendix); hence, firm- and investment-specific location factors may better capture heterogeneous responses to risk. Among these, the literature on Chinese FDI has identified agglomeration economies (internal agglomeration, industry agglomeration, and country-of-origin agglomeration) and international investment agreements. Whereas IIAs set explicit provisions to protect foreign investors, the agglomeration of previous investments mitigates the actual and perceived risk by reducing the cost of collecting information about the destination and facilitating access to business networks (Lu et al., 2014; Quer et al., 2018; Hertenstein et al., 2017).

Internal agglomeration

Firm location in a foreign country is a costly decision that is difficult to alter (Duanmu, 2012). *Internal agglomeration*, i.e., the tendency to re-locate new investments where a

firm has previous entry experience (Defever, 2012; Alcácer and Delgado, 2016), reduces sunk costs and offers information advantages for subsequent investments. It allows firms to rely on existing organizational routines, collaborations with local firms, distribution networks, and local customers (Yuan and Pangarkar, 2010). From a knowledge-based perspective, it represents a difficult-to-imitate firm-specific asset that reduces risk and costs and, ultimately, the liability of foreignness (Lu et al., 2014).

Drawing on Lu et al. (2014) and Quer et al. (2018), we expect government support and state ownership to decrease the importance of this factor for CMNEs. Indeed, as part of its overseas investment strategies, the Chinese government produces strategic plans and guidelines for investors (Luo et al., 2010). MNEs complying with the guidelines enjoy preferential treatment in terms of funding, taxes, tariffs, and foreign exchange, and can access information about the destination (Lu et al., 2014). An instance of this is the special economic zone established jointly by the Chinese and Egyptian governments in Suez, where a "one-stop-shop" building centralizes administrative services to reduce red tape and institutional costs (Sutherland et al., 2020). In addition, the government supports MNEs in litigation against host-country governments and promotes practical FDI promotion initiatives (Bräutigam and Tang, 2014). Finally, Chinese investments, and especially those from state-owned firms, are intertwined with their government's "debtbook diplomacy" (Ghafar and Jacobs, 2019). The so-called "Angola-model", first implemented in that country as a strategy to exchange natural resources for infrastructure projects, became a framework for Chinese activities across Sub-Saharan Africa (SSA). Through China's EXIM Bank, the Chinese government provides conditionality-bound loans and aid and engages in competitive tenders for major infrastructural and resource projects that bind host countries to long-term cooperation with China. These interventions effectively prepare the ground for future investments in multiple sectors (Biggeri and Sanfilippo, 2009; Kaplinsky and Morris, 2009; Mazé and Chailan, 2021). As reported by Mazé and Chailan (2021), in 2013 Sinopec negotiated multi-billion dollar contracts with the Gabonese authorities for the construction of dams and a railway in the Simandou mine and for the exploitation of forests, while simultaneously offering bids for the acquisition of three oil fields. The authors identify the same bundling practices in the behavior of Citic and Chinalco investing in different industries in Algeria and Guinea. In Morocco, the Memorandum of Understanding between the China Communications Construction Company and Morocco's BMCE Bank for the construction of the "Mohammed VI Tangier

Tech City", which is expected to become the largest Chinese investment project in North Africa, was followed by FDI from major Chinese automobile manufacturing companies such as BYD, Citic Dicastal, and Aotecar New Energy Technology (Ghafar and Jacobs, 2019). These transactions are often negotiated directly by the Chinese government with high-level host-country institutions, regardless of the private or state-owned nature of the contracting firm.

Overall, we expect the strong engagement of the Chinese government to protect CMNEs against political instability and expropriation risk. Compared with atomistic investors from other countries, they may offset the information and cost advantages arising from internal agglomeration:

H1: *Internal agglomeration influences Chinese FDI less than non-Chinese FDI in Africa.*

Country-of-origin agglomeration

Country-of-origin agglomeration, i.e., the co-location of firms from the same country of origin, is an established location factor in the literature because it helps build trust between newcomers and local businesses and allows smoother information flows about the local context and its formal and informal institutions. Ultimately, it partly substitutes for direct firm experience and reduces the "liability of outsidership" of new investors (**Haveman1993**; e.g., Head et al., 1999; Johanson and Vahlne, 2009; Tan and Meyer, 2011).

Quer et al. (2018) argue that the lower level of risk faced by Chinese SOEs decreases the importance of country-of-origin agglomeration in their location decisions. Beyond SOEs, we argue that CMNEs as a whole are comparatively effective in dealing with information and enforcement costs and institutional voids in African countries. The number of "comprehensive strategic partnership" agreements with African countries (Ghafar and Jacobs, 2019), their familiarity with weak institutional environments, and their commercial strategy based mainly on informal networks and "soft power" will reduce these costs. "People-to-people" networks (*guanxi* in Chinese) drove the penetration of CMNEs in North Africa and are central to the deployment of the Belt and Road Initiative (Ghafar and Jacobs, 2019). The "soft" Chinese penetration also involves investment in the cultural dimension, with more than 40 Confucius Institutes opened in different African countries (Akhtaruzzaman et al., 2017) and media hubs being established as well. In 2012, Chinese Central Television (CCTV) chose Nairobi to locate its first broadcast hub outside

of China, CCTV Africa.[3] Furthermore, the Chinese government offers scholarships and training programs to African citizens.[4] As a result, surveys indicate that opinions about China are remarkably positive among young Africans (Carr, 2020).

Overall, we expect these factors to substitute for country-of-origin agglomeration:

H2: *Country-of-origin agglomeration influences Chinese FDI less than non-Chinese FDI in Africa.*

Industry agglomeration

Information gains also arise from locating close to other firms operating in the same industry, i.e., *industry agglomeration.* Proximity is associated with "Marshallian" externalities, i.e., access to knowledge spillovers, specialized labor, and suppliers (Marshall, 1920; Krugman, 1991). This type of agglomeration has ex-ante ambiguous effects on location. On the one hand, strategic asset-seeking MNEs tend to be sensitive to industry-specific knowledge (Fujita and Thisse, 1996). On the other hand, industry agglomeration brings competition. In African contexts, strategic asset-seeking motives may be less central for advanced economies aiming to exploit growing markets as first movers (Ramasamy et al., 2012). This would imply a negative effect of industry agglomeration.

Different considerations may apply to MNEs from China and other emerging countries. As latecomers in their industries, EMNEs must accelerate their pace of internationalization to access resources and capabilities they lack at home. Government support, familiarity with opaque institutional contexts, and production-cost advantages allow them to adopt higher-risk targets than advanced-country MNEs, emphasizing strategic objectives over political and economic risk (Child and Rodrigues, 2005; Mathews, 2006; Luo and Tung, 2007). Cheru and Obi (2011) describe the Chinese investment strategy in Africa as based on the principle of "'twinning' the laggard Chinese manufacturers with the leaders in joint projects" (p. 74), where CMNEs have an opportunity to learn by participating in joint projects with companies from advanced countries. These considerations suggest that CMNEs may be more sensitive to the presence of industry agglomeration than investors from other countries:

H3: *Industry agglomeration influences Chinese FDI more than non-Chinese FDI in Africa.*

[3] http://country.eiu.com

[4] At the end of 2013, more than 35,000 African students were studying in China thanks to Chinese scholarships and support: http://country.eiu.com

International investment agreements

International investment agreements (IIAs) are formal mechanisms to cope with investment risk that may also play a role in the decision to invest in Africa (Dunning, 1998), although their effectiveness is debated (Bankole and Adewuyi, 2013; Lejour and Salfi, 2015; Beri and Nubong, 2021; Benfratello et al., 2022b). Most IIAs are bilateral investment treaties regarding the promotion and protection of FDI. Other IIAs include economic partnerships, free-trade agreements, and preferential trade and investment agreements. African countries faced with credibility problems may resort to IIAs to signal their trustworthiness and protect investors against the risk of expropriation and unfair treatment (Kerner, 2009).

Duanmu (2014) finds that the strength of political ties effectively protects Chinese SOEs from expropriation risk. From our above discussion about risk factors, we generalize this argument. We expect that CMNEs that rely on the systemic protection of their government face an overall lower risk of expropriation compared to atomistic investors from other countries:

H4: *IIAs with the host country influence Chinese FDI less than non-Chinese FDI.*

Political stability

Based on the above arguments, we may expect CMNEs in Africa to be less vulnerable to the host country's political risk. Influential works by Cuervo-Cazurra (2006) and Buckley et al. (2007) argue that this is the case, due to government support and familiarity with opaque institutional environments. However, studies focusing on Africa, where politically unstable countries are often rich in natural resources, tend not to identify significant differences between Chinese and Western investors. The findings of Kolstad and Wiig (2011) and Fiodendji and Evlo (2015) suggest that Chinese and non-Chinese FDI alike are more resource-seeking than attracted to political instability. Chen et al. (2018) and Landry (2019) find positive stability effects for both Western and Chinese investments, although Chinese FDI are less reluctant to target unstable countries and seem to benefit from corruption. Overall, we expect that

H5: *Chinese FDI in Africa are positively but less strongly related to political stability in host countries than non-Chinese FDI.*

Natural resources and market size

In the African context, Chen et al. (2018) show that CMNEs pursue profit and comparative advantage just like other investors. Nonetheless, several authors have highlighted

the role of natural resources and market size for Chinese FDI (Buckley et al., 2007; Cheung et al., 2012; Ramasamy et al., 2012). Hence, a distinctive effect of natural resources and market size would imply different "tastes", i.e., that these factors contribute differently to the utility of CMNEs (Cheung et al., 2012; Bräutigam et al., 2014; Shen, 2015). This may indeed be the case, given CMNEs' aggressive market-seeking strategies (Taylor, 2002; Buckley et al., 2007) and their domestic scarcity of resources (Zhan, 1995; Lunding et al., 2006). However, the few studies that compare Chinese and non-Chinese investors in Africa fail to identify a distinctive market and resource-seeking orientation for CMNEs (Kolstad and Wiig, 2011; Chen et al., 2018; Landry, 2019). Landry (2019) even finds Chinese investors to be comparatively less market-seeking. These ambiguities suggest that the African context, rather than the Chinese origin, may drive a difference in the composition of the FDI portfolio and attracts mainly resource- and market-seeking FDI, regardless of origin. We argue that different "tastes" should translate into differential effects of these determinants within motives, while composition should not:

H6a: *Chinese FDI in Africa are positively related to the availability of natural resources in host countries, similarly to non-Chinese FDI with similar motives.*

H6b: *Chinese FDI in Africa are positively related to the presence of large and/or growing markets in host countries, similarly to non-Chinese FDI with similar motives.*

3. Empirical application

3.1. Empirical model

We study the location choice of FDI in African countries via conditional logit models (Train, 2009). The logic behind these models is that the investor will choose the location that yields the highest possible utility. We model utility as a linear function of alternative-specific regressors. Specifically, investment n from country o in African destination country i at time t will obtain utility $U_{niot} = \delta' w_{niot} + \epsilon_{niot}$, where w_{niot} is a vector of location factors varying by destination and investment destination, δ is a parameter vector to be estimated, and the error term ϵ_{niot} is iid extreme value. A particular investment will locate in country i if the utility yielded by locating in i exceeds that of locating in all other African countries $j \neq i$. Each of the N investments involves the choice of where to locate among the set of J African countries (i.e., the countries chosen at least once as an FDI destination). Hence, we consider $J \times N$ choices in total. The

dependent variable *"Choice"* equals one if a specific alternative was selected and zero for the other alternatives. The probability of choosing i takes the following form:

$$P_{niot} = P(\text{Choice}_{niot} = 1|x, y, z) = \frac{e^{\delta' w_{niot}}}{\sum_j e^{\delta' w_{njot}}} \quad (1)$$

This probability only depends on the difference in utility between alternatives. Decision-maker attributes that do not vary across alternatives (e.g., the FDI origin country, the amount of capital invested) do not affect the choice. Hence, their effects are not estimated unless in interaction (see Train, 2009). This is equivalent to including investment fixed effects.

To study whether FDI determinants are different for CMNEs, we interact all our regressors with a dummy *China* equal to 1 if the origin country o of investment n is China and zero otherwise, and we specify the observable component of utility as follows:

$$V_{niot} = \delta' w_{niot} + \tilde{\delta}'(w_{niot} \times \text{China}_{no}) \quad (2)$$

Hence, the effect of regressor w_{niot} on the utility of locating investment n in country i at time t is $(\delta + \tilde{\delta})$ if the origin country is China and δ otherwise. The interaction effects indicate the specificity of CMNEs relative to other investors and represent our coefficients of interest. The marginal effects of the interactions are similar to linear regression, with the estimated coefficients being multiplied by a factor $P_{niot}(1 - P_{niot})$ (Train, 2009).

3.1.1. Control-function approach

Endogeneity concerns are most pressing for *internal agglomeration*. Indeed, the location choice of a firm may not only depend on the exogenous effect of previous experience in a particular country: a particular sequence of investments in the same country may be the result of a broader strategic considerations enacted by the investor that are unobservable to the analyst. The resulting coefficient of internal agglomeration would then be biased and would not strictly proxy for the risk-mitigating effect of going back to a country where the investor has already gained some experience. To address this concern, we resort to a control-function approach (Wooldridge, 2015) as follows.

Building on similar intuition to Lu et al. (2014), we instrument internal agglomeration, i.e., the number of previous investments by the same firm, with the number of investments by firm n predicted in a gravity model that includes only strictly exogenous variables and firm fixed effects (e.g. Head and Mayer, 2014). The exogenous regressors that we include are the following: availability of ores and fuel, political stability, log population,

and distance, as well as the dummies for common language, colonial ties, South Africa, and Egypt. Due to the count nature of the dependent variable in the gravity model, we estimate it by Poisson Pseudo-Maximum Likelihood (PML) regression (Silva and Tenreyro, 2006; Correia et al., 2020). The predicted number of investments in year $t-1$ from this regression is our instrument for internal agglomeration in year t. We then run a Poisson regression of the observed number of cumulated investments by a particular firm (*internal agglomeration*) on the instrument and take the difference between the two.

Including this residual as the control function in our main specification, we can distinguish between the exogenous effect of co-location (i.e., the pure risk-mitigating effect of going back to the same country if a firm has already invested there) and the effect of other firm-level factors that are more likely to capture firm strategic decisions. The former is captured by the internal agglomeration coefficient and the latter by the control function coefficient. By including the control function, the unobserved firm component that would otherwise remain in the error term enters the set of regressors and corrects for the endogeneity of internal agglomeration (Wooldridge, 2015).

3.2. Sample and variables

The set of variables that we include in our empirical model is meant to capture factors that enter the objective function of the investor (Spies, 2010). Since the African context is marked by substantial issues of data quality and completeness, for each location factor we carefully balance theoretical relevance, empirical added value, and data quality considerations, combining several data sources. The result of this process is a remarkably rich database that allows us to control for a broad range of location factors while counting on a good level of data quality over a relatively long period. Our final dataset covers 8,892 greenfield FDI into 43 African destinations over the 2004-2017 period.

Table 1 summarizes the dependent variable, the variables of interest, the control variables, and the relevant data sources.

Detailed information on the sample and dataset used for the analysis is available in the Appendix I.

As mentioned, our binary dependent variable *Choice* equals 1 if investment n is located in country i and 0 otherwise, following standard practice in location-choice models (e.g., Alcácer and Chung, 2007), and is drawn from fDi Markets. Our main regressors of interest are those related to firm- and investment-specific responses to risk, i.e., agglomeration economies and IIAs. As for agglomerations, for each investment in year t we compute the

TABLE 1. Variable description and data sources

Variable	Description	Data source
Choice	1 if investment takes place	fDi Markets
Internal agglo	No. of FDI from same firm from 2003 to t–1	fDi Markets
Industry agglo	No. of FDI in same industry from 2003 to t–1	fDi Markets
Country-of-origin agglo	No. of FDI from same origin from 2003 to t–1	fDi Markets
IIA	1 if an IIA is in force between destination and origin in year t	UNCTAD Investment Policy Hub
FDI stock	FDI stocks in destination i in 2002 (billion USD)	UNCTAD WIR Annex tables
Ores exports 2002	Share of ores exports on total merchandise exports in 2002	World Development Indicators (WDI)
Fuel exports 2002	Share of fuel exports on total merchandise exports in 2002	World Development Indicators (WDI)
Political stability	Political stability index	Worldwide Governance Indicators (WGI)
GDP growth	GDP growth (annual %)	World Development Indicators (WDI)
Log population	Log of population	World Development Indicators (WDI)
Human capital	Human capital index	Penn World Tables (PWT)
Infrastructure	Africa Infrastructure Development Index (AIDI)	African Development Bank
Log distance	Log of great-circle distance between destination and origin capitals	CEPII
Common language	1 if a language is spoken by at least 9% of the population in both the destination and origin country	CEPII
Colonial tie	1 if destination and origin country ever shared a colonial tie	CEPII
Log exports	Log of bilateral exports value (from Africa)	WITS
Log imports	Log of bilateral imports value (to Africa)	WITS
Log emigrants	Log of bilateral stock of emigrants (from Africa)	World Bank migration data
Log immigrants	Log of bilateral stock of immigrants (to Africa)	World Bank migration data
South Africa	1 if the destination country is South Africa	
Egypt	1 if the destination country is Egypt	
China	1 if the investing firm is from China	

cumulated number of investments from the same firm (*internal agglomeration*), from the same origin country (*country-of-origin agglomeration*), or in the same activity (*industry agglomeration*) as investment n in destination country i between 2003 (the first year in our dataset) and year $t-1$. As for international investment agreements, *IIA* is a dummy equal to 1 if in year $t-1$ a bilateral trade agreement or another treaty with investment provisions was in force between destination country i and the source country of investment n and zero otherwise.

Based on our discussion of H5, H6a, and H6b, we also study location factors that have been argued to play a particular role for CMNEs. These are host-country-level determinants referring to the level of institutional quality (*political stability,* Lu et al., 2014; Chen et al., 2018; Landry, 2019), the availability of natural resources (*fuel exports 2002* and *ores exports 2002*, Asiedu, 2006; Rodriguez-Pose and Cols, 2017) and the presence of large and growing markets, proxied by the population size (*log population*) and *GDP growth* (Lederman et al., 2010; Fiodendji and Evlo, 2015). We include *fuel exports*

2002 and *ores exports 2002* along with their quadratic terms to allow for diminishing returns in their effects.

Finally, we include a set of control variables encompassing the established location factors included in Buckley et al. (2007) and Ramasamy et al. (2012) and widely used in the literature on the determinants of FDI in Africa. We provide a detailed description of the included control variables and their sources, construction, and rationale for inclusion in Appendix I.

3.3. Descriptives

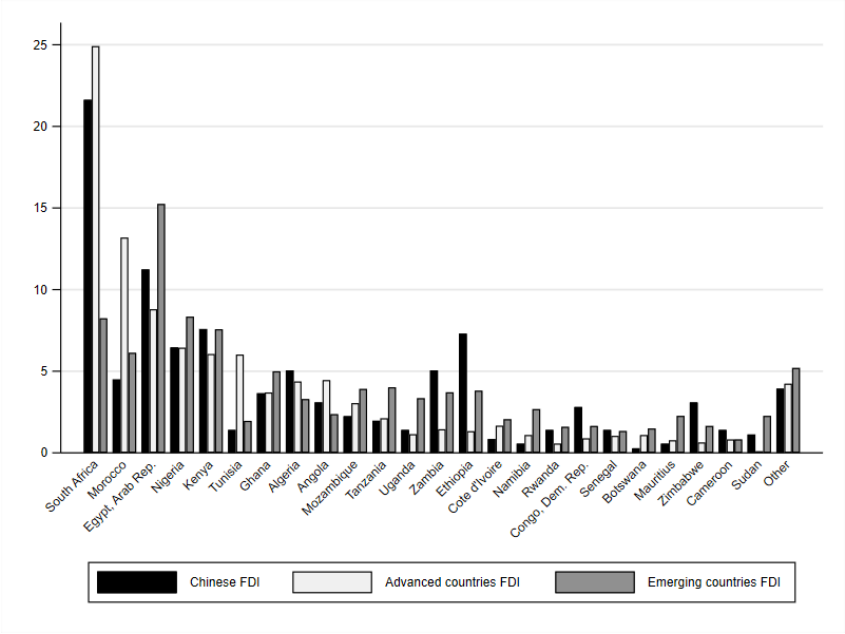
FDI in Africa are highly concentrated, with 50% of projects directed to only four destinations: South Africa received almost one fifth of investments targeting African countries from 2004 to 2017, followed by Morocco, Egypt, and Nigeria, each attracting around 9-10% of FDI. Kenya, Tunisia, Ghana, and Algeria together account for another 20% (see Table A.2 in Appendix).

Figure 1 shows how Chinese and non-Chinese FDI projects distribute across African destinations, distinguishing advanced from emerging origin countries. South Africa and Morocco are the top destinations for FDI from advanced countries, and Egypt, Nigeria, and Kenya are the most popular ones for emerging-country MNEs. Mixing features of both groups, Chinese FDI mainly target South Africa and Egypt. These are followed by Nigeria, Kenya, and Ethiopia, the latter attracting only a few investments from advanced countries.

About one third of investments targeting African countries in the 2004-2017 period originated from the US, UK, and France; emerging economies such as South Africa, India, and the UAE play an important role as well (see Fig. 2). Chinese investors ranked 9th. As the share of Chinese projects over the total number of ventures targeting the continent suggests, this relatively small role is rapidly increasing (Fig. 3). In 2004, Chinese FDI amounted to 2% of total FDI in Africa. In 2016, it had grown to 10%, making China the 4th largest investor in the continent.

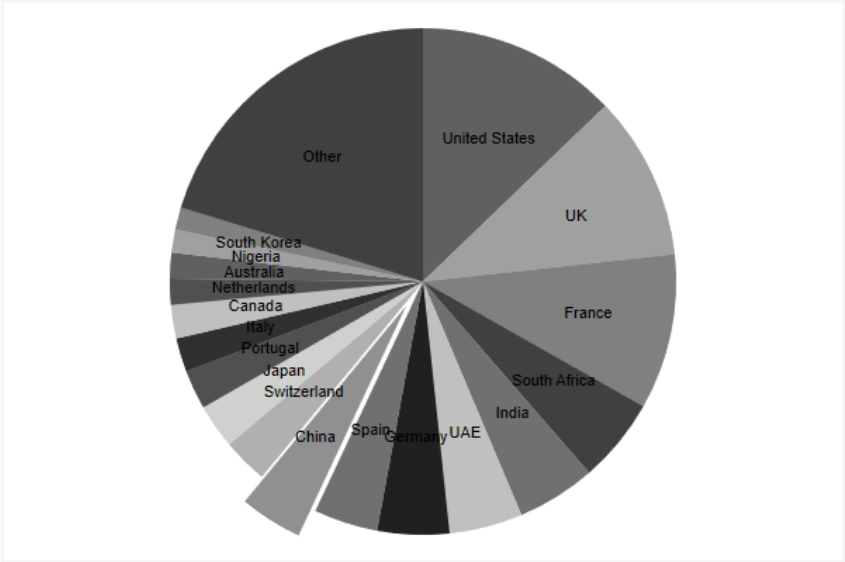
Figure 4 shows the evolution in the number of Chinese FDI across the African destinations in our sample. At the beginning of the period (2004-2008), Chinese investments mainly targeted South Africa, Nigeria, and Egypt. Over the years, CMNEs have increasingly spread across African countries, while maintaining South Africa as the key destination. In particular, China has consolidated its presence in North Africa, with Egypt, Algeria, and Morocco now included among the main destinations. According to

FIGURE 1. FDI destinations by origin-country group (destination shares, 2004-2017)



Source: own elaboration on fDi Markets data

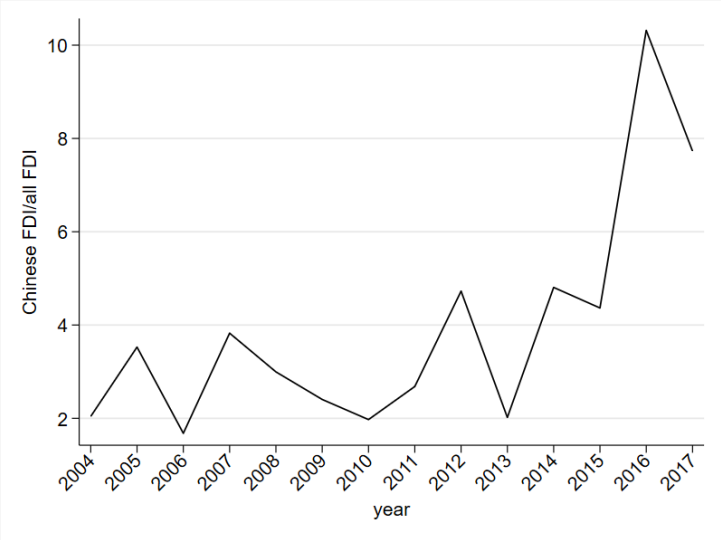
FIGURE 2. Main investor origin countries in Africa (2004-2017)



Source: own elaboration on fDi Markets data

Ghafar and Jacobs (2019), FDI in North African countries represent strategic platforms from which to enter the European market, thanks to their geographic position and investment in infrastructure development. Indeed, North Africa is expected to play a central role in connecting Asia, Africa, and Europe in the framework of the Belt and Road Initiative (BRI), which formally includes only Egypt but involves every North African

FIGURE 3. Chinese share of total FDI in Africa (2004-2017), percentage



Source: own elaboration on fDi Markets data

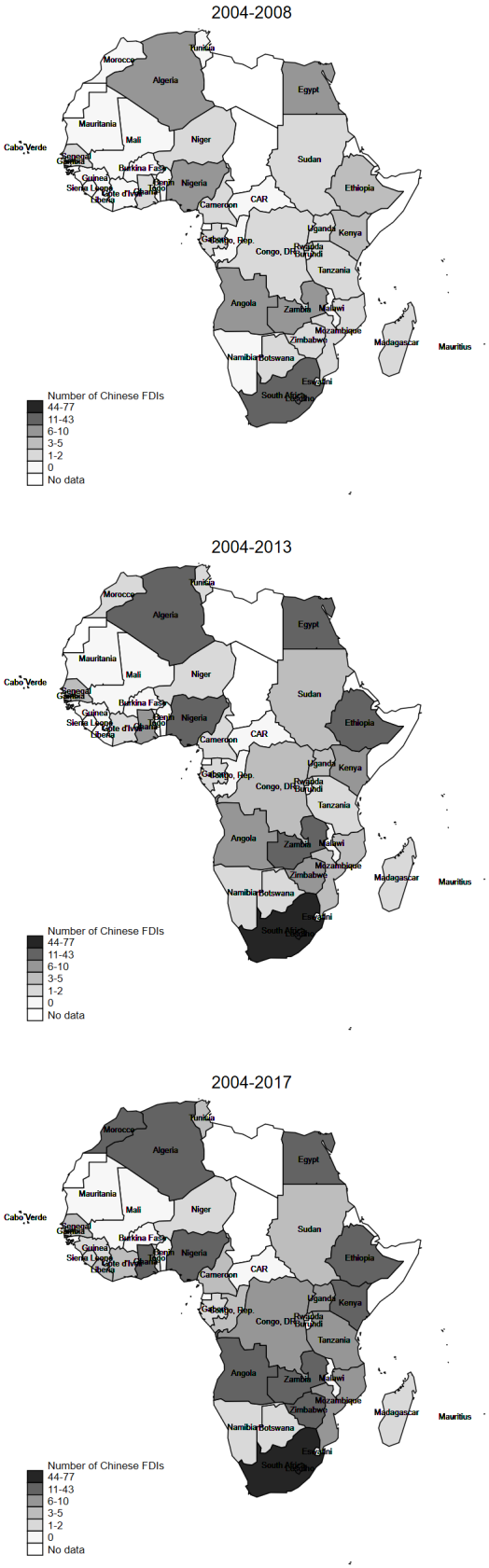
country through the signing of a Memorandum of Understanding with China. Moreover, the cooperation between China and North African countries, marked by a strict non-interference dogma, aims to strengthen ties with the key military powers in the region, mainly Algeria and Egypt, with a prominent role of soft power relationships. Remarkably, the Middle East and North Africa are the only regions in which Chinese FDI and construction projects are still increasing, while BRI projects worldwide are starting to decline.[5]

The use of FDI as export platforms to serve Western markets is not specific to North Africa. Indeed, the early 2000s Africa Growth Opportunity Act (AGOA) and Everything-But-Arms (EBA) agreements provide Sub-Saharan African goods preferential access to the United States and Europe. Many CMNEs invested in SSA to exploit the preferential export conditions and overcome the anti-dumping measures put in place by several countries against Chinese exporters.

A closer look at our data reveals that some destinations have developed specific ties with China. This is the case of Ethiopia, where China is the top country of origin, largely relying on SEZs to invest in labor-intensive shoe manufacturing, textiles, and leather goods processing, both to serve the local market and to export (Crescenzi and Limodio, 2021; Lin and Xu, 2019). In Zambia, China is the third-largest investor, with an intensive extractive activity that exceeds the share of advanced countries. Parallel

[5]https://www.lawfareblog.com/chinas-balancing-act-libya

FIGURE 4. Distribution of Chinese FDI across 3 periods.



Source: own elaboration on fDi Markets data

to the sharp increase in Chinese investments in the most recent period, new investors from emerging economies appear to be on the rise, with South Africa and new African investors—mainly Nigeria and Morocco—taking a leading role. Investments in Zambia, Ghana, and Uganda, and to a lesser extent the Democratic Republic of the Congo, mainly originate from emerging economies, with China being among the top investors in most of these destinations.

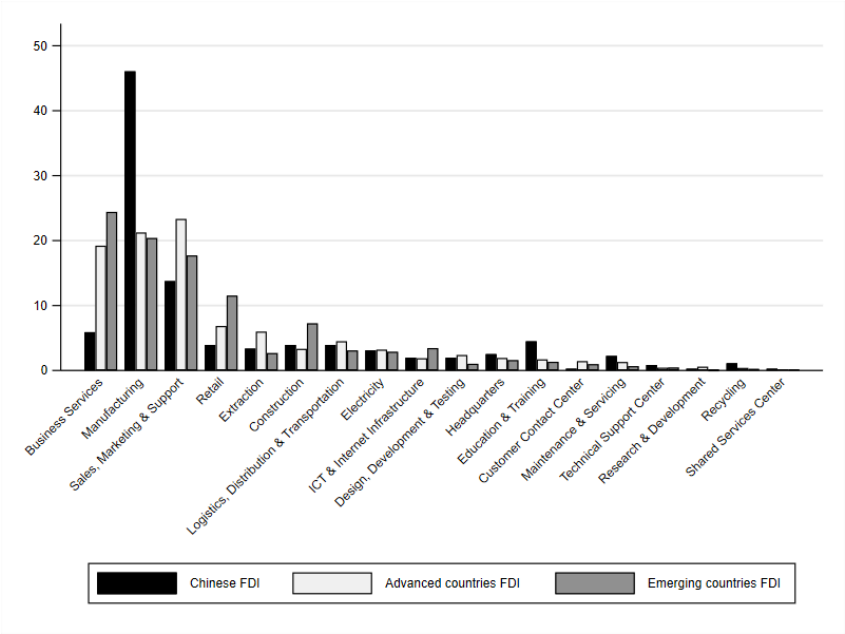
Our data allow us to run a separate analysis for specific functions. The composition of the investment portfolio is shown in Figures 5 and 6. To ensure sufficient numerosity in the estimates, we aggregate investments into three functional categories: manufacturing, services, and resource-related activities. These categories may be seen as broadly reflecting the underlying heterogeneity in motives between efficiency-seeking, market-seeking, and resource-seeking investments, respectively. The services category includes FDI in sales, marketing, and support activities, customer contact centers, business services activities, retail, ICT, education, headquarters, R&D, design, development, and testing. Resource-related activities include investments in construction and extraction activities, electricity, and logistics.

A prominent role of investments in manufacturing and services emerges for the majority of investors in Africa. Non-Chinese investors are comparatively more involved in business services and sales, marketing, and support activities. For the US, UK, and France, FDI in services are markedly predominant, representing over 60% of total investments. Instead, Chinese investments are significantly more concentrated in manufacturing, with about half of investments devoted to this activity, at times involving the creation of special economic zones (SEZs) to develop industrial capacity and export, especially since the start of the Go Global Strategy. Services FDI, while growing, still represent a comparatively small share of Chinese investments, with only about 35% devoted to services.

As for FDI driven by natural resources, in line with recent findings (Bräutigam and Xiaoyang, 2011; Ramasamy et al., 2012; Chen et al., 2018) and contrary to common perceptions, FDI from China do not turn out to be distinctively resource-seeking.[6] Indeed, the Chinese display similar shares of resource-related investments to other investors, with a predominance of construction activities. Besides manufacturing, CMNEs in Africa appear comparatively more involved in education and training projects.

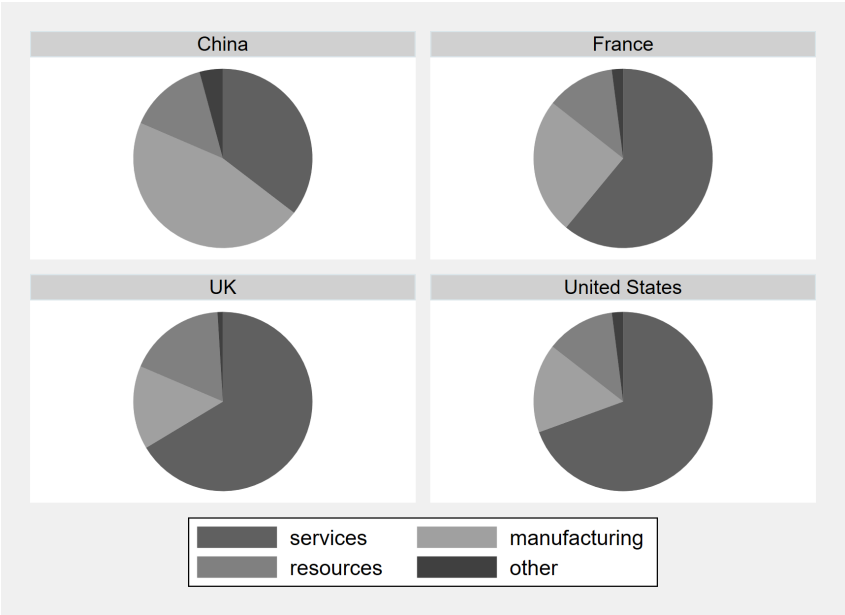
[6]As mentioned earlier, one exception is Zambia, where the second most significant activity of investment for CMNEs is extraction, attracting more than 1 of 4 Chinese FDI in the country.

FIGURE 5. Distribution of FDI across industry activities.



Source: own elaboration on fDi Markets data

FIGURE 6. Distribution of FDI across manufacturing, services, and resource activities - main investors.



Source: own elaboration on fDi Markets data

Tables 2 and 3 report the summary statistics and the correlation matrix for the variables we use in our empirical model.

Our main variable of interest, the dummy for Chinese investments, is positively correlated mainly with the imports of Chinese products in the African destination country and with the geographical distance between the two countries. The latter factor is easily

TABLE 2. Summary statistics

Variable	Mean	Std. Dev.	Min	Max
Internal agglo$_{i,n,t-1}$	0.04	0.58	0.00	69.00
Country-of-origin agglo$_{i,o,t-1}$	6.01	20.78	0.00	351.00
Industry agglo$_{i,n,t-1}$	16.56	38.16	0.00	521.00
IIA$_{o,I,t-1}$	0.72	0.45	0.00	1.00
FDI stock$_{i,2002}$	3.88	7.54	−0.28	35.88
Ores exports$_{i,2002}$	14.49	21.60	0.11	73.87
Fuel exports$_{i,2002}$	15.17	26.29	0.00	95.70
Political stability$_{i,t-1}$	−0.55	0.86	−2.70	1.20
GDP growth$_{i,t-1}$	4.79	4.23	−36.70	20.72
Log population$_{i,t-1}$	16.29	1.30	13.04	19.04
Human capital $_{i,t-1}$	1.81	0.41	1.10	2.86
Infrastructure$_{i,t-1}$	9.50	10.17	0.55	56.51
Log distance$_{o,i}$	8.71	0.59	2.35	9.85
Common language$_{o,i}$	0.29	0.45	0.00	1.00
Colony$_{o,i}$	0.09	0.29	0.00	1.00
Log exports$_{I,o,t-1}$	9.73	3.27	0.00	17.48
Log imports$_{i,o,t-1}$	10.70	2.51	0.00	16.64
Log immigrants$_{i,o,t-1}$	3.12	3.44	0.00	14.19
Log emigrants$_{i,o,t-1}$	5.59	4.00	0.00	14.19
China$_o$	0.04	0.20	0.00	1.00

Note: The number of observations for all variables is 365,958.

TABLE 3. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Internal agglo$_{i,n,t-1}$	1.00																					
2	Industry agglo$_{i,n,t-1}$	0.08	1.00																				
3	Country-of-origin agglo$_{i,o,t-1}$	0.14	0.50	1.00																			
4	IIA$_{o,i,t-1}$	0.02	0.04	0.10	1.00																		
5	FDI stock$_{i,2002}$	0.09	0.63	0.48	0.05	1.00																	
6	Ores exports$_{i,2002}$	−0.02	−0.10	−0.07	−0.03	−0.12	1.00																
7	Fuel exports$_{i,2002}$	0.05	0.22	0.14	0.02	0.38	−0.23	1.00															
8	Political stability$_{i,t-1}$	−0.01	−0.07	−0.04	−0.03	−0.12	−0.11	−0.24	1.00														
9	GDP growth$_{i,t-1}$	−0.00	−0.06	−0.05	0.01	−0.04	0.06	−0.03	0.06	1.00													
10	Log population$_{i,t-1}$	0.06	0.37	0.26	0.08	0.47	−0.02	0.26	−0.55	0.15	1.00												
11	Human capital $_{i,t-1}$	0.03	0.30	0.23	0.01	0.29	−0.04	0.15	0.32	−0.10	−0.15	1.00											
12	Infrastructure$_{i,t-1}$	0.02	0.20	0.14	0.04	0.27	−0.18	−0.01	0.30	−0.06	−0.16	0.53	1.00										
13	Log distance$_{o,i}$	−0.02	−0.05	−0.06	−0.32	−0.06	0.03	−0.11	0.11	0.00	−0.11	0.04	−0.03	1.00									
14	Common language$_{o,i}$	0.04	0.05	0.20	0.03	0.07	0.01	−0.01	0.09	0.02	−0.01	0.23	0.18	−0.02	1.00								
15	Colony$_{o,i}$	0.04	0.01	0.20	0.20	0.02	−0.01	−0.00	0.02	−0.01	−0.02	0.04	0.01	−0.09	0.34	1.00							
16	Log exports$_{I,o,t-1}$	0.06	0.33	0.36	0.08	0.43	−0.10	0.31	−0.06	0.02	0.35	0.29	0.12	−0.03	0.12	0.19	1.00						
17	Log imports$_{i,o,t-1}$	0.07	0.33	0.39	0.09	0.41	−0.07	0.31	−0.10	0.05	0.40	0.17	0.09	−0.13	0.09	0.21	0.71	1.00					
18	Log immigrants$_{i,o,t-1}$	0.05	0.15	0.26	0.13	0.20	0.01	0.04	0.08	−0.02	0.07	0.27	0.22	−0.12	0.31	0.33	0.35	0.38	1.00				
19	Log emigrants$_{i,o,t-1}$	0.05	0.16	0.32	0.33	0.23	−0.04	0.14	−0.11	0.05	0.27	0.06	0.06	−0.22	0.27	0.29	0.41	0.46	0.42	1.00			
20	South Africa$_i$	0.05	0.46	0.38	0.01	0.65	−0.01	−0.03	0.09	−0.08	0.17	0.26	0.06	0.09	0.05	0.02	0.22	0.21	0.25	0.07	1.00		
21	Egypt$_i$	0.03	0.21	0.14	0.07	0.36	−0.07	0.14	−0.10	−0.02	0.24	0.21	0.68	−0.09	0.09	0.01	0.15	0.18	0.18	0.11	−0.02	1.00	
22	China$_o$	0.00	0.02	−0.02	−0.16	−0.00	0.00	−0.00	−0.00	−0.02	0.00	0.01	−0.00	0.20	−0.13	−0.07	0.12	0.20	0.03	−0.07	0.00	−0.00	1.00

understood in light of the fact that South Africa attracts a major portion of FDI inflows. The China dummy is instead negatively correlated with *common language*—not surprisingly, since China does not have a colonial past in Africa. Chinese investments are also negatively correlated with *IIA*, which is in line with our hypothesis that Chinese investors are less affected by the presence of IIAs when choosing their destinations.

4. Results

4.1. Baseline estimates

In Table 4, we report the results of our baseline estimates. Before testing our hypotheses in Model 2, we study the overall effect of our determinants for all investments

in our sample (Model 1). In line with expectations, all types of agglomeration economies positively and significantly promote the location of FDI, but *internal agglomeration* stands out for its strong role. Its estimated coefficient implies that a firm is 1.7 times more likely to locate in countries where it has already invested. Our results also confirm that investment protection via IIAs acts as a significant signal for country trustworthiness in Africa (see also Benfratello et al., 2022b), increasing the odds of choosing a signatory country by 1.14 times compared with a non-signatory country. FDI turns out to be attracted to political stability, economic growth, market size, and natural resources, in line with expectations and confirming the importance of market-seeking and resource-seeking motives among investors. The coefficients of the control variables also have the expected signs.

With Model 2, we address our core issue and study whether the location factors are significantly different for CMNEs, augmenting our specification with the interactions with the dummy *China*. Chinese investments represent a relatively small share of total investments targeting African countries. Hence, the main effects in Model 2 remain remarkably similar to those estimated in Model 1. As for the interaction effects, they confirm that Chinese FDI determinants are overall different.[7] Specifically, the negative and significant interaction effects of *China* with *internal agglomeration* ($\beta = -0.420$, $p< 0.01$), *country-of-origin agglomeration* ($\beta = -0.019$, $p< 0.01$), and *IIA* ($\beta = -0.331$, $p< 0.1$) indicate that these risk-mitigating factors play a comparatively less important role for Chinese investments. Instead, the effect of industry agglomeration is somewhat larger but not significantly different for CMNEs ($\beta = 0.002$, $p> 0.1$). We report the elasticities corresponding to the net effects of these coefficients in Figure 7.[8] Our results support H1, H2, and H4, whereas they do not support H3. The positive interaction effects of *China* with *log population* and the South African dummy indicate that large and growing markets attract CMNEs comparatively more. This result is in line with the common finding about the importance of market-seeking motives behind Chinese FDI. We do not find that political stability and natural resources affect Chinese investments differently from other investments, consistent with the most recent literature on Africa.

[7] A Wald test of the joint significance of the interaction terms strongly rejects the null hypothesis that their coefficients are jointly equal to zero.

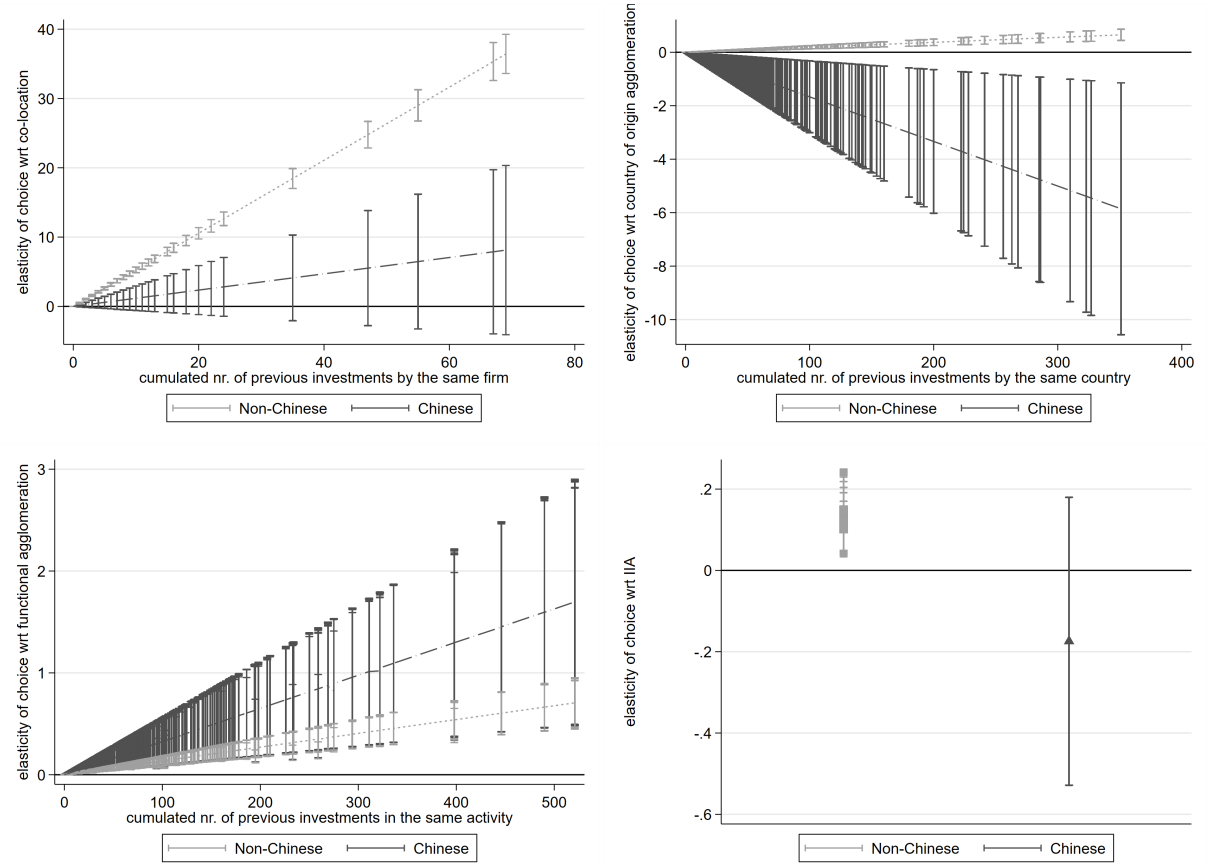
[8] The percentage change in the probability that investment n locates in country i with a 1% change in the variable of interest δw_{niot} is $\delta w_{niot}(1 - P_{niot})$ when $China = 0$ and $(\delta + \tilde{\delta})w_{niot}(1 - P_{niot})$ when $China = 1$.

TABLE 4. Baseline results

	Model 1: All	Model 2: All		Model 3: China	Model 4: Control function	
		Main	Interaction	China only	Main	Interaction
Internal agglo$_{i,n,t-1}$	0.515***	0.541***	-0.420***	0.121	0.471***	-0.340***
	(0.021)	(0.021)	(0.095)	(0.093)	(0.023)	(0.104)
Country-of-origin agglo$_{i,o,t-1}$	0.002***	0.002***	-0.019***	-0.017**	0.002***	-0.021***
	(0.000)	(0.000)	(0.007)	(0.007)	(0.000)	(0.007)
Industry agglo$_{i,n,t-1}$	0.001***	0.001***	0.002	0.003***	0.002***	0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
IIA$_{o,i,t-1}$	0.132***	0.153***	-0.331*	-0.178	0.151***	-0.333
	(0.048)	(0.052)	(0.192)	(0.185)	(0.057)	(0.207)
FDI stock$_{i,2002}$	0.071***	0.072***	-0.051	0.021	0.051***	-0.067
	(0.007)	(0.007)	(0.050)	(0.049)	(0.008)	(0.054)
FDI stock$^2_{i,2002}$	-0.002***	-0.002***	0.001	-0.001	-0.001***	0.001
	(0.000)	(0.000)	(0.002)	(0.002)	(0.000)	(0.002)
Ores exports$_{i,2002}$	0.013***	0.013***	0.016	0.029	0.013***	0.024
	(0.003)	(0.003)	(0.022)	(0.022)	(0.004)	(0.023)
Ores exports$^2_{i,2002}$	-0.0002***	-0.0002***	-0.0000	-0.0002	-0.000***	-0.000
	(0.0000)	(0.0000)	(0.0003)	(0.0003)	(0.000)	(0.000)
Fuel exports$_{i,2002}$	0.014***	0.013***	0.010	0.023	0.016***	0.006
	(0.003)	(0.003)	(0.017)	(0.017)	(0.003)	(0.018)
Fuel exports$^2_{i,2002}$	-0.0002***	-0.0002***	0.0000	-0.0002	-0.000***	0.000
	(0.0000)	(0.0000)	(0.0002)	(0.0002)	(0.000)	(0.000)
Political stability$_{i,t-1}$	0.275***	0.283***	0.0510	0.334**	0.307***	0.093
	(0.026)	(0.026)	(0.150)	(0.148)	(0.029)	(0.165)
GDP growth$_{i,t-1}$	0.037***	0.036***	0.025	0.062***	0.031***	0.007
	(0.004)	(0.004)	(0.023)	(0.023)	(0.005)	(0.025)
Log population$_{i,t-1}$	0.621***	0.609***	0.306*	0.915***	0.633***	0.297*
	(0.027)	(0.028)	(0.164)	(0.161)	(0.029)	(0.171)
Human capital $_{i,t-1}$	0.266***	0.255***	0.708**	0.963***	0.205***	0.770**
	(0.052)	(0.053)	(0.297)	(0.292)	(0.057)	(0.312)
Infrastructure$_{i,t-1}$	0.039***	0.038***	-0.010	0.028	0.039***	-0.006
	(0.004)	(0.004)	(0.024)	(0.024)	(0.004)	(0.025)
Log distance$_{o,i}$	-0.080***	-0.074**	-2.701**	-2.775**	-0.079**	-3.176***
	(0.030)	(0.031)	(1.086)	(1.086)	(0.033)	(1.200)
Common language$_{o,i}$	0.232***	0.232***			0.213***	
	(0.036)	(0.036)			(0.039)	
Colony$_{o,i}$	0.354***	0.340***			0.249***	
	(0.057)	(0.057)			(0.062)	
Log exports$_{I,o,t-1}$	0.039***	0.039***	0.014	0.053	0.045***	-0.009
	(0.008)	(0.008)	(0.066)	(0.065)	(0.009)	(0.071)
Log imports$_{i,o,t-1}$	0.256***	0.257***	-0.184*	0.072	0.242***	-0.080
	(0.013)	(0.014)	(0.104)	(0.103)	(0.014)	(0.110)
Log immigrants$_{i,o,t-1}$	0.039***	0.042***	-0.095***	-0.053**	0.048***	-0.122***
	(0.005)	(0.005)	(0.026)	(0.025)	(0.005)	(0.029)
Log emigrants$_{i,o,t-1}$	0.067***	0.066***	0.128	0.194**	0.060***	0.153
	(0.006)	(0.006)	(0.095)	(0.095)	(0.006)	(0.106)
South Africa$_i$	-0.417**	-0.455**	2.087*	1.633	-1.198***	2.366*
	(0.174)	(0.179)	(1.138)	(1.124)	(0.201)	(1.230)
Egypt$_i$	-2.926***	-2.898***	0.539	-2.359*	-3.087***	0.422
	(0.233)	(0.238)	(1.314)	(1.292)	(0.258)	(1.363)
Residual					0.046***	-0.013
					(0.012)	(0.124)
N	365,958	365,958		15,270	316,823	
Wald test for interactions		$\chi^2(22) = 89.68$			$\chi^2(\ 23) = 80.61$	
P-value		0.0000			0.0000	

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 7. Elasticities of the main variables of interest.



Source: own elaboration on fDi Markets data

To ease the computation of the net effects, Model 3 reports the results of the analysis restricted to the subsample of Chinese investments. Consistent with the elasticities reported in Figure 7, the coefficient for *internal agglomeration* is positive but insignificant, the one for country-of-origin agglomeration is negative and significant, and the one for *industry agglomeration* is positive and significant. In line with Chen et al. (2018), we find that political stability, market size, and growth positively affect Chinese FDI, while we detect no significant effects of natural resources.[9] Furthermore, the China-only results show a significant correlation with the presence of African emigrants to China, possibly suggesting that the ties created with the scholarships granted to African students to study in China and the cultural proximity created by Confucius Institutes may serve broader economic interests and open new channels for African emigration.

[9]The precision of the coefficients estimated in Model 3 suffers from a very restricted sample compared with previous models. Therefore, it is not surprising that only some coefficients are significant when focusing on the restricted sample of CMNEs.

In Model 4, we test the robustness of our results to endogeneity, applying the control-function approach described in Section 3 to the entire sample of investors. The first-stage residual has a positive and significant effect. Yet, it does not change the main insights and leaves the coefficients largely unaffected compared with Model 2. The interaction between China and the residual has a very small coefficient far from statistical significance. Even correcting for endogeneity, the differential effect of internal agglomeration for CMNEs appears driven by its "exogenous" component, i.e., the cost-reducing effects of internal agglomeration. Accordingly, the coefficient of this variable remains negative and significant ($\beta = -0.340$, $p < 0.01$). Overall, this suggests that there is indeed an endogenous strategic component in the decision of firms to return to countries where they were previously located, but this does not operate differently for China.

Our baseline results strongly confirm the risk-mitigating effects of government support, in line with H1, H2, and H4. The results are also qualitatively in line with H3 regarding the role of government support in the pursuit of economies stemming from knowledge spillovers, but less precisely estimated. Furthermore, the results indicate that CMNEs in Africa are searching for natural resources and politically stable contexts, just like non-Chinese investors, which is somewhat in line with the expectations of H5 and H6a.

4.2. Additional analyses

Function-specific estimates

To distinguish between mere FDI composition and the different weights that CMNEs place on particular location factors, we analyze FDI determinants separately by function (Table 5). Figures 5 and 6 show that Chinese investments are distributed differently across functions compared to other investments, which may drive the differential effects we estimated in the aggregate sample.

Motive heterogeneity affects the relative importance of risk-related variables. Analysis of the main effects reveals that for non-Chinese investors, internal agglomeration positively affects location choice across functions but is strongest for manufacturing FDI, probably due to the role of sunk costs and capital intensity for a portion of these investments. Non-Chinese investors also rely heavily on country-of-origin agglomeration for manufacturing and services FDI, but not for resource-seeking investments—the strategic nature of resource-seeking investments makes it unlikely that different firms from the same country of origin will engage in multiple potentially competing ventures. As

TABLE 5. Heterogeneity by activity

	Manufacturing		Services		Resource-related	
	Main	Interaction	Main	Interaction	Main	Interaction
Internal $\text{agglo}_{i,n,t-1}$	0.951***	-0.122	0.394***	-0.460***	0.746***	0.306
	(0.056)	(0.266)	(0.024)	(0.119)	(0.055)	(0.506)
Country-of-origin $\text{agglo}_{i,o,t-1}$	0.003***	-0.083***	0.002***	-0.011	-0.000	0.014
	(0.001)	(0.017)	(0.000)	(0.012)	(0.001)	(0.022)
Industry $\text{agglo}_{i,n,t-1}$	-0.003***	0.025***	0.001***	-0.001	0.011***	0.015
	(0.001)	(0.005)	(0.000)	(0.002)	(0.002)	(0.012)
$\text{IIA}_{o,I,t-1}$	0.092	-0.138	0.137**	-0.597*	0.220*	-0.224
	(0.113)	(0.318)	(0.070)	(0.342)	(0.119)	(0.485)
FDI $\text{stock}_{i,2002}$	0.138***	-0.566***	0.056***	0.103	0.077***	-0.206
	(0.019)	(0.121)	(0.009)	(0.085)	(0.018)	(0.136)
FDI $\text{stock}^2_{i,2002}$	-0.004***	0.017***	-0.001***	-0.005	-0.002**	0.006
	(0.001)	(0.004)	(0.000)	(0.003)	(0.001)	(0.005)
Ores $\text{exports}_{i,2002}$	0.006	0.039	0.004	-0.001	0.049***	0.002
	(0.008)	(0.036)	(0.004)	(0.044)	(0.008)	(0.051)
Ores $\text{exports}^2_{i,2002}$	-0.000	-0.000	-0.000**	-0.000	-0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)
Fuel $\text{exports}_{i,2002}$	0.004	-0.005	0.015***	0.052*	0.016**	0.016
	(0.007)	(0.029)	(0.004)	(0.031)	(0.007)	(0.040)
Fuel $\text{exports}^2_{i,2002}$	-0.000*	0.000	-0.000***	-0.000	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Political $\text{stability}_{i,t-1}$	0.360***	0.299	0.265***	-0.162	0.291***	0.037
	(0.059)	(0.246)	(0.034)	(0.278)	(0.062)	(0.347)
GDP $\text{growth}_{i,t-1}$	0.048***	-0.015	0.035***	0.045	0.015	0.083
	(0.010)	(0.039)	(0.005)	(0.038)	(0.010)	(0.055)
Log $\text{population}_{i,t-1}$	0.709***	0.328	0.645***	0.353	0.477***	-0.059
	(0.065)	(0.271)	(0.036)	(0.321)	(0.062)	(0.328)
Human $\text{capital}_{i,t-1}$	0.073	0.992**	0.390***	0.821	0.032	1.041
	(0.123)	(0.490)	(0.068)	(0.514)	(0.130)	(0.714)
$\text{Infrastructure}_{i,t-1}$	0.035***	-0.033	0.042***	0.031	0.027***	-0.000
	(0.010)	(0.039)	(0.005)	(0.041)	(0.010)	(0.049)
Log $\text{distance}_{o,i}$	-0.241***	-6.731***	0.025	-1.649	-0.229***	-0.591
	(0.068)	(1.972)	(0.039)	(1.876)	(0.080)	(2.579)
Common $\text{language}_{o,i}$	0.008		0.268***		0.317***	
	(0.078)		(0.047)		(0.088)	
$\text{Colony}_{o,i}$	0.458***		0.384***		-0.012	
	(0.126)		(0.073)		(0.138)	
Log $\text{exports}_{I,o,t-1}$	0.052***	0.095	0.047***	-0.037	0.008	0.190
	(0.019)	(0.100)	(0.011)	(0.128)	(0.019)	(0.159)
Log $\text{imports}_{i,o,t-1}$	0.298***	-0.285*	0.269***	-0.208	0.178***	0.030
	(0.031)	(0.163)	(0.017)	(0.204)	(0.032)	(0.232)
Log $\text{immigrants}_{i,o,t-1}$	0.024**	-0.110***	0.041***	-0.071	0.072***	-0.106
	(0.011)	(0.039)	(0.006)	(0.050)	(0.013)	(0.068)
Log $\text{emigrants}_{i,o,t-1}$	0.054***	0.214	0.082***	0.061	0.041***	0.122
	(0.013)	(0.151)	(0.008)	(0.163)	(0.014)	(0.217)
South Africa_i	0.409	-3.295	-0.393*	4.422**	-0.780*	-2.552
	(0.413)	(2.059)	(0.230)	(1.907)	(0.455)	(3.115)
Egypt_i	-2.609***	1.376	-3.184***	-2.059	-2.083***	-0.020
	(0.577)	(2.184)	(0.306)	(2.335)	(0.548)	(2.714)
N	79,240		221,179		58,402	
Wald test for interactions	$\chi^2(22) = 66.22$		$\chi^2(22) = 45.65$		$\chi^2(22) = 26.01$	
P-value	0.0000		0.0022		0.2510	

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

for industry agglomeration, non-Chinese investments in manufacturing tend to avoid the competition of other investors in the same activity, whereas services and resource-related activities tend to benefit from agglomeration and cluster in particular countries. In this sense, the African case would mark a difference compared with the more advanced context of Germany, where the role of agglomeration economies in manufacturing FDI is well documented (Zschoche, 2016).

We now turn to our coefficients of interest, i.e., the differential effects of Chinese location determinants within functions. The heterogeneity in motives absorbs much of the Chinese distinctiveness. This is blatant for resource-related investments, where no Chinese distinctiveness is left, indicating that resource-seeking CMNEs essentially behave like non-Chinese ones. In contrast, a factual particularity of the Chinese internationalization model emerges for services: CMNEs engaging in these FDI locate significantly less frequently where they have already located ($\beta = -0.460$, $p< 0.01$) and appear distinctively indifferent to the investment protection provided by IIAs (and $\beta = -0.597$, $p< 0.1$). Furthermore, Chinese services FDI disproportionately target the large South African market and countries endowed with fuel, suggesting that market-seeking and resource-seeking motives coexist for services FDI. This is in line with the observation that private Chinese firms in the services industry follow resource-seeking investments by SOEs (Ramasamy et al., 2012), and contradicts H6a and H6b.

Turning to manufacturing, which represents the bulk of Chinese FDI, another Chinese particularity emerges for what concerns industry agglomeration. Contrary to the general avoidance of agglomeration among manufacturing investors from other countries, CMNEs pursue economies stemming from knowledge spillovers, turning the coefficient from negative to positive ($\beta = 0.025$, $p< 0.01$). This is firmly in line with the arguments made in support of H3 and indicates that CMNEs pursue unconventional asset-seeking motives when investing in manufacturing, where there is arguably more to gain from knowledge spillovers (Brouthers and Brouthers, 2003). Coherently, the effect of human capital on manufacturing FDI is distinctively positive for China in this type of investment. Parallel to this, CMNEs in manufacturing also display significantly lower reliance on country-of-origin agglomeration ($\beta = -0.083$, $p< 0.05$), which is consistent with the arguments about their lower vulnerability to risk and information costs, and with H2. Finally, specific market-seeking motives in manufacturing also emerge from the analysis of the control variables, in terms of the pursuit of trade substitution (captured by the

negative effect of log imports) and of new markets (negative effect of start-of-period FDI stocks).

Overall, our results so far suggest that when investing in Africa, the location determinants that may be considered critical for atomistic investors—in particular, internal and country-of-origin agglomeration, IIAs, and FDI stocks—become less salient for CMNEs. Our results do not support the pursuit of political instability among Chinese investments. However, they indicate a particular sensitivity to market-seeking motives, partly driven by composition effects and partly by a distinctive focus on market factors within functions. We do not find evidence of a distinctive resource-seeking behavior of CMNEs, except for the role of services firms, which tend to locate in resource-abundant countries.

Emerging vs. advanced-origin countries

China is often taken as a prominent example of an emerging economy and may introduce a different investment model compared with Western MNEs (Buckley et al., 2018). In Africa, the role of other emerging economies like India and Russia is growing against a diminishing one of Western investors (UNCTAD, 2014; The Economist, 2019), but the extent to which China is representative of other emerging countries remains unaddressed (Table A.1).

Table 6 shows how our baseline results change when comparing CMNEs to both advanced- and emerging-market MNEs. Model 2 in Table 4 is reported here as Model 1 for comparison. As before, we distinguish the respective role of Chinese investments by adding interaction terms. On the whole, internal agglomeration plays an important role for MNEs from both advanced and emerging economies. In light of this, the lower reliance of CMNEs on this variable emerges as a unique feature. Other risk-mitigating factors (industry agglomeration, country-of-origin agglomeration, and IIAs) appear comparatively more important for emerging economies, as the magnitude of their main effects is consistently larger. From this perspective, China's limited reliance on country-of-origin agglomeration and IIAs is similar to advanced economies but even more marked. Instead, the pursuit of learning economies via industry agglomeration aligns with emerging-market investors more likely to be latecomers in their industries, in line with the arguments behind H3.

Emerging countries turn out to be more reactive to market size, whereas advanced economies appear more sensitive to the growth potential of host countries. From this point of view, China aligns with emerging countries in its distinctive attention to population

TABLE 6. Heterogeneity by origin country

	All		Advanced		Emerging	
	Main	Interaction	Main	Interaction	Main	Interaction
Internal agglo$_{i,n,t-1}$	0.541***	-0.420***	0.533***	-0.413***	0.465***	-0.344***
	(0.021)	(0.095)	(0.026)	(0.096)	(0.043)	(0.102)
Country-of-origin agglo$_{i,o,t-1}$	0.002***	-0.019***	0.000	-0.017**	0.008***	-0.025***
	(0.000)	(0.007)	(0.000)	(0.007)	(0.002)	(0.007)
Industry agglo$_{i,n,t-1}$	0.001***	0.002	0.001***	0.002	0.004***	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
IIA$_{o,i,t-1}$	0.153***	-0.331*	-0.094	-0.085	0.291***	-0.470**
	(0.052)	(0.192)	(0.073)	(0.199)	(0.089)	(0.205)
FDI stock$_{i,2002}$	0.072***	-0.051	0.093***	-0.072	-0.030*	0.052
	(0.007)	(0.050)	(0.011)	(0.050)	(0.016)	(0.052)
FDI stock$^2_{i,2002}$	-0.002***	0.001	-0.002***	0.001	0.001**	-0.002
	(0.000)	(0.002)	(0.000)	(0.002)	(0.001)	(0.002)
Ores exports$_{i,2002}$	0.013***	0.016	0.018***	0.011	-0.000	0.029
	(0.003)	(0.022)	(0.004)	(0.022)	(0.006)	(0.022)
Ores exports$^2_{i,2002}$	-0.0002***	-0.0000	-0.0003***	0.0000	0.0000	-0.0003
	(0.0000)	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0003)
Fuel exports$_{i,2002}$	0.013***	0.010	0.010**	0.013	0.022***	0.001
	(0.003)	(0.017)	(0.004)	(0.017)	(0.006)	(0.018)
Fuel exports$^2_{i,2002}$	-0.0002***	0.0000	-0.0002***	-0.0000	-0.0003***	0.0001
	(0.0000)	(0.0002)	(0.0000)	(0.0002)	(0.0001)	(0.0002)
Political stability$_{i,t-1}$	0.283***	0.0510	0.303***	0.0309	0.349***	-0.0153
	(0.026)	(0.150)	(0.036)	(0.152)	(0.051)	(0.156)
GDP growth$_{i,t-1}$	0.036***	0.025	0.035***	0.027	0.026***	0.036
	(0.004)	(0.023)	(0.006)	(0.023)	(0.008)	(0.024)
Log population$_{i,t-1}$	0.609***	0.306*	0.562***	0.353**	0.807***	0.108
	(0.028)	(0.164)	(0.036)	(0.165)	(0.058)	(0.171)
Human capital $_{i,t-1}$	0.255***	0.708**	0.311***	0.652**	-0.217**	1.180***
	(0.053)	(0.297)	(0.069)	(0.300)	(0.111)	(0.312)
Infrastructure$_{i,t-1}$	0.038***	-0.010	0.031***	-0.004	0.058***	-0.031
	(0.004)	(0.024)	(0.005)	(0.024)	(0.008)	(0.025)
Log distance$_{o,i}$	-0.074**	-2.701**	0.062	-2.84***	-0.140**	-2.634**
	(0.031)	(1.086)	(0.044)	(1.087)	(0.069)	(1.088)
Common language$_{o,i}$	0.232***		0.138***		0.716***	
	(0.036)		(0.048)		(0.077)	
Colony$_{o,i}$	0.340***		0.314***		0.762***	
	(0.057)		(0.067)		(0.153)	
Log exports$_{I,o,t-1}$	0.039***	0.014	0.069***	-0.015	0.038**	0.015
	(0.008)	(0.066)	(0.012)	(0.066)	(0.016)	(0.067)
Log imports$_{I,o,t-1}$	0.257***	-0.184*	0.353***	-0.281***	0.211***	-0.139
	(0.014)	(0.104)	(0.020)	(0.105)	(0.028)	(0.107)
Log immigrants$_{i,o,t-1}$	0.042***	-0.095***	0.050***	-0.104***	0.031***	-0.084***
	(0.005)	(0.026)	(0.006)	(0.026)	(0.010)	(0.027)
Log emigrants$_{i,o,t-1}$	0.066***	0.128	0.046***	0.148	0.036***	0.158*
	(0.006)	(0.095)	(0.009)	(0.095)	(0.010)	(0.095)
South Africa$_i$	-0.455**	2.087*	-0.504**	2.136*	-1.461***	3.094***
	(0.179)	(1.138)	(0.231)	(1.148)	(0.379)	(1.187)
Egypt$_i$	-2.898***	0.539	-2.746***	0.387	-3.607***	1.248
	(0.238)	(1.314)	(0.312)	(1.329)	(0.467)	(1.374)
N	365,958		267,511		92,269	
Wald test for interactions		$\chi^2(22) = 89.68$		$\chi^2(22) = 102.21$		$\chi^2(22) = 74.21$
P-value		0.0000		0.0000		0.0000

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

size. Finally, and in line with the results in Table 5, it is interesting to note that China behaves more similarly to advanced economies when it comes to human capital, weighting it even more than advanced-market investors. This finding is somewhat unexpected and may deserve attention in future research.

Overall, CMNEs display a peculiar behavior mixing features of advanced-economy investors with characteristics of emerging countries and a distinctive lack of concern for prior firm experience and country-of-origin agglomeration.

4.3. Robustness checks

In this section, we confirm the stability of our results using a broad set of robustness checks.

SOEs vs. non-SOEs

Among CMNEs, state-owned enterprises (SOEs) may be less vulnerable to risk than private firms (e.g., Duanmu, 2012, 2014; Ramasamy et al., 2012; Quer et al., 2018). Nonetheless, the results are robust if we exclude private Chinese firms from the sample and interact our regressors with a dummy that is only equal to one if the Chinese investor is an SOE (Table 7). Despite the smaller sample size, the core results regarding internal and country-of-origin agglomeration remain virtually identical. Furthermore, more substantial effects of market factors and resources emerge, confirming that SOEs are better able to navigate opaque political environments to gain access to markets and resources (Duanmu, 2012). Again, SOEs do not react differently to political stability. Overall, the results regarding risk-mitigating factors suggest that state ownership is not the only way the Chinese government exerts control over investment outflows.

Firm size

The response to risk may be heterogeneous across firms of different sizes.[10] To address this issue, we split the sample of investing firms according to the average size of their global investments (Table 8).[11] We find that the results regarding internal agglomeration are driven by smaller firms, i.e., those presumably less able to mobilize high-level relationships to promote their investments and reduce risk and that have more to gain from government support. Smaller CMNEs also react more to industry agglomeration,

[10]We thank an anonymous referee for raising this relevant point.

[11]We define small-medium firms as those with an average investment below or equal to the median value of 25.35 million USD and medium-large firms as those that exceed the median. For each firm, the average investment size is the ratio of the total amount invested globally to the total number of FDI projects. The distribution of state-owned firms is similar across size categories.

indicating their greater sensitivity to learning economies and confirming H3 for this subsample. Instead, the smaller effect of country-of-origin agglomeration applies to CMNEs of all sizes. Otherwise, the location determinants of Chinese and non-Chinese MNEs are similar, suggesting that size correlates with a greater ability to cope with risk, regardless of the country of origin.

State ownership beyond China

Government support and state ownership are not exclusive to China or EMNEs. For instance, the French government maintains sizeable decision-making power in FDI via minority ownership in many ventures (Financial Times, 2016). As such, the location factors driving French firms may differ from those of more liberal countries like the US. To explore the role of state ownership beyond the particular case of China, we replace the dummy for Chinese origin with a measure of state ownership drawn from the Fraser Institute (Table 9). This approach effectively generalizes Quer et al.'s argument that internal agglomeration matters less for countries with more state ownership (Quer et al., 2018). We find that state ownership operates as a risk-reduction factor across origin countries but does not fully explain the distinctive features of Chinese FDI. In fact, including interactions with both the cross-country measure of state ownership and *China*, the differential effect of internal agglomeration reduces in absolute value but remains negative and significant.

Differences among emerging countries

Some of our arguments about China may apply to other emerging players in Africa, and particularly India and Russia, although Chinese government support appears more closely linked to tied aid, loans, and diplomatic relationships than that from the Russian government (Biggeri and Sanfilippo, 2009; Kaplinsky and Morris, 2009; Mazé and Chailan, 2021) and more proactive than the Indian one (Chakrabarti and Ghosh, 2014). In Table 10, we include two additional interactions with dummies for Russian and Indian investments along with our China dummy. Results confirm that the role of risk-mitigating factors is minimal for Chinese investments. The ties built by development cooperation and SOEs nonetheless appear to exert a protective effect for India, decreasing the role of country-of-origin agglomeration. Instead, no risk-mitigating effects are detectable for Russian investors, who appear comparatively more sensitive to natural resource availability.

Regional differences within Africa

North Africa and Sub-Saharan Africa are substantially different macro-regions and may attract different investments (Ghafar and Jacobs, 2019). To explore this heterogeneity, we split the sample between investments that ended up targeting North and Sub-Saharan Africa (Table 11). The results confirm the main finding of the lower reliance of Chinese investments on internal agglomeration but also point to different strategic objectives in the two regions. In Sub-Saharan Africa, CMNEs pursue market size and trade substitution and avoid large FDI stocks, suggesting that market-seeking motives prevail. In North Africa, a region plagued by political instability, risk-mitigating factors are central for most investors but much less for China. According to Ghafar and Jacobs (2019), Chinese FDI in the region largely serve geopolitical objectives. These include exploiting countries as export platforms to access Western markets, extending the sphere of influence to emerging African military powers, and controlling strategic infrastructure such as the Suez Canal and gas hubs.

Robustness to additional control variables

Additional variables may affect the location decisions of investors, but their availability is severely constrained to a limited number of years or countries, sometimes excluding large FDI attractors with substantial natural resource endowments. We study the robustness of our results to augmenting our specification with these variables, considering in particular host country wages, the bilateral number of aid projects, aid amounts, and import and export tariffs (Table 12). Despite the shrunken sample sizes, the results are remarkably robust for what concerns internal agglomeration[12] and provide additional insights. Labor costs generally discourage investment, but they do not play a different role for CMNEs. Aid and FDI are complementary for investors as a whole but, as expected, play a more strategic role for Chinese ones (Biggeri and Sanfilippo, 2009). Regarding tariffs, Chinese investments appear more sensitive to and are strongly discouraged by import tariffs than those from other investors, suggesting that tariff jumping is not a prevailing motive for Chinese FDI.

[12]The results for the other variables of interest lose precision but largely maintain their signs. The insights from IIAs are less robust, indicating a particular sensitivity of this variable to changes in the estimation sample of countries. Hence, data availability issues affecting the African continent bear implications for inference and may limit the comparability of results across studies that employ different variables.

TABLE 7. Robustness to restricting the interactions to Chinese state-owned enterprises

	Model 1		Model 2
	Main	Interaction	China only
Internal agglo$_{i,n,t-1}$	0.541***	-0.418***	0.123
	(0.021)	(0.101)	(0.099)
Country-of-origin agglo$_{i,o,t-1}$	0.002***	-0.017*	-0.015*
	(0.000)	(0.009)	(0.009)
Industry agglo$_{i,n,t-1}$	0.001***	0.001	0.002
	(0.000)	(0.002)	(0.001)
IIA$_{o,I,t-1}$	0.153***	-0.374	-0.221
	(0.052)	(0.237)	(0.231)
FDI stock$_{i,2002}$	0.072***	0.019	0.091
	(0.007)	(0.061)	(0.060)
FDI stock$^2_{i,2002}$	-0.002***	-0.002	-0.004*
	(0.000)	(0.002)	(0.002)
Ores exports$_{i,2002}$	0.013***	-0.018	-0.005
	(0.003)	(0.029)	(0.029)
Ores exports $^2_{i,2002}$	-0.000***	0.000	0.000
	(0.000)	(0.000)	(0.000)
Fuel exports$_{i,2002}$	0.013***	0.035*	0.048**
	(0.003)	(0.021)	(0.021)
Fuel exports$^2_{i,2002}$	-0.000***	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)
Political stability$_{i,t-1}$	0.283***	0.080	0.362**
	(0.026)	(0.179)	(0.177)
GDP growth$_{i,t-1}$	0.036***	0.031	0.068**
	(0.004)	(0.029)	(0.029)
Log population$_{i,t-1}$	0.609***	0.401**	1.010***
	(0.028)	(0.203)	(0.201)
Human capital $_{i,t-1}$	0.255***	0.918**	1.173***
	(0.053)	(0.389)	(0.386)
Infrastructure$_{i,t-1}$	0.038***	-0.021	0.017
	(0.004)	(0.031)	(0.031)
Log distance$_{o,i}$	-0.074**	-2.109	-2.183
	(0.031)	(1.343)	(1.342)
Common language$_{o,i}$	0.232***		
	(0.036)		
Colony$_{o,i}$	0.340***		
	(0.057)		
Log exports$_{i,o,t-1}$	0.039***	-0.074	-0.036
	(0.008)	(0.077)	(0.076)
Log imports$_{i,o,t-1}$	0.257***	-0.149	0.108
	(0.013)	(0.131)	(0.131)
Log immigrants$_{i,o,t-1}$	0.042***	-0.082**	-0.040
	(0.005)	(0.033)	(0.032)
Log emigrants$_{i,o,t-1}$	0.066***	0.043	0.110
	(0.006)	(0.115)	(0.114)
South Africa$_i$	-0.455**	3.462**	3.007**
	(0.179)	(1.394)	(1.383)
Egypt$_i$	-2.898***	0.410	-2.488
	(0.238)	(1.708)	(1.691)
N	360,504		9,816
Wald test for interactions	$\chi^2(22) = 90.63$		
P-value	0.0000		

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 8. Robustness to splitting by firm size

	Small-medium			Medium-large		
	Main	Interaction	China only	Main	Interaction	China only
Internal agglo$_{i,n,t-1}$	0.529***	-0.447***	0.083	0.614***	0.162	0.776**
	(0.026)	(0.104)	(0.101)	(0.040)	(0.398)	(0.396)
Country-of-origin agglo$_{i,o,t-1}$	0.002***	-0.016*	-0.014*	0.002***	-0.023*	-0.021
	(0.000)	(0.009)	(0.009)	(0.000)	(0.013)	(0.013)
Industry agglo$_{i,n,t-1}$	0.001	0.003**	0.004**	0.001***	0.000	0.001
	(0.000)	(0.002)	(0.001)	(0.000)	(0.002)	(0.002)
IIA$_{o,I,t-1}$	0.179***	-0.360	-0.181	0.138*	-0.302	-0.164
	(0.068)	(0.228)	(0.218)	(0.082)	(0.383)	(0.375)
FDI stock$_{i,2002}$	0.079***	-0.046	0.034	0.073***	0.188	0.261
	(0.010)	(0.056)	(0.055)	(0.010)	(0.299)	(0.299)
FDI stock$^2_{i,2002}$	-0.002***	0.001	-0.001	-0.002***	-0.019	-0.021
	(0.000)	(0.002)	(0.002)	(0.000)	(0.021)	(0.021)
Ores exports$_{i,2002}$	0.026***	-0.017	0.009	0.001	0.103**	0.103**
	(0.005)	(0.025)	(0.025)	(0.005)	(0.048)	(0.048)
Ores exports $^2_{i,2002}$	-0.000***	0.000	0.000	-0.000	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Fuel exports$_{i,2002}$	0.014***	0.011	0.025	0.011**	0.014	0.026
	(0.004)	(0.020)	(0.020)	(0.005)	(0.032)	(0.032)
Fuel exports$^2_{i,2002}$	-0.000***	-0.000	-0.000	-0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Political stability$_{i,t-1}$	0.346***	-0.052	0.294*	0.219***	0.229	0.447
	(0.036)	(0.173)	(0.169)	(0.039)	(0.319)	(0.317)
GDP growth$_{i,t-1}$	0.035***	0.027	0.062**	0.035***	0.010	0.046
	(0.006)	(0.028)	(0.027)	(0.006)	(0.042)	(0.041)
Log population$_{i,t-1}$	0.663***	0.265	0.928***	0.584***	0.195	0.780**
	(0.038)	(0.193)	(0.189)	(0.040)	(0.344)	(0.342)
Human capital $_{i,t-1}$	0.247***	0.393	0.640*	0.320***	1.549***	1.868***
	(0.075)	(0.366)	(0.358)	(0.075)	(0.568)	(0.563)
Infrastructure$_{i,t-1}$	0.030***	0.013	0.043	0.045***	-0.066	-0.020
	(0.006)	(0.029)	(0.028)	(0.006)	(0.046)	(0.046)
Log distance$_{o,i}$	-0.165***	-2.092*	-2.258*	0.009	-5.660**	-5.651**
	(0.046)	(1.256)	(1.255)	(0.042)	(2.470)	(2.469)
Common language$_{o,i}$	0.204***			0.272***		
	(0.050)			(0.052)		
Colony$_{o,i}$	0.203**			0.463***		
	(0.081)			(0.080)		
Log exports$_{i,o,t-1}$	0.045***	0.008	0.053	0.032**	-0.037	-0.005
	(0.011)	(0.077)	(0.076)	(0.013)	(0.147)	(0.147)
Log imports$_{i,o,t-1}$	0.208***	-0.043	0.165	0.298***	-0.406**	-0.108
	(0.019)	(0.123)	(0.122)	(0.019)	(0.202)	(0.201)
Log immigrants$_{i,o,t-1}$	0.039***	-0.087***	-0.049*	0.042***	-0.118**	-0.076
	(0.007)	(0.030)	(0.029)	(0.007)	(0.054)	(0.053)
Log emigrants$_{i,o,t-1}$	0.041***	0.077	0.118	0.094***	0.265	0.359
	(0.008)	(0.107)	(0.106)	(0.009)	(0.219)	(0.218)
South Africa$_i$	-0.161	1.369	1.208	-0.593**	20.033	19.440
	(0.249)	(1.277)	(1.253)	(0.262)	(17.331)	(17.329)
Egypt$_i$	-2.345***	-0.657	-3.003*	-3.431***	6.395	2.964
	(0.338)	(1.573)	(1.537)	(0.343)	(4.747)	(4.735)
N	184,517		11,149	181,441		4,121
Wald test for interactions	$\chi^2(22) = 70.47$			$\chi^2(22) = 24.94$		
P-value	0.0000			0.3001		

Conditional logit estimates. Standard errors in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 9. State ownership beyond China

	SO		China		
	Main	Interaction	Main	Int. SO	Int. China
Internal agglo$_{i,n,t-1}$	0.228***	-0.038***	0.392***	-0.019	-0.343***
	(0.074)	(0.010)	(0.095)	(0.012)	(0.107)
Country-of-origin agglo$_{i,o,t-1}$	0.006***	0.001**	0.007***	0.001***	-0.014**
	(0.002)	(0.000)	(0.002)	(0.000)	(0.006)
Industry agglo$_{i,n,t-1}$	0.002*	0.000	0.002	0.000	0.001
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
IIA$_{o,I,t-1}$	0.704***	0.087***	0.839***	0.103***	-0.457**
	(0.132)	(0.019)	(0.163)	(0.021)	(0.179)
Ores exports$_{i,2002}$	-0.027**	-0.005***	-0.029**	-0.005***	0.017
	(0.012)	(0.002)	(0.014)	(0.002)	(0.018)
Ores exports $^{2}_{i,2002}$	0.001***	0.000***	0.000**	0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fuel exports$_{i,2002}$	0.030***	0.002***	0.029***	0.002**	-0.000
	(0.007)	(0.001)	(0.007)	(0.001)	(0.009)
Fuel exports$^2_{i,2002}$	-0.000***	-0.000*	-0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth$_{i,t-1}$	0.080***	0.005**	0.082***	0.006**	-0.005
	(0.017)	(0.002)	(0.019)	(0.002)	(0.024)
Log population$_{i,t-1}$	0.481***	-0.020***	0.346***	-0.036***	0.411***
	(0.062)	(0.007)	(0.070)	(0.008)	(0.088)
Human capital $_{i,t-1}$	-0.043	-0.042**	-0.192	-0.060***	0.600***
	(0.139)	(0.017)	(0.159)	(0.020)	(0.202)
FDI stock$_{i,2002}$	0.069***		0.068***		
	(0.007)		(0.007)		
FDI stock$^2_{i,2002}$	-0.002***		-0.002***		
	(0.000)		(0.000)		
Political stability$_{i,t-1}$	0.287***		0.289***		
	(0.026)		(0.026)		
Infrastructure$_{i,t-1}$	0.038***		0.038***		
	(0.004)		(0.004)		
Log distance$_{o,i}$	-0.110***		-0.118***		
	(0.031)		(0.031)		
Common language$_{o,i}$	0.249***		0.251***		
	(0.036)		(0.036)		
Colony$_{o,i}$	0.363***		0.355***		
	(0.058)		(0.058)		
Log exports$_{i,o,t-1}$	0.042***		0.046***		
	(0.008)		(0.008)		
Log imports$_{i,o,t-1}$	0.248***		0.243***		
	(0.013)		(0.014)		
Log immigrants$_{i,o,t-1}$	0.038***		0.038***		
	(0.005)		(0.005)		
Log emigrants$_{i,o,t-1}$	0.061***		0.060***		
	(0.006)		(0.006)		
South Africa$_i$	-0.514***		-0.481***		
	(0.177)		(0.177)		
Egypt$_i$	-2.927***		-2.886***		
	(0.234)		(0.235)		
N	365,883		365,883		
Wald test for interactions	$\chi^2(11) = 113.25$		$\chi^2(11) = 100.95$		$\chi^2(11) = 47.80$
P-value	0.0000		0.0000		0.0000

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 10. Differences among emerging countries

	Main	Int. China	Int. India	Int. Russia
Internal agglo$_{i,n,t-1}$	0.527***	-0.408***	0.238**	-0.392
	(0.022)	(0.095)	(0.116)	(0.428)
Country-of-origin agglo$_{i,o,t-1}$	0.002***	-0.020***	-0.019***	-0.053
	(0.000)	(0.007)	(0.007)	(0.072)
Industry agglo$_{i,n,t-1}$	0.001***	0.003**	0.005***	0.003
	(0.000)	(0.001)	(0.001)	(0.003)
IIA$_{o,I,t-1}$	0.156***	-0.303	0.308	-1.497
	(0.054)	(0.188)	(0.422)	(1.156)
FDI stock$_{i,2002}$	0.072***	-0.128***	-0.099**	0.113
	(0.006)	(0.034)	(0.042)	(0.095)
FDI stock$^2_{i,2002}$	-0.002***	0.004***	0.003***	-0.002
	(0.000)	(0.001)	(0.001)	(0.003)
Ores exports$_{i,2002}$	0.016***	0.022	0.008	0.095**
	(0.003)	(0.022)	(0.018)	(0.043)
Ores exports$^2_{i,2002}$	-0.000***	-0.000	-0.000	-0.001**
	(0.000)	(0.000)	(0.000)	(0.001)
Fuel exports$_{i,2002}$	-0.012***	0.014	-0.058***	0.031
	(0.002)	(0.013)	(0.015)	(0.030)
Fuel exports$^2_{i,2002}$	0.000***	-0.000	0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Political stability$_{i,t-1}$	0.286***	0.115	0.068	-0.635**
	(0.026)	(0.142)	(0.144)	(0.315)
GDP growth$_{i,t-1}$	0.034***	0.016	-0.007	-0.042
	(0.004)	(0.022)	(0.020)	(0.037)
Log population$_{i,t-1}$	0.411***	0.308**	0.175	-0.182
	(0.022)	(0.141)	(0.134)	(0.286)
Human capital $_{i,t-1}$	0.514***	0.795***	-0.154	0.569
	(0.050)	(0.260)	(0.302)	(0.591)
Infrastructure$_{i,t-1}$	-0.011***	-0.009	0.014	0.059***
	(0.001)	(0.010)	(0.010)	(0.021)
Log distance$_{o,i}$	-0.003	-3.562***	-1.788***	2.436***
	(0.032)	(1.012)	(0.644)	(0.936)
Common language$_{o,i}$	0.223***		0.532**	
	(0.037)		(0.223)	
Colony$_{o,i}$	0.288***			
	(0.058)			
Log exports$_{I,o,t-1}$	0.065***	0.064	-0.032	-0.060
	(0.009)	(0.061)	(0.060)	(0.074)
Log imports$_{i,o,t-1}$	0.284***	-0.123	0.043	-0.027
	(0.014)	(0.097)	(0.094)	(0.131)
Log immigrants$_{i,o,t-1}$	0.033***	-0.087***	-0.021	-0.105
	(0.005)	(0.025)	(0.023)	(0.070)
Log emigrants$_{i,o,t-1}$	0.069***	0.076	-0.013	-0.253**
	(0.006)	(0.089)	(0.030)	(0.120)
N		365,958		
Wald test for interactions		$\chi^2(20)$=88.72	$\chi^2(21)$=82.42	$\chi^2(20)$=62.27
P-value		0.0000	0.0000	0.0000

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 11. Robustness to destination subregions: North Africa vs. SSA

	North Africa		SSA	
	Main	Interaction	Main	Interaction
Internal agglo$_{i,n,t-1}$	0.529***	-0.653**	0.522***	-0.239*
	(0.053)	(0.266)	(0.024)	(0.123)
Country-of-origin agglo$_{i,o,t-1}$	0.005***	-0.058	0.001***	-0.009
	(0.001)	(0.039)	(0.000)	(0.007)
Industry agglo$_{i,o,t-1}$	0.007***	0.006	0.001***	0.003**
	(0.001)	(0.006)	(0.000)	(0.001)
IIA$_{o,I,t-1}$	0.145		-0.160***	
	(0.119)		(0.061)	
FDI stock$_{i,2002}$	4.085***	0.404	-0.163***	-0.065*
	(0.374)	(0.616)	(0.012)	(0.034)
FDI stock$^2_{i,2002}$	-0.230***	-0.024	0.006***	0.002*
	(0.022)	(0.028)	(0.000)	(0.001)
Ores exports$_{i,2002}$	-0.649***		0.004	
	(0.089)		(0.004)	
Ores exports $^2_{i,2002}$	0.007***		-0.000	
	(0.001)		(0.000)	
Fuel exports$_{i,2002}$	0.200***		-0.006**	
	(0.022)		(0.003)	
Fuel exports$_{i,2002}$	-0.003***		0.000	
	(0.000)		(0.000)	
Political stability$_{i,t-1}$	0.984***		0.381***	
	(0.131)		(0.029)	
GDP growth$_{i,t-1}$	-0.042***		0.064***	
	(0.015)		(0.005)	
Log population$_{i,t-1}$	5.977***	0.929	0.400***	0.502***
	(0.632)	(1.335)	(0.026)	(0.118)
Human capital $_{i,t-1}$	6.409***	-0.456	0.420***	0.968***
	(0.618)	(1.499)	(0.057)	(0.235)
Infrastructure$_{i,t-1}$	0.077***		-0.036***	
	(0.025)		(0.003)	
Log distance$_{o,i}$	-0.754***	-14.826	0.641***	-0.852
	(0.091)	(9.381)	(0.043)	(0.732)
Common language$_{o,i}$	0.106		0.329***	
	(0.081)		(0.044)	
Colony$_{o,i}$	0.137		0.058	
	(0.131)		(0.074)	
Log exports$_{i,o,t-1}$	0.003		0.074***	
	(0.027)		(0.009)	
Log imports$_{i,o,t-1}$	0.258***	0.585	0.307***	-0.209**
	(0.049)	(0.893)	(0.015)	(0.085)
Log immigrants$_{i,o,t-1}$	0.003	-0.096	0.055***	-0.084***
	(0.014)	(0.105)	(0.006)	(0.025)
Log emigrants$_{i,o,t-1}$	0.008		0.060***	
	(0.015)		(0.007)	
South Africa$_i$			-2.035***	
			(0.239)	
Egypt$_i$	14.008***			
	(3.279)			
N	110,285		255,673	
Wald test for interactions		$\chi^2(10) = 24.81$	$\chi^2(10) = 42.45$	
P-value		0.0057	0.0000	

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12. Robustness to additional control variables

	Model 1		Model 2		Model 3		Model 4	
	Main	Interaction	Main	Interaction	Main	Interaction	Main	Interaction
Internal agglo$_{i,n,t-1}$	0.608***	-0.306**	0.548***	-0.428**	0.549***	-0.417**	0.564***	-0.410**
	(0.034)	(0.136)	(0.030)	(0.203)	(0.030)	(0.204)	(0.033)	(0.178)
Country-of-origin agglo$_{i,o,t-1}$	0.003***	-0.022**	-0.001***	0.007	-0.001**	-0.008	0.005***	-0.014
	(0.000)	(0.009)	(0.001)	(0.015)	(0.000)	(0.015)	(0.001)	(0.011)
Industry agglo$_{i,n,t-1}$	0.001***	0.002	0.001***	0.004**	0.002***	0.004*	0.002***	0.002
	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)
IIA$_{o,I,t-1}$	0.294***	0.026	0.084	0.175	0.088	-0.054	0.204***	-0.284
	(0.073)	(0.430)	(0.072)	(0.262)	(0.073)	(0.259)	(0.060)	(0.230)
FDI stock$_{i,2002}$	0.195***	0.576	0.124***	-0.102	0.107***	-0.057	0.038***	0.017
	(0.052)	(0.366)	(0.011)	(0.074)	(0.011)	(0.073)	(0.011)	(0.070)
FDI stock$^2_{i,2002}$	0.009	-0.062	-0.004***	0.002	-0.003***	0.000	-0.001***	-0.001
	(0.007)	(0.048)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)
Ores exports$_{i,2002}$	0.033***	0.062	0.021***	0.007	0.021***	0.016	0.008*	0.014
	(0.006)	(0.055)	(0.005)	(0.033)	(0.005)	(0.033)	(0.005)	(0.030)
Ores exports$^2_{i,2002}$	-0.001***	-0.000	-0.000***	0.000	-0.000***	-0.000	-0.000*	-0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fuel exports$_{i,2002}$	0.023**	-0.072	0.004	0.027	0.004	0.020	0.012***	0.036*
	(0.010)	(0.072)	(0.005)	(0.024)	(0.005)	(0.024)	(0.004)	(0.021)
Fuel exports$^2_{i,2002}$	-0.001***	0.002	-0.000	-0.000	-0.000*	-0.000	-0.000***	-0.000
	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Political stability$_{i,t-1}$	0.158***	-0.408	0.335***	0.150	0.354***	0.135	0.268***	0.173
	(0.050)	(0.313)	(0.039)	(0.188)	(0.039)	(0.191)	(0.035)	(0.179)
GDP growth$_{i,t-1}$	0.053***	0.054	0.026***	0.010	0.026***	0.020	0.033***	0.032
	(0.007)	(0.038)	(0.006)	(0.027)	(0.006)	(0.027)	(0.006)	(0.027)
Log population$_{i,t-1}$	0.520***	0.256	0.449***	0.825***	0.450***	0.851***	0.719***	0.333
	(0.044)	(0.283)	(0.039)	(0.253)	(0.039)	(0.251)	(0.040)	(0.212)
Human capital $_{i,t-1}$	-0.009	1.749**	0.438***	0.833*	0.367***	1.347***	0.280***	1.106***
	(0.113)	(0.778)	(0.078)	(0.429)	(0.078)	(0.448)	(0.078)	(0.409)
Infrastructure$_{i,t-1}$	0.058***	-0.007	0.018***	-0.008	0.019***	-0.022	0.041***	-0.025
	(0.007)	(0.047)	(0.006)	(0.036)	(0.006)	(0.035)	(0.006)	(0.030)
Log distance$_{o,i}$	-0.215***	-3.794	-0.034	-3.290**	-0.052	-2.769*	-0.243***	-3.507**
	(0.051)	(2.489)	(0.047)	(1.563)	(0.046)	(1.508)	(0.046)	(1.553)
Log exports$_{i,o,t-1}$	0.013	-0.045	0.053***	0.016	0.054***	0.030	0.033***	0.028
	(0.012)	(0.119)	(0.013)	(0.086)	(0.013)	(0.091)	(0.011)	(0.085)
Log imports$_{i,o,t-1}$	0.207***	-0.307	0.301***	-0.671***	0.338***	-0.721***	0.172***	-0.365***
	(0.018)	(0.240)	(0.022)	(0.161)	(0.022)	(0.162)	(0.016)	(0.141)
Log immigrants$_{i,o,t-1}$	0.035***	-0.140***	0.060***	-0.082**	0.063***	-0.069**	0.025***	-0.045
	(0.008)	(0.047)	(0.007)	(0.033)	(0.007)	(0.033)	(0.007)	(0.031)
Log emigrants$_{i,o,t-1}$	0.070***	0.153	0.057***	0.011	0.065***	0.035	0.052***	0.238**
	(0.008)	(0.172)	(0.009)	(0.122)	(0.009)	(0.116)	(0.008)	(0.120)
South Africa$_i$	-18.006**	61.936	0.454*	1.615	0.191	2.518	-0.216	1.675
	(8.134)	(53.160)	(0.248)	(1.606)	(0.248)	(1.659)	(0.251)	(1.420)
Egypt$_i$	-10.132***	15.369	-1.813***	-0.292	-1.930***	0.607	-2.875***	-0.814
	(2.428)	(16.209)	(0.343)	(2.032)	(0.344)	(1.984)	(0.329)	(1.586)
Common language$_{o,i}$	0.320***		0.169***		0.112**		0.394***	
	(0.055)		(0.052)		(0.052)		(0.048)	
Colony$_{o,i}$	0.300***		0.328***		0.266***		0.695***	
	(0.079)		(0.073)		(0.074)		(0.159)	
Log wage$_{i,t-1}$	-0.090***	0.070						
	(0.022)	(0.111)						
Aid projects$_{i,o,t-1}$			0.001***	0.020***				
			(0.000)	(0.007)				
Aid amount$_{i,o,t-1}$					0.000***	-0.000		
					(0.000)	(0.000)		
Export tariffs$_{i,o,t-1}$							-0.003*	-0.025
							(0.002)	(0.021)
Import tariffs$_{i,o,t-1}$							-0.003	-0.044**
							(0.002)	(0.018)
N	121,657		218,844		218,844		167,518	
Wald test for interactions	$\chi^2(22) = 64.24$		$\chi^2(22) = 90.85$		$\chi^2(22) = 89.83$		$\chi^2(22) = 56.39$	
P-value	0.0000		0.0000		0.0000		0.0002	

Conditional logit estimates. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5. Concluding remarks

Using investment-level data, we study whether the location determinants of FDI in African countries differ between Chinese and non-Chinese investments. We focus on determinants that reflect investor reactions to investment risk: prior firm experience in the country, country-of-origin agglomeration, industry agglomeration, and international investment agreements. To our knowledge, this is the first systematic comparison of these location factors between Chinese and non-Chinese investors. Our focus on risk-mitigating factors helps shed light on some critical factors hindering FDI to Africa.

Our results robustly indicate that CMNEs do not require the same protection guarantees as other investors. CMNEs rely significantly less on the risk-mitigating effects of internal and country-of-origin agglomeration and investment agreements. The lower reliance of Chinese MNEs on intra-firm colocation is in line with the findings of previous literature on CMNE internationalization patterns (Luo and Tung, 2007; Lu et al., 2014; Quer et al., 2018). An instance of this is the case of TCL Technology, a leading company in Chinese electronics (Luo and Tung, 2007). Instead of gradually diversifying into less familiar markets as MNEs from traditional investing countries tend to do in the early phases of their internationalization process, the company took its first steps outside of China investing in a variety of countries in Europe and Asia. In Africa, the top greenfield investors from China, including Huawei and ZTE Corporation, present lower rates of intra-firm colocation compared to the main investors from the UK and France (fDi Markets).

We argue that this is due to the "systemic" engagement of the Chinese government when operating in Africa (Li et al., 2022), providing practical support to Chinese investors and developing strategic partnership agreements with African governments. The Chinese government proactively engages in competitive tenders for major infrastructural projects and provides conditionality-bound loans that bind host countries to long-term cooperation with China. It also prepares the ground for investment opportunities in multiple sectors through the extensive use of bundling practices, as exemplified by the cases of Sinopec, Citic, and Chinalco in Gabon, Algeria, and Guinea (Mazé and Chailan, 2021). These transactions are often negotiated directly by the Chinese government with high-level host-country institutions, regardless of the private or state-owned nature of the contracting firm.

Indeed, our comparative focus has highlighted that the systemic engagement of the Chinese government in Africa concerns not only state-owned enterprises but CMNEs as a whole. The Chinese government can shape the behavior and practices of firms investing abroad through several forms of control that make it very difficult to distinguish private and state-affiliated firms. As a result, especially when the firm is a major market player, concerns about state control may persist even in the absence of direct ownership, as in the case that led the US to ban the electronics giant Huawei (Cuervo-Cazurra, 2018). Similarly, government support is not limited to SOEs, as shown by Bräutigam and Tang (2014). These authors report that the Chinese government intervened directly in support of the Tianli Group, the private MNE in charge of setting up a special economic zone in Mauritius, following an explicit appeal from the Mauritian Prime Minister worried about delays in the development of the SEZ.

A dense network of soft power and diplomatic ties embeds Chinese FDI, where state control, government strategies, geopolitical interest, and private initiatives are inextricably interconnected. Non-economic factors play an important role, with Chinese influence in Africa also occurring through penetration into the host countries' cultural spheres, as exemplified by the choice of Nairobi as the first broadcasting hub of Chinese Central Television outside China, as well as the many Confucius Institutes opened across Africa in recent decades. This embeddedness turns out to effectively reduce the liability of foreignness for CMNEs and represents a comparatively more salient ownership advantage for smaller firms, which have more to gain from access to business-relevant information and protection against risks related to political instability and expropriation. Whether such pervasive government support will remain a cost- and risk-reducing asset in the long run or become a source of rigidity in investment strategies is an intriguing question that we invite future research to address.

Our analysis also shows that Chinese MNEs in Africa disregard economic risk and locate manufacturing investments where there is FDI agglomeration in the same activity. This is consistent with the interpretation that latecomer emerging investors aggressively pursue information spillovers to catch up with industry-specific knowledge (Child and Rodrigues, 2005). We show that the internationalization model of CMNEs combines features of advanced- and emerging-country location strategies, while being distinctively less risk-averse.

Several common perceptions about Chinese FDI are based on studies focusing only on China. Our comparative and function-specific approach allows us to verify whether they represent a distinctive feature of Chinese FDI in Africa or not, and this bears implications for Africa's development prospects.

First, are Chinese FDI aimed at riskier destinations? Similar to Kolstad and Wiig (2012) and Chen et al. (2018), we do not find evidence of this. On the contrary, we find that they benefit from political stability, just like those of other investors. Combined with the above results, this implies that while government support mitigates individual firm risk, CMNEs also lose from instability and are not systematically pursuing countries with poor governance to sneak into their institutional voids. This may be viewed as an encouraging sign for African countries with better institutions.

Second, are Chinese FDI distinctively resource-seeking? On aggregate, our results do not highlight a distinctive role for natural resources. Within the subsample of resource-seeking FDI, we find that CMNEs behave just like other investors. Hence, we do not support this perception and would instead conclude that CMNEs are rather similar to advanced-country investors when it comes to exploiting resources (Chen et al., 2018). Accordingly, we may expect similarly minor impacts of their FDI in the host economies (Farole and Winkler, 2012). A distinctive resource-seeking orientation emerges for the subsample of services FDI, probably due to state-owned CMNEs subcontracting to private firms (Ramasamy et al., 2012), which could reduce the potential of these FDI to activate linkages.

Third, are CMNEs distinctively market-seeking? This is strongly confirmed in our study, especially for Sub-Saharan Africa. Composition effects and distinctive attention to market factors within functions drive this result. Manufacturing and services FDI, which make up a large share of Chinese FDI, are sensitive to market-specific information and behavioral uncertainties, making the risk-mitigating effects of government support very salient. These ownership advantages may grow even more central as China enters a new development phase, and the share of services FDI in its portfolio will likely increase (Nord and Chen, 2017). These investments tend to develop stronger links with domestic firms (Farole and Winkler, 2012; Sánchez-Martín et al., 2015), but the scant empirical evidence points to comparatively smaller employment effects for CMNEs (Coniglio et al., 2015).

Overall, besides representing a remarkable ownership advantage, government support may reduce the incentive to integrate into the host economies and reduce the potential for FDI spillover effects (Mazé and Chailan, 2021).

In contrast, CMNEs seem to use manufacturing FDI as an opportunity to learn and catch up with industry-specific knowledge, and they appear to strongly value destination countries' human capital. This result emerges as a distinctive feature of CMNEs that may challenge the widespread perception that Africa's competitive advantage mainly concerns resources and market size. The familiarity of CMNEs with developing countries may not only enable them to more easily navigate weak institutional environments but also to spot the presence of unexploited competencies and activate them for business purposes. The Huajian Industrial Holding Company—the largest private Chinese manufacturing investor in Ethiopia, producing over 20 million pairs of shoes a year—acted as a pioneer with its first investment in the Ethiopian Eastern Industrial Park, starting the first wave of relocated Chinese plants on the African continent and exerting a "demonstration effect" on the many shoe manufacturing firms that followed (Lin and Xu, 2019). Lin and Xu (2019) report that at the time of the investment, the company recruited Ethiopian workers to be trained in China to tackle a lack of adequate skills and created 3,500 jobs in two years. A priori, this may bear some potential to break poverty traps or end up exclusively serving CMNEs' own interests. The outcome will depend on host countries' interactions with the CMNEs, their absorptive capacity, and the extent to which legitimacy gaps and competitor rivalry will allow CMNEs to maintain their growing role in African countries (Farole and Winkler, 2012; Li et al., 2022). Either way, the ability of CMNEs to activate host-country human capital for FDI is a promising research avenue that our study has highlighted regarding "what is still emerging about emerging countries".

Despite our efforts to design a comprehensive and robust study, some limitations affect our analysis. First, in absence of ad-hoc information about the motives, our approximation of FDI motives with sectoral categories is necessarily imperfect. Relatedly, we are unable to distinguish between horizontal and vertical FDI in order to better appreciate market- vs. efficiency-seeking motives, an issue further exacerbated by the lack of comprehensive and reliable data on wages in African destinations. Secondly, Chinese investment commitments in Africa are not fully captured by FDI inflows as they also relate to aid (Biggeri and Sanfilippo, 2009; Kaplinsky and Morris, 2009). Although we made an attempt to include this dimension using data on bilateral aid, this information

is only available for a limited number of countries and years. Third, we are aware that our firm-level measures of coping with risk and uncertainty, given by agglomerations and IIAs, are far from representing the totality of strategies put in place by foreign investors to overcome the liability of foreignness—this would require a broader set of firm- and investment-level variables. Finally, a number of firm characteristics that may interact in interesting ways with risk and government support, such as age, industry, governance and profitability, are not considered in our analysis due to data limitations and insufficient statistical power on split samples, which the structural break due to the Covid-19 pandemic has further hindered.

Future research should be directed at overcoming these limitations and further exploring heterogeneity in the investor features, motives, and entry modes characterizing FDI in African countries and their interactions with risk. In particular, our results call for new studies to walk the maze of Chinese government engagement, disentangling the role of financial and other types of support, different ownership levels, and soft power. This is not only in order to better assess "what is still emerging about emerging countries" but also to anticipate what is going to emerge in the coming years. The last couple of years, not covered by our analysis, have been characterized by disruptive events that have shaken the stability of economies worldwide. Therefore, it is of primary interest to assess whether Chinese outward FDI in Africa have reacted distinctively to the economic slowdown, the ensuing recovery, and the increase in risk caused by Covid-19 pandemic.

Appendix

I. Data appendix

The data we use originate from the linkage of different data sources. FDI flow data are drawn from the fDi Markets database, a comprehensive and regularly updated online database of announced cross-border greenfield investments constructed by the Financial Times Intelligence Unit.[13] It covers all countries and sectors worldwide. We extracted from this repository the data relating to inward FDI into African countries over the 2003-2017 period (2003 being the first year available). These correspond to almost 10,000 greenfield investments into 54 African countries from 123 origin countries, including both extra- and intra-African investments. We consider as origin country the one in which the investing company is resident when the investment takes place. Our initial choice set included approximately 530,000 investment-country combinations. Because we lagged all our regressors one year, including those derived from fDi Markets, the first year available for estimation is 2004. Due to scarce availability for some of our main variables of interest, we resorted to missing value imputation where this was possible without causing distortions in the data. In spite of our efforts, our estimation sample shrank to 365,958 investment-country combinations, corresponding to 8,892 FDI, including 43 destinations, 93 origin countries, and 18 different industry activities, from 2004 to 2017.

Admittedly, official statistics for some African countries might suffer from manipulation for propaganda purposes. Another limitation of our data relates to the fact that the investment data may neglect smaller, less formalized operations of CMNEs. We can only acknowledge these limitations, remarking that we resorted to official statistics provided by qualified international organizations, carefully selecting the most accurate and complete sources of data available. The underlying comprehensive literature review that we conducted on FDI in Africa was especially valuable in this regard.

We draw from the fDi Markets database some of our main variables of interest, related to agglomeration and information economies deriving from intra-firm co-location (measured by the cumulated number of investments from the same investing firm in destination country i up to year $t-1$, *internal agglomeration*); co-location within the same industry (cumulated number of investments in the same industry activity as investment n observed in country i up to year $t-1$, *industry agglomeration*); co-location of firms from the same country of origin (cumulated number of investments for the same origin-destination pair

[13] https://www.fdimarkets.com/

up to year $t-1$, *country-of-origin agglomeration*). All three measures of agglomeration are assigned a value of 0 for the first year in the FDI data, namely 2003.

We rely on UNCTAD data on FDI stocks in 2002[14] to capture the agglomeration of FDI in destination i prior to our observation period. This could also be interpreted as a measure of the costs of doing business in the country. The variable included, *FDI stock 2002*, is expressed in billions of US dollars.

Information on IIAs is retrieved using the International Investment Agreements Navigator tool on the UNCTAD Investment Policy Hub website[15], where all signed and ratified IIAs are easily searchable according to the type of agreement and year, for both individual destinations and country groupings. For each year and pair of origin-destination countries in our dataset, our variable *IIA* is equal to 1 if at least one Bilateral Investment Treaty (BIT) or Treaty with Investment Provision (TIP) is in force (and not only signed) between these two countries in that year.

Data on the standard location determinants are mostly retrieved from the World Bank's World Development Indicators (WDI) database,[16] and include information on market size and the growth and availability of natural resources. As for natural resources, we considered the share of mineral and metal exports and the share of fuel exports on all merchandise exports at the beginning of the period (*ores exports 2002; fuel exports 2002*), obtained computing the mean of the shares from 1994 to 2002. Information from WDI theoretically covers all years, origins, and destinations considered. However, some countries present large amounts of missing data due to a number of reasons, including sporadic realization of surveys and underreporting of data due to conflict and lack of statistical capacity, as reported on the World Bank's website, in the data helpdesk section. As indicated previously, this led us to exclude certain destinations from the start, namely Eritrea, Libya, Somalia, Chad, Djibouti, Comoros, Guinea Bissau, Equatorial Guinea, Seychelles, and Sao Tome and Principe. We also resorted to missing data imputation by interpolating and extrapolating variables where appropriate. In our estimation sample, 7% and 11.5% of observations for *ores exports 2002* and *fuel exports 2002*, respectively, are imputed.

To proxy for institutional quality, we add the country's political stability index for year t (e.g., Lu et al., 2014; Chen et al., 2018), drawn from the Worldwide Governance

[14] https://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx
[15] investmentpolicyhub.unctad.org
[16] https://datacatalog.worldbank.org/dataset/world-development-indicators

Indicators (WGI) of the World Bank.[17] WDI governance indicators are given in units of a standard normal distribution and range from approximately –2.5, indicating the worst governance performance, to 2.5.

We include a measure of human capital to control for the role of location-specific knowledge and information, which may affect the quality of the labor force employed in subsidiaries (Rodriguez-Pose and Cols, 2017). Data on human capital and education were severely incomplete in the WDI dataset, hence we relied on the human capital index of the Groningen Growth and Development Centre Penn World Tables (PWT, release 9.1),[18] combining average years of schooling and returns to education. The index covers the whole period under analysis and is only unavailable for Guinea and Cabo Verde. For these two countries only, we used imputation running fixed effects regressions of *human capital* on WDI education variables (primary, secondary, and tertiary enrollment) and on time. Imputed observations represent 4.5% of the estimation sample for *human capital*.

The presence of reliable *infrastructure* represents a critical factor for investment location in Africa (Asiedu, 2002; Biggeri and Sanfilippo, 2009). Information on infrastructure development was included using the Africa Infrastructure Development Index (AIDI), developed by the African Development Bank for 54 African countries from 2003 to the present year.[19]

Bilateral variables capturing the role of geographic, cultural and institutional distance between the origin and the destination country are routinely included in the literature on location choice for FDI (Buckley et al., 2007; Lu et al., 2014) to capture the transportation, coordination, and administrative costs of running a business in a foreign country. We retrieved these variables from the CEPII CHELEM dataset.[20] This includes the log distance, calculated as the great circle distance between the two countries' capitals; a common language dummy equal to 1 if the two countries share a common language spoken by at least 9% of the population; and a colony dummy equal to 1 if the two countries ever shared a colonial tie. These variables cover the entire sample of countries for the whole period.

[17] https://databank.worldbank.org/source/worldwide-governance-indicators

[18] https://www.rug.nl/ggdc/productivity/pwt/?lang=en

[19] http://infrastructureafrica.opendataforafrica.org/rscznob/africa-infrastructure-development-index-aidi-2020

[20] http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp

To control for potential complementarity and substitution effects between trade and FDI, we collected information on the value of exports from and imports to African countries (*log exports* and *log imports*), measured in 2011 US$, from the World Bank World Integrated Trade Solution (WITS) database.[21] We also retrieved data on stocks of immigrants into and emigrants from African countries (*log emigrants* and *log immigrants*) from World Bank migration data. We integrated the Bilateral Migration Database 1960-2000, which gives the bilateral migrant stocks up to year 2000, with its two latest updates (Bilateral Migration Matrix 2013 and 2017).[22] We decided not to use the 2010 update since it has too many missing values with respect to origin countries. We used 2000 stocks for the years up to 2007, 2013 data for the years from 2008 to 2013, and 2017 stocks for the years from 2014 to 2017.

Investors seeking efficiency improvements via foreign investment will consider the level of salaries in their location choice, and ceteris paribus prefer areas with lower labor costs. We retrieved data on monthly wages from the ILOSTAT database.[23] Unfortunately, that information is only available for 24 destination countries and not for all years. When data were partially available for a destination, we filled the missing years with the data from the first previous year available. In spite of this, including *log wage* in our analysis reduces our sample to one third of the original, shrinking it to 121,657 investment-country combinations, where 77% of observations for wage are imputed. We also aimed to include data on bilateral weighted tariffs on imports and exports and on other important financial flows to Africa, which is bilateral aid. Information on tariffs, retrieved from the UNCTAD TRAINS database,[24] is only available until 2014 and is missing for some origin-destination pairs. In spite of our efforts to fill the missing data using the same method used for the wage variable, including tariff information halves our dataset, with 24% and 21% of *import tariffs* and *export tariffs*, respectively, being imputed. As for aid data, not all countries publicly disclose information on the aid projects they undertake, including China. For the countries that make official data publicly available, these data can be retrieved from AidData's project-level database.[25] Although China is not among those countries, AidData provides the same information related to aid projects from China, as

[21]https://wits.worldbank.org/

[22]https://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data

[23]https://ilostat.ilo.org/topics/wages/

[24]https://databank.worldbank.org/source/unctad-%5e-trade-analysis-information-system-(trains)#

[25]http://dashboard.aiddata.org/

well as from Qatar and Saudi Arabia, collected by using the TUFF (Tracking Underreported Financial Flows) methodology. All the data, as well as detailed information on the TUFF methodology, can be found on AidData's website.[26] After integrating the different aid data sources, we included the cumulated number of aid projects and the cumulated amount of aid flows in constant 2014 US$ for each origin-destination pair at a given year, considering only disbursed aid flows, not aid commitments. The resulting information, however, is only available for 32 origin countries and only until 2013, which reduces our sample to 218,844 observations. For these reasons, we decided to include data on aid, tariffs, and wages only as robustness checks (*aid projects* and *aid amount*, *export tariffs* and *import tariffs*, and *log wage* in Table 12).

Given that South Africa accounts for almost 20% of all investments in our sample, being the top FDI destination overall for MNEs from both advanced countries and China, we created a dummy named *South Africa* taking a value of 1 if the destination country is South Africa and zero otherwise. We also created a dummy for Egypt (*Egypt*) to take into account that this country suffers from a series of negative factors unobservable to us that depress its FDI attractiveness (see OECD, 2020).

To study the differential role of CMNEs, our regressors are interacted with a dummy, *China*, equal to 1 if the origin country of investment n is China and zero otherwise. We use the same approach to study the location determinants of Russian and Indian MNEs as part of our robustness checks.

We explored origin-country heterogeneity by introducing the dummies *advanced* and *emerging* equal to 1 if the origin country belongs, respectively, to the group of advanced countries plus China or to the emerging countries, and zero otherwise, according to the IMF classification.[27]

We study firm-size heterogeneity by distinguishing investments based on their amounts, an information we retrieve from fDi Markets. We define small-medium firms as those with an average investment below or equal to the median value of 25.35 million USD and medium-large firms as those that exceed the median. For each firm, the average investment size is the ratio of the total amount invested globally to the total number of FDI projects.

Finally, we relied on publicly available information on the internet, such as financial websites, company websites and reports, and Wikipedia, to identify which of the 356

[26]https://www.aiddata.org/datasets

[27]https://www.imf.org/external/np/exr/key/advanced.htm

Chinese FDI in our sample are realized by firms that are currently SOEs. The dummy *SOE* is equal to 1 if the CMNE is an SOE and zero otherwise. Following the relevant literature, the criteria we used to identify state ownership in our sample was a broad one, including both direct ownership as well as government affiliation. Specifically, we categorized as SOE i) firms that are totally or majority-owned by the Chinese government at different levels (state, province, or municipality levels); ii) those for which the Chinese government (at various levels) owns minority but consistent ownership shares; iii) those for which we were able to collect information attesting to other forms of relevant government affiliation, including government funding or affiliation with government-funded entities; iv) those firms, such as Huawei, for which substantial doubts exist with respect to the actual absence of state control.

TABLE A.1. Empirical cross-country studies of the determinants of Chinese FDI in Africa

Study	Method and period covered	Determinants considered	Results	Empirical comparison with non-Chinese investors
Biggeri and Sanfilippo (2009)	1998 to 2005, panel IV country level	natural resources	+	No
		market size	n.s.	
		infrastructure	n.s.	
		human capital	n.s.	
		inflation	+	
		governance (pol. stab.)	+	
		total FDI inflows	-	
		aid/cooperation	+	
Chen et al. (2016)	1998-2012 country level: OLS investment level: linear probability, negative binomial	natural resources	+	Yes (country level)
		market size	+	
		governance (pol. stab.)	+	
		sector (K/L)	-	
		sector (H/L skills)	n.s.	
Cheung et al. (2012)	1991-2005, Tobit and Heckmann country level	natural resources	+	No
		market size	n.s.	
		governance	+/-	
		bilateral econ. relations (trade and contracts)	+	
Claassen et al. (2012)	2003-2008, panel OLS country level	natural resources	+	No
		market size	+	
		infrastructure	n.s.	
		human capital	n.s.	
		inflation	n.s.	
		governance (pol. stab.)	-	
		domestic investment	-	
		openness to trade	n.s.	
		level of development	n.s.	
		ex socialist	n.s.	
		export diversification	n.s.	
Drogendijk and Blomkvist (2013)	2003-2009, OLS country level	natural resources	+	No
		market size	+	
		governance (pol. stab.)	-	
		trade openness	+	
		Chinese minority	n.s.	
		innovation (patents)	+	
Kolstad and Wiig (2011)	2003-2006, OLS country level	natural resources	n.s.	Yes
		market size	+	
		inflation	n.s.	
		governance (rule of law)	n.s.	
		openness to trade	n.s.	
		rule of law*natural resources	-	
Landry (2019)	2003-2014, panel OLS and PPML country level	natural resources	n.s.	Yes
		market size	+	
		governance	+	
		political alignment	-	
		distance	n.s.	
		language/colonial tie	n.s.	
		china*natural resources	n.s.	
		china*market size	-	
		china*governance	n.s.	
		china*political alignment	+	
Ross (2019)	2003-2015, panel OLS, fe, re country level	natural resources	+	No
		market size	n.s.	
		inflation	n.s.	
		governance	+/-	
		labor productivity	+	
Shan et al. (2018)	2008-2014, panel fe country level	natural resources	n.s.	No
		market size	+	
		infrastructure	-	
		inflation	n.s.	
		governance	+/-	
		trade openness	n.s.	
Soumaré et al. (2016)	panel fe country level	natural resources	+ for China	Yes
		market size	-	
		infrastructure	+ for OECD	
		inflation	n.s.	
		governance	+/-	
		trade openness	- for China	
		gross capital formation	n.s.	
Zhang et al. (2013)	2002-2011, panel FE country level firm-level (PE vs. SOE)	natural resources	n.s.	No
		market size	+ for both	
		governance (pol. stab.)	- for SOE	
		cultural tie	n.s.	
		distance	+ for PE	
		exchange rate	n.s.	
		wage	- for SOE	
		bilateral exports (from China)	n.s.	
		bilateral imports (to China)	+ for both	

TABLE A.2. Destination countries

Destination country	N. of FDI	Share of total FDI (%)
Algeria	376	4.23
Angola	326	3.67
Benin	12	0.13
Botswana	102	1.15
Burkina Faso	28	0.31
Burundi	24	0.27
Cabo Verde	15	0.17
Cameroon	80	0.90
Central African Republic	6	0.07
Congo, Dem. Rep.	106	1.19
Congo, Rep.	34	0.38
Cote d'Ivoire	160	1.80
Egypt, Arab Rep.	902	10.14
Eswatini	17	0.19
Ethiopia	192	2.16
Gabon	45	0.51
Gambia, The	12	0.13
Ghana	400	4.50
Guinea	32	0.36
Kenya	576	6.48
Lesotho	9	0.10
Liberia	28	0.31
Madagascar	42	0.47
Malawi	23	0.26
Mali	30	0.33
Mauritania	29	0.32
Mauritius	95	1.07
Morocco	932	10.48
Mozambique	279	3.13
Namibia	122	1.37
Niger	10	0.11
Nigeria	595	6.69
Rwanda	119	1.32
Senegal	103	1.16
Sierra Leone	29	0.33
South Africa	1758	19.77
Sudan	61	0.69
Tanzania	256	2.88
Togo	20	0.22
Tunisia	406	4.57
Uganda	203	2.28
Zambia	203	2.28
Zimbabwe	95	1.07
Total	8,892	100.00

CHAPTER 3

Foreign direct investment, structural transformation and employment: evidence from Ghana

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In spite of the fast growth of a number of African economies, many of these still largely rely on low productivity agriculture. Foreign direct investments (FDI) could enable structural change by creating new employment opportunities in higher value-added sectors, leading the transition of mostly rural African economies to manufacturing- and service-based systems. Despite the centrality of the topic, very little of the literature on structural change focuses on African countries and even less is known about the role of FDI in bringing and shaping these transformations. Looking at the interesting case of Ghana, this paper aims at understanding whether FDI induce a shift in employment from low productivity agriculture towards higher value-added industries. We match data on greenfield FDI with individual-level information on workers employed in different sectors, also considering the differentiated impact that FDI may have on female and educated workers. Our results detect a positive effect on services across industries and categories of workers, while no significant impact emerges in manufacturing.

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1. Introduction

Structural change, the transition from rural to manufacturing- and service-based economic systems, has been a key driver of growth for several developed and developing economies (McMillan et al., 2014; Rodrik, 2016). In Africa, where many countries still heavily rely on low productivity agriculture (McMillan and Headey, 2014), the transition from mostly rural to more productive economic systems is a crucial condition for development and calls for a deep understanding of what are the factors that lead to structural change. At the same time, in several developing countries, including many African ones, this transition seems to be entailing a rapid overtaking of the industrialization stage to directly turn to services, which brought some economists to start discussing about the possible drawbacks of a "premature deindustrialization" (Rodrik, 2016).

In this framework, disentangling the role of foreign direct investment (FDI) is of central importance. FDI flows have increased dramatically in the last decades, especially in developing countries, where almost half of total inflows is currently located. In Africa, where they increased by almost 15 times from 1990 to 2019 (UNCTAD, 2021), FDI may be especially helpful in filling the lack of capital left by low levels of domestic investment and, establishing linkages with domestic actors, may bring productivity gains and movement of workers attracted by higher wages and employment opportunities in more productive sectors (Amendolagine et al., 2013; Amendolagine et al., 2017; Pineli et al., 2021; Fu et al., 2021).

However, labour-saving technologies brought in by foreign firms together with the crowding out of the worse-performing domestic competitors could cause a contraction of employment in the industries in which foreign MNEs enter, especially in the short run (Meyer and Sinani, 2009; Farole and Winkler, 2014). This could end up pulling workers back to agriculture or into low pay services, most often in informal settings. Female workers may be especially vulnerable, since they are often employed in less secure low skill jobs (Braunstein, 2006; Aguayo-Tellez, 2012); on the other hand, the increasing importance of services and the decreasing request for physically demanding labour may have a positive effect on female labour participation and wages (Rendall, 2013; Ngai and Petrongolo, 2017).

Despite the centrality of these issues for African countries, very little of the literature on structural change focuses on Africa and even less is known about the role of FDI in bringing and shaping these transformations. This paper contributes to the understanding

of the role of FDI on structural change and employment in African economies by focusing on the interesting case of a prominent African country, namely Ghana. In fact, in spite of its considerable economic performance, which led the country to be one of the major FDI destinations in Africa, the decline in agricultural employment started in the country in the 1990s was counterbalanced by an increase in services more than in manufacturing (Osei and Jedwab, 2016; Diao et al., 2019; Alagidede et al., 2013; Geiger et al., 2019), making Ghana the perfect ground to study the role of FDI in premature deindustrialization processes.

To understand whether FDI in medium or high value-added industries induce a shift in employment to those sectors, we match individual-level information on workers employed in different industries in Ghana obtained from the Ghana Living Standard Surveys with data on greenfield FDI from the *fDi market* database. Along with the sectoral analysis, we shed light on the differentiated impact that FDI may have on specific categories of workers, namely female and more educated workers, thus addressing the important but under-investigated issue, especially for African countries, of the inequality-reducing potential of FDI.

Our results suggest that FDI have an employment-enhancing effect in all the service industries in which they enter, especially strong for retail trade. This effect is amplified for more educated workers, indicating a reallocation of labour especially for this category, and interests also female workers, although in this case the effect is less precisely estimated.

The rest of the paper is structured as follows: Section 2 reports the evidence available on FDI and structural change, Section 3 discusses methodologies and data sources and provides some descriptive statistics, Section 4 reports the results of the analysis and the robustness checks, and Section 5 draws some conclusions.

2. Literature on FDI and structural change

Structural change refers to the increase in productivity deriving from the reallocation of labour across sectors and is identified as a key factor for economic growth and development (McMillan et al., 2014; De Vries et al., 2015; Rodrik, 2016). As detailed by McMillan et al. (2014), when labour reallocation is positively correlated with productivity levels, that is, when labour moves from lower to higher productive sectors, structural change will positively contribute to economy-wide productivity growth.

Manufacturing and services can both be associated to higher productivity, although both these sectors include different industries varying substantially in terms of value-added (Kucera and Jiang, 2019). Nonetheless, a substantial number of studies looks with concern to the patterns of premature deindustrialization followed by many developing and African countries and stress the importance of manufacturing for the growth of these economies (McMillan et al., 2014; McMillan and Headey, 2014; ACET, 2014; De Vries et al., 2015; Rodrik, 2016).

Few studies consider the contribution of FDI to structural transformation although, according to Rodrik (2016), globalization processes may be especially helpful in explaining structural transformation patterns in developing countries. In their literature review, Fu et al. (2021) show that FDI have a strong potential for structural change via knowledge transfer and upgrading, productivity and export growth and industrial diversification, and that their effect varies according to a number of characteristics of investing MNEs and destination countries, including their technological and cultural proximity. Mühlen and Escobar (2020) analyze the effect of FDI on structural transformation in Mexico and find a positive effect of FDI in manufacturing with a four-year time lag. The authors also find that FDI positively affect structural change through the reallocation of labour towards more productive sectors. On the contrary, Pineli (2022) finds a negative relationship between FDI and employment growth in high productivity industries in European post-communist economies. As he also finds productivity growth in these same industries to be positively associated to FDI, he suggests that investing MNEs introduce labour-saving technologies in host countries. Analyzing the role of FDI on the reallocation of labour towards more productive sectors is especially important for African countries, where jobless growth and low value-added are compelling problems (Léautier and Hanson, 2017; Aryeetey and Baah-Boateng, 2015; Baah-Boateng, 2015).

While some empirical analyses find evidence of a crowding out effect of FDI in manufacturing in African countries (Brautigam et al., 2013; Edwards and Jenkins, 2015), only few studies address the role of FDI in increasing the weight of productive sectors in host countries employment. Pineli et al. (2021) analyze the impact of FDI on the share of modern sector employment according to the development stage of developing host countries and find that structural change is brought by FDI in manufacturing in countries at initial stages of development, whereas the FDI-structural change nexus is stronger in the non-manufacturing modern sector for more advanced destinations. Mensah (2020) finds an

overall positive effect of FDI on the share of manufacturing employment in Sub-Saharan Africa (SSA), which negatively interacts with the host country level of human capital. However, the author includes FDI among a variety of determinants of structural change and does not address endogeneity issues affecting the FDI-employment relationship.

The aim of this paper is twofold. First, we investigate the effect of FDI on structural change in Africa looking at the reallocation of labour towards more value-added industries. In doing so, we focus on the intra-industry impact of FDI on employment shares in Ghana, which, beyond being a prominent FDI destination and one of the richest countries in Africa, is among the few African countries to collect data on employment and occupations consistently over time and at a high level of industrial disaggregation. Although previous evidence on intra-industry spillovers on domestic firms generally identifies a null or a negative impact of FDI (Havranek and Irsova, 2011; Fu et al., 2021; Crescenzi and Limodio, 2021), an analysis linking FDI to the movement of labour towards more productive industries at such a high level of disaggregation is currently missing and highly needed for African countries to go beyond the mere manufacturing/non-manufacturing dichotomy and understand which industries are worth to be prioritized when designing a strategy to attract FDI. At the same time, this kind of analysis also allows us to assess the role of FDI in the premature deindustrialization of African countries that, as discussed above, raises the concerns of some economists since manufacturing is generally associated with higher value-added and value chain upgrading. Again, Ghana is an emblematic case to analyse since the considerable economic growth experienced by the country in the last decades has not been accompanied by substantial movements of labour from agriculture to the industrial sector (Alagidede et al., 2013; Osei and Jedwab, 2016; Diao et al., 2019; Geiger et al., 2019).

A second aim of this paper is to contribute to shed light on the potential effect of FDI in terms of amplifying or reducing inequalities, by investigating the differentiated impacts on female and most educated workers. If MNEs introduce new technologies and more productive processes in host countries, they will also need better skilled labour force. Therefore, FDI-induced employment is likely to benefit this category of workers in the first place, sometimes at the expense of the least educated (Lipsey and Sjöholm, 2004; Slaughter, 2004; Hijzen et al., 2013; Hale and Xu, 2016; Nguyen et al., 2020; Narula and Van der Straaten, 2020; Ibarra-Olivo and Rodríguez-Pose, 2022). According to Narula and Van der Straaten (2020), skill-biased technology transfer in developing countries is

related to the deindustrialization of efficiency-seeking investments, which demands increasingly high shares of administrative jobs requiring a better skilled labour force. Since many among the least educated workers are female, a number of studies have pointed at the so-called "defeminisation" of FDI (Braunstein, 2006; Aguayo-Tellez, 2012), due to the declining demand in least educated labour. On the other hand, the increasing importance of services decreases the request for physically demanding labour and may therefore have a positive effect on female labour participation and wages (Rendall, 2013; Ngai and Petrongolo, 2017). The relationship between FDI and female employment has not been widely investigated and the scant results available are not univocal (Braunstein, 2006; Vacaflores, 2011; Aguayo-Tellez, 2012; Kodama et al., 2018). Braunstein (2006)'s review shows that FDI significantly increase female employment in semi-industrialized countries, where FDI are mainly in labour-intensive and export-oriented industries. Conversely, as the industrial structure upgrades, women appear to be substituted by more skilled men and relegated to subcontracted and often informal work when firms are forced to cut costs to avoid being crowded out from the market. Exploiting the individual-level information available on workers in Ghana, which includes indication of the gender and the education level, our analysis is going to shed light on whether and how FDI differently affect labour and structural change outcomes for female and more educated workers.

In the next section, we provide more details on the data, we present the model and outline our empirical strategy, which is discussed in detail in the Appendix, before providing some descriptive statistics and moving to the discussion of results.

3. Empirical Application

3.1. Model and variables

To estimate the effect of FDI on employment and structural change in Ghana, we rely on two main sources of data. We derive our dependent variable from the 2005/06, 2012/13 and 2016/17 Ghana Living Standards Surveys (GLSS 5, GLSS 6 and GLSS 7)[1]. These surveys provide individual-level information on workers employed in different industries in Ghana, reporting the corresponding ISIC code. We retrieved information on the main occupation carried on in the seven days before the interview and aggregated it at the ISIC industry level using the weights provided in the survey. We built our dependent variable as the difference between the industry shares of employment at time t and $t-1$ in the

[1]The datasets are available at the Ghana Statistical Service website: urlhttps://www2.statsghana.gov.gh/nada/index.php/catalog/central

three years of survey (2006, 2013, 2017), ending up with two different time periods.[2] We use the change in the industry shares of employment, and not in the absolute number of employees in each industry, since we believe that this is a better measure of the weight of the industry and, ultimately, of structural change.[3]

Since the GLSS do not provide information on firm ownership, we rely on the Financial Times *fDi markets* database to get investment-level information on greenfield FDI projects in Ghana. Since *fDi markets* does not provide the ISIC nor any code for which a conversion table is available, we had to carefully match the information on activities, sectors and sub-sectors of investment available in the dataset with the ISIC codes in the GLSS. We provide a detailed explanation of the database construction, including the harmonization of the information contained in the different datasets, in the Data appendix. Our resulting database includes 72 sectors, largely corresponding to the "division" column of the ISIC Rev.4. The list of codes with the corresponding description is reported in Table A.1 in the Appendix.

The estimated equation for our model is the following:

$$\Delta Emp_{ist} = \alpha + \beta \Delta FDI_{ist} + \gamma \Delta firms_{ist} + \eta_s + \delta_t + \mu_{st} + \epsilon_{ist} \quad (1)$$

$$\text{where } t\text{=2006, 2013, 2017}$$

ΔEmp_{ist} is the difference between the share of employment in industry i, macrosector s, at time t and $t-1$. The measure includes all the respondents to the surveys independently of the number of hours worked. As alternative dependent variables, we built $\Delta Emp20_{ist}$ and $\Delta Emp40_{ist}$ to include only the individuals who declared to work for at least 20 or 40 hours per week. To measure the impact of FDI specifically on female and on more educated workforce, we created the same three variables considering, respectively, only female workers and workers with at least secondary education. Table 1 provides a description of all the variables used in the analysis.

ΔFDI_{ist} is the difference between the cumulated sum of FDI projects in Ghana in industry i, macrosector s, at time t and $t-1$, 2003 being the first year available in the *fDi markets* database. The total number of projects is 438. We are aware of

[2]In each wave, the interviews lasted several months at the turn of two different years. We associated all the responses to the second years of survey, i.e. 2006, 2013, 2017, since the majority of the interviews were realized in those months.

[3]The GLSS also reports information on wages. Unfortunately, this information is unavailable for a substantial fraction of the sample. Furthermore, its use is hampered by the different time units (e.g hourly, daily, weekly) employed within the same survey.

TABLE 1. Variable description

Code	Description	Data source
ΔEmp_{ist}	Difference between the share of workers in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp_f}_{ist}$	Difference between the share of female workers in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp_edu}_{ist}$	Difference between the share of educated workers in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp_f_edu}_{ist}$	Difference between the share of female educated workers in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
ΔEmp20_{ist}	Difference between the share of workers working at least 20 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp20_f}_{ist}$	Difference between the share of female workers working at least 20 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp20_edu}_{ist}$	Difference between the share of educated workers working at least 20 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp20_f_edu}_{ist}$	Difference between the share of female educated workers working at least 20 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
ΔEmp40_{ist}	Difference between the share of workers working at least 40 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp40_f}_{ist}$	Difference between the share of female workers working at least 40 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp40_edu}_{ist}$	Difference between the share of educated workers working at least 40 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
$\Delta\text{Emp40_f_edu}_{ist}$	Difference between the share of female educated workers working at least 40 hrs/week in industry i, macrosector s, at time t and $t-1$ (%)	GLSS 5, 6, 7
ΔFDI_{ist}	Difference between the cumulated sum of greenfield FDI in Ghana in industry i, macrosector s, at time t and $t-1$	*fDi markets*
$\Delta\text{FDI_west}_{ist}$	Difference between the cumulated sum of greenfield FDI in West Africa (excluding Ghana) in industry i, macrosector s, at time t and $t-1$	*fDi markets*
$\Delta\text{tariff_west}_{ist}$	Difference between the import weighted tariff in West Africa (excluding Ghana) in industry i, macrosector s, at time t and $t-1$ (%)	WITS
Δfirms_{ist}	Difference between the total number of firms in Ghana in industry i, macrosector s, at time t and $t-1$ (%)	Orbis

the potential endogeneity characterizing the relationship between our dependent variable and our regressor of interest. In particular, some concerns may exist about simultaneous causality since substantial increases in the employment shares of a given industry may derive from FDI flows in the same industry, but at the same time FDI can be attracted by the employment growth in that industry. To assess the causal effect of FDI on our dependent variable, we rely on an IV estimation strategy. We exploit the exogenous variation in FDI inflows in Ghana generated by changes of two different instruments, which affect the dependent variable only through the endogenous regressor. The first one is the number of FDI in the whole West African region, excluding Ghana, built exactly

as our regressor of interest. Regional FDI trends are likely to affect industry employment shares in Ghana only through FDI inflows and have been used as instruments for FDI by the empirical industrial organization literature. The other instrument uses the import tariffs in the West African region, excluding Ghana, disaggregated at the same industry level as FDI. Tariffs and taxes have been used as instruments for FDI (see for example Crescenzi and Limodio, 2021) since they can directly affect trade and investment – high barriers to imports can induce tariff-jumping FDI – whereas an effect on employment through other channels is unlikely.

To account for industry dynamics, we include information on the total number of firms operating in Ghana in the different industries and years considered. The data, retrieved from the Bureau van Dijk's Orbis database, include all firms regardless of their ownership, and we built the variable $\Delta firms_{ist}$ as the difference between the share of firms in industry i, macrosector s, at time t and $t-1$.[4] Furthermore, we include fixed effects at the macrosector (η_s), year (δ_t) and macrosector-year (μ_{st}) level to further catch changes that possibly occurred over the considered period at the macroeconomic level and that may affect both FDI inflows and the performance of domestic firms.[5]

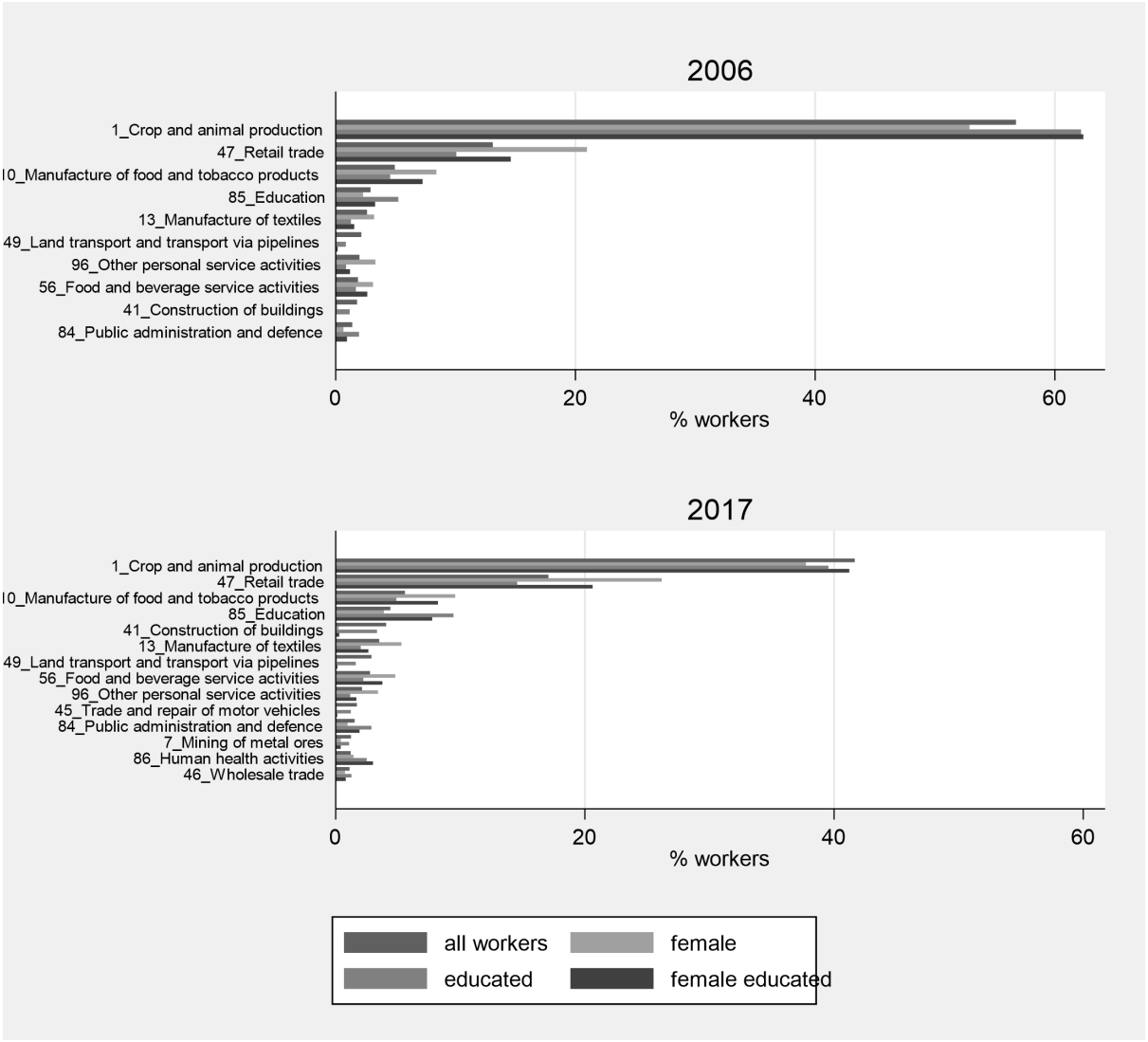
3.2. Descriptive statistics

Figure 1 shows the distribution of Ghanaian workers across sectors at the beginning and at the end of the period for all the workers in the sample, for female and more educated workers. Few industries account for substantial shares of employment in Ghana, whereas the majority employ less than 1% of workers. For better readability, we do not include these minor industries in the figure. The agricultural sector still absorbs the great majority of workers, although its share has considerably decreased over the years, passing from 57% in 2005 to 42% in 2017. The greatest decrease is recorded for educated workers: while 62% of individuals with at least secondary education was working in agriculture in 2006, this percentage was less than 40% twelve years later. The second industry in terms of employment is retail trade, absorbing 17% of the workforce in 2017, 4 percentage points more than in 2013.

[4] As explained in the Data Appendix, this variable presents some limitations, i.e. it includes formally registered firms only; it does not allow to account for firm mortality; most firms' last update is dated 2014.

[5] We use macrosectors following the 12-sector classification of the Groningen Growth and Development Centre (GGDC). See Table A.1 in the Appendix for the list and the composition of these macrosectors.

FIGURE 1. Distribution of employment across ISIC sectors (main sectors)



Source: own elaboration on GLSS data

Employment shares increased in retail trade for all categories of workers and are especially high for female ones, more than one quarter of which was employed in this industry in 2017. Instead, fewer individuals with at least secondary education work in retail trade. This is unsurprising considering that retail trade entails high levels of informality in African countries and that most street vendors and traders are uneducated women, although also 20% of educated female workers are employed in this industry. Food and tobacco and textiles are the industries employing the highest shares of workers among manufacturing activities, and they did not register substantial increases over the period and end up attracting around 5% and 3% of workers in 2017, respectively. Again, the share of female workers in these industries is higher compared to the overall share. This

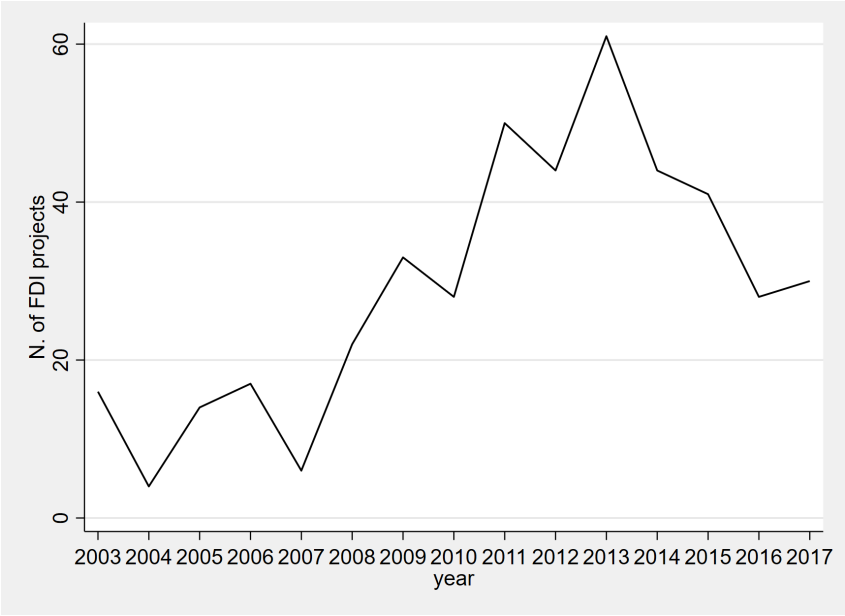
is true for both more and less educated women in the case of food and tobacco products, whereas educated workers are comparatively less present in textiles. Compared to the overall share, slightly fewer women are employed in education, although their share is higher than average when only more educated women are considered, and the employment share of educated female workers in education activities has more than doubled over the years.

Turning to our regressor of interest, greenfield FDI directed to Ghana have increased significantly until 2013, when they reached the peak of 61 projects before dropping considerably until the end of the period (see Figure 2). FDI in Ghana are quite concentrated in terms of investment activity: one third of the 438 projects included in our sample is in Business services, followed by Manufacturing and Sales, Marketing & Support, with around 19% of the projects each. The picture is more heterogeneous in terms of origin countries. More than half of the projects come either from other major African FDI destinations, i.e. Nigeria (14.4 %) and South Africa (11.9 %), or from Western countries (United States and UK, with 12.3 and 11.4 %, respectively). Emerging non-African investors such as India and China are, respectively, in fifth and eighth position, although their presence in the country has increased in more recent years. The post-2013 drop in FDI appears to have characterized all the main activities of investment, although 2017 shows an upward trend for FDI in Manufacturing and Sales, Marketing & Support (see Figure 3).

Figure 4 shows the distribution of FDI across industries (we include only the top 20 ones for sake of intelligibility). The vertical axis reports the cumulated sum of FDI projects in 2006 and 2017, starting from 2003 that is the first available year in *fDi Markets* database. Almost one quarter of the greenfield FDI occurs in financial services, the following two industries in terms of FDI number being retail trade and telecommunications. Within manufacturing, the most attractive industries are related to the processing of food and tobacco products and basic metals, which is unsurprising given the large presence of natural resources in the country. Only few investments targeted Ghana up to 2006, the majority of which being in the mining of metal ores.

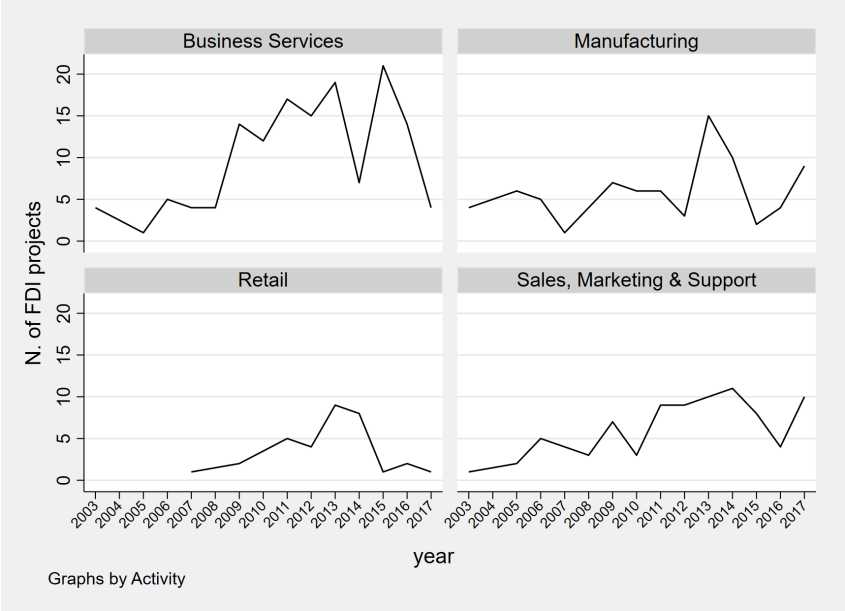
The situation is quite different looking at the full set of firms active in Ghana, including both domestic and foreign ones, as Fig. 5. More than a quarter of the sample indicate retail trade as their main activity across the whole period, while financial service activities,

FIGURE 2. Greenfield FDI in Ghana, 2003-2017 inflows



Source: own elaboration on *fDi markets* data

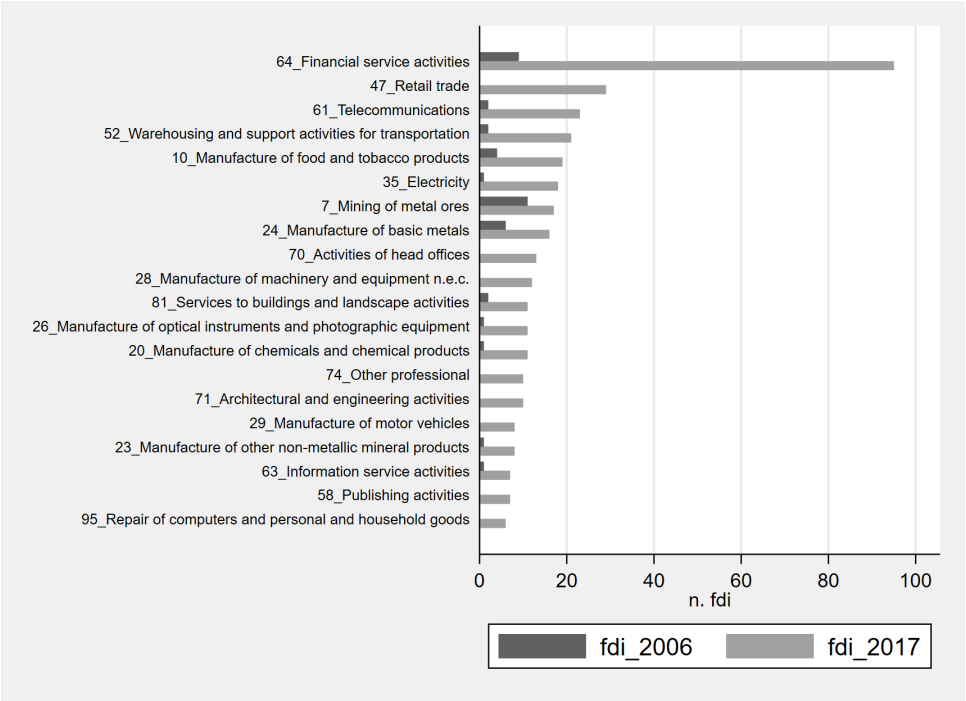
FIGURE 3. Greenfield FDI in Ghana, 2003-2017 inflows - top 4 industries



Source: own elaboration on *fDi markets* data

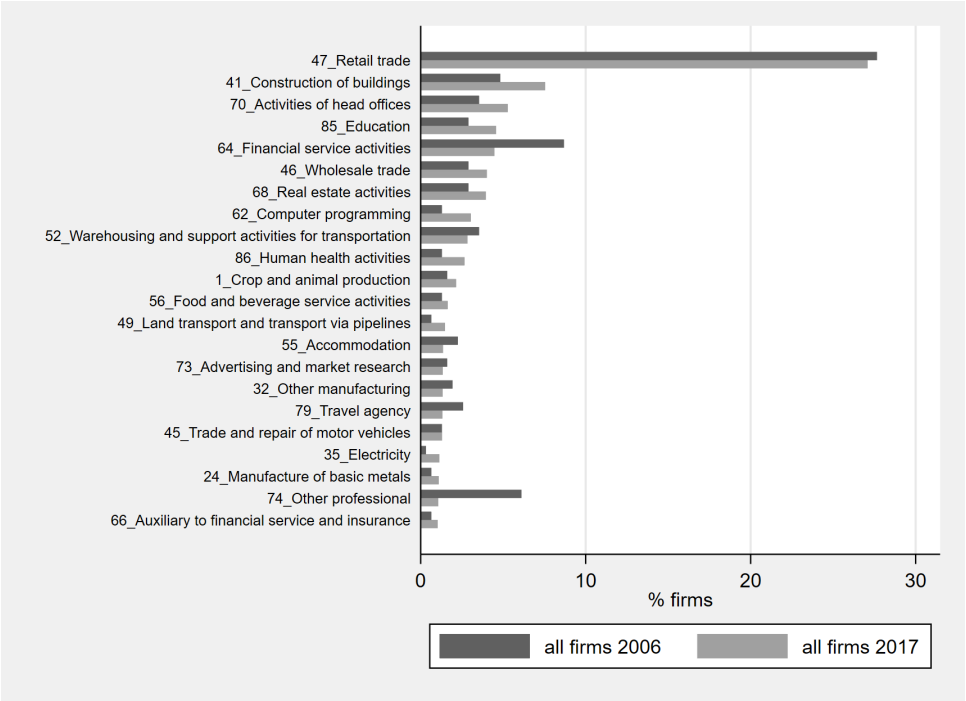
which were in second position in 2006, backed down to the fourth position, despite the large inflow of foreign firms in the industry.

FIGURE 4. Distribution of FDI across ISIC sectors (2006 and 2017 stock)



Source: own elaboration on *fDi markets* data

FIGURE 5. Distribution of firms across ISIC sectors (2006 and 2017 %)



Source: own elaboration on *fDi markets* data

TABLE 2. Summary Statistics

Variable	Mean	Std.Dev.	Min	p25	p50	p75	Max
ΔEmp_{ist}	-0.0005	1.031	-8.191	-0.030	0.010	0.100	3.537
ΔEmp_f_{ist}	-0.0017	1.182	-8.117	-0.020	0.000	0.040	4.994
ΔEmp_edu_{ist}	-0.0008	1.525	-14.923	-0.040	0.020	0.140	4.366
$\Delta Emp_f_edu_{ist}$	-0.0018	1.530	-14.022	-0.020	0.000	0.060	5.827
$\Delta Emp20_{ist}$	-0.0006	1.311	-12.274	-0.040	0.010	0.100	4.107
$\Delta Emp20_f_{ist}$	-0.0012	1.442	-11.692	-0.020	0.000	0.040	5.803
$\Delta Emp20_edu_{ist}$	0.0002	1.738	-16.676	-0.050	0.020	0.170	4.332
$\Delta Emp20_f_edu_{ist}$	0.0002	1.773	-15.778	-0.030	0.000	0.080	5.607
$\Delta Emp20_{ist}$	-0.0003	1.237	-9.542	-0.080	0.010	0.140	2.958
$\Delta Emp20_f_{ist}$	-0.0016	1.296	-10.784	-0.040	0.000	0.050	5.351
$\Delta Emp20_edu_{ist}$	0.0006	1.724	-14.023	-0.090	0.040	0.230	4.254
$\Delta Emp20_f_edu_{ist}$	0.0003	1.727	-14.341	-0.060	0.000	0.110	4.323
ΔFDI_{ist}	2.6875	5.838	0	0	1	3	51
ΔFDI_west_{ist}	7.2431	11.924	0	0	3	9.500	88
$\Delta tariff_west_{ist}$	0.1254	1.199	-3.800	0.000	0.000	0.000	6.798
$\Delta firms_{ist}$	0.0000	0.760	-4.926	-0.110	0.030	0.210	3.536

Note: The number of observations for all variables is 144. This number corresponds to 72 (the number of sectors) times 2 (the time periods).

Table 2 reports the summary statistics for all the variables included in our analysis. All our variables have 144 observations, given by 72 sectors for 2 years. Our alternative dependent variables display a wide range, as we also know from Figure 1. The number of FDI displays high variability too, with an increase of 51 investments in financial services coexisting with the very small or null increases of the majority of the other industries. Specifically, 21 out of 72 industries did not record any change in FDI over the entire period.

4. Results

In Table 3, our baseline results show the average effect of FDI on the employment share for all industries. Column 1 shows the estimate for the whole sample of workers, while in Column 2 and 3, the dependent variable is computed using only the individuals who declared to work for more than 20 and more than 40 hours per week, respectively. The F statistics of the relevance of the instruments obtained from the first stage and the Hansen J p-values are reported at the bottom of the table and show that our instruments

are highly relevant and exogenous. The coefficient of FDI is positive across the three specifications, although in no case it gets to be statistically significant.

A similar picture emerges when looking at female employment in Columns 4-6. In all these cases, the number of hours worked does not seem to be relevant in influencing the impact of FDI. Quite interestingly, the situation changes when looking at more educated workers in Columns 7-9 (all educated workers) and 11-13 (female educated workers). FDI show to significantly increase the employment of educated workers in the industries in which they enter, and this effect increases with the number of hours worked. Whereas a positive effect is recorded for both the whole sample of educated workers and the women subsample, the effect appears to be larger for the female educated category. Our estimates suggest that approximately 25 to 32 new investments bring a 1 percentage point increase in educated workers employment, 22 to 29 for female ones. On the contrary, $\Delta firms$, which controls for industry dynamics by measuring the change in the share of firms operating in the country in each industry, does not show to have any influence on employment shares conditional on the large set of fixed effects that we include. The sluggish response of our employment measures to changes in $\Delta firms$ may be attributable to the fact that the former includes a high share of informal workers, while $\Delta firms$ includes only formally registered firms, whose different features may hinder the impact on total employment. We restrict our analysis to formal paid employees in a robustness check in Section 4.1.

TABLE 3. Baseline results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All workers			Female			Educated			Educated female		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.017	0.022	0.021	0.017	0.024	0.017	0.031*	0.036**	0.039**	0.034	0.041*	0.045**
	(0.013)	(0.016)	(0.013)	(0.019)	(0.023)	(0.015)	(0.016)	(0.018)	(0.017)	(0.021)	(0.024)	(0.022)
$\Delta firms_{ist}$	0.028	0.070	-0.023	0.016	0.033	-0.118	0.126	0.110	0.009	0.106	0.084	-0.061
	(0.068)	(0.080)	(0.068)	(0.094)	(0.103)	(0.083)	(0.098)	(0.091)	(0.080)	(0.111)	(0.103)	(0.097)
N	144	144	144	144	144	144	144	144	144	144	144	144
F stat	46.798	46.798	46.798	46.798	46.798	46.798	46.798	46.798	46.798	46.798	46.798	46.798
J stat	0.500	0.565	0.597	0.350	0.374	0.343	0.745	0.775	0.984	0.478	0.522	0.568

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

Results from a disaggregated analysis at the sectoral level show quite a variegated picture (Tables 4 to 7).

TABLE 4. Sector heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.022*	0.028*	0.028**	-0.007	-0.005	0.008	0.026*	0.033*	0.030**
	(0.013)	(0.016)	(0.013)	(0.015)	(0.021)	(0.025)	(0.015)	(0.019)	(0.015)
$\Delta firms_{ist}$	0.063	0.074	0.031	0.413**	0.373**	0.313***	0.053	0.072	0.022
	(0.071)	(0.082)	(0.068)	(0.171)	(0.146)	(0.121)	(0.077)	(0.091)	(0.073)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.289	0.306	0.294	0.243	0.254	0.245	0.328	0.491	0.770

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

TABLE 5. Sector heterogeneity - female workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.022	0.030	0.025*	-0.024	-0.021	0.003	0.031	0.040	0.030*
	(0.018)	(0.022)	(0.014)	(0.021)	(0.030)	(0.034)	(0.022)	(0.027)	(0.017)
$\Delta firms_{ist}$	0.053	0.048	-0.026	0.597	0.545	0.450	0.038	0.040	-0.049
	(0.098)	(0.106)	(0.072)	(0.376)	(0.350)	(0.291)	(0.102)	(0.115)	(0.065)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.259	0.265	0.235	0.234	0.237	0.216	0.404	0.571	0.957

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

Table 4 refers to all workers and reports the estimates obtained considering all sectors except agriculture (Columns 1-3), manufacturing only (Columns 4-6), and services only (Columns 7-9).[6] Within each category, the first column refers to the full sample of workers,

[6]Specifically, Columns 1-3 include all our adjusted ISIC codes except from 1 and 2, Columns 4-6 codes from 10 to 33, Columns 7-9 codes equal or greater than 45. The average of these coefficients does not coincide with the ones in Table 3, since not all industries fall into the manufacturing or service sectors. Since we could not run separate regressions for secondary industries other than manufacturing, namely construction, mining and quarrying, and electricity, gas and water supply, due to sample size limitations, we have re-estimated the model including these sectors within manufacturing. We have also

TABLE 6. Sector heterogeneity - educated workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.038**	0.044***	0.049***	-0.018	-0.011	-0.007	0.046**	0.053**	0.056***
	(0.016)	(0.017)	(0.015)	(0.013)	(0.016)	(0.020)	(0.019)	(0.021)	(0.018)
$\Delta firms_{ist}$	0.122	0.117	0.078	0.365**	0.316**	0.241***	0.137	0.137	0.100
	(0.097)	(0.093)	(0.079)	(0.145)	(0.136)	(0.088)	(0.114)	(0.111)	(0.096)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.313	0.325	0.342	0.222	0.230	0.211	0.260	0.261	0.311

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
All the regressions include macrosector, year and macrosector-year fixed effects

TABLE 7. Sector heterogeneity - female educated workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.040*	0.049**	0.056***	-0.017	-0.009	0.015	0.051**	0.061**	0.065**
	(0.021)	(0.024)	(0.021)	(0.018)	(0.022)	(0.026)	(0.026)	(0.030)	(0.026)
$\Delta firms_{ist}$	0.104	0.101	0.044	0.422	0.405	0.303	0.115	0.116	0.054
	(0.112)	(0.107)	(0.080)	(0.277)	(0.290)	(0.221)	(0.128)	(0.122)	(0.090)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.294	0.317	0.315	0.244	0.263	0.257	0.321	0.313	0.408

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
All the regressions include macrosector, year and macrosector-year fixed effects

while the other two–as before–reduce the sample to individuals working more than 20 and 40 hours per week, respectively. Although we are not able to isolate the effect of FDI in the agricultural sector as it includes only two industries resulting in a too limited number of observations, Columns 1-3 show that removing agriculture from the sample substantially increases the magnitude of the coefficients across all the specifications and especially for individuals working more hours per week. This is probably due to the very low number of FDI in agriculture, which, instead, absorbs great part of the labour force throughout the years, as previously shown in Fig. 1. The insignificant average effects found in Table 3 for all workers seem to be therefore driven by the agricultural sector. Columns 4 to 9 show that the positive effect found once removing agriculture is driven by FDI in services, showing similar coefficients as the baseline results and increasing in

re-estimated the model excluding the industries that are mainly public services (codes 84 and above). In both cases, results remain virtually unaffected and are available upon request.

significance along with the number of hours worked. On the contrary, no effect emerges for manufacturing employment shares. This might be partly due to the very small number of FDI in most manufacturing industries as shown in Figure 4.

The coefficient of $\Delta firms$ is significantly positive only for manufacturing, thereby suggesting that industry dynamics and not foreign investments affect manufacturing employment, while employment in services appear more dependent on the localization of foreign MNEs.

Our results do not feed the concerns about a "defeminisation" of work (Braunstein, 2006; Aguayo-Tellez, 2012), since also female employment in services is positively affected by FDI in these industries, although the effect is less precisely estimated than the one detected for the whole sample (Table 5).

Consistently with the aggregate findings, educated workers are those who gain more from FDI in services (Tables 6 and 7). Interestingly, this is even more true for female ones: around 20 foreign investments lead to a 1 percentage point increase in employment in this sector for educated workers (Table 6, Columns 7-9), 15 for female educated ones (Table 7, Columns 7-9). This compelling result shows that, in line with previous literature, education can be a tool to match the labour demand of foreign firms, higher skill demanding than domestic firms.

Instead, FDI in manufacturing do not appear to positively affect employment in these industries neither for more educated workers (Table 6 and Table 7, Columns 4-6). We interpret this result pointing at the low performance and high informality of domestic firms in Ghana that make foreign MNEs in manufacturing primarily compete with better performing domestic firms, which are those employing the highest shares of educated workers and the most likely to be crowded out (Tables 10 and 11 in relation to formal employment confirm this interpretation and are reported in the next section). This is also in line with the analysis from Baah-Boateng (2015) showing that unemployment in Ghana increases with the education level due to the mismatch between educated workers' skills and firms' requirements.

4.1. Robustness checks

In this section, we assess the stability of our results using two different robustness checks.

We first check the stability of our parameter of interest, ΔFDI, by removing one code at a time from our sample of manufacturing and service industries. To this end, we plot

in Figure 6 the estimated coefficients for individuals working at least 40 hours per week respectively in manufacturing and services (analogous to Columns 5 and 8 of Table 4).[7] The red lines indicate the value of the coefficients when no industry is excluded. For a matter of space, we report only the codes in the graph, while the sector descriptions are reported in Table A.1.

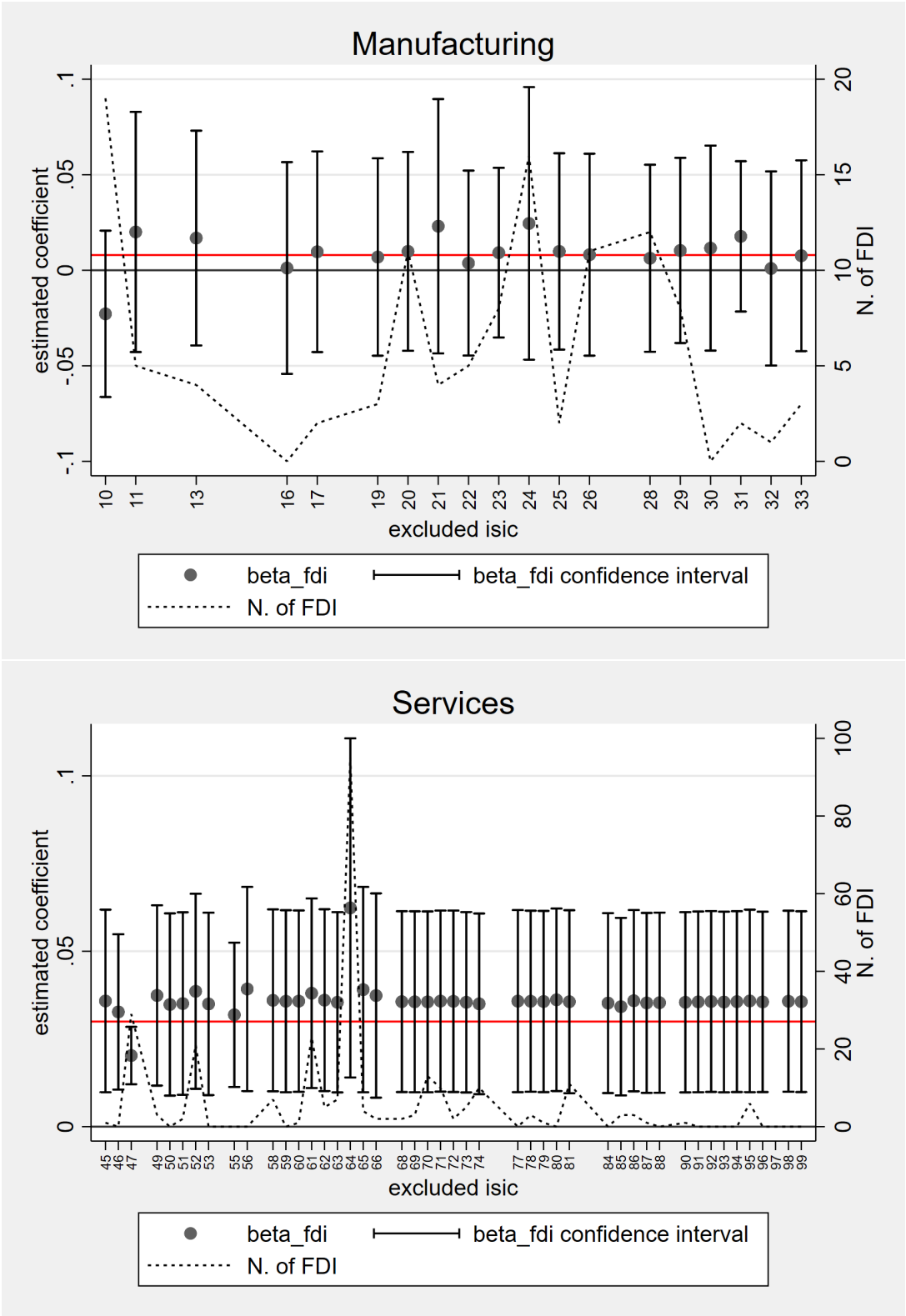
Both the upper and the lower graphs show that results are stable across specifications, although some heterogeneity emerges especially in relation to services and allow for some interesting considerations. In fact, the bottom graph shows that coefficients for services are largely stable across specifications except for two industries moving in opposite directions. The effect of FDI decreases markedly when removing retail trade activities (ISIC code 47), indicating that these play a significant role in driving the results. On the opposite side, the large amount of FDI in financial services (ISIC code 64), which is the main industry of investment attracting more than 20% of FDI in our sample, is not associated with an equally large share of employment: removing this industry drives the estimated coefficient up. Yet, the coefficients remain significantly different from zero across all the specifications. Many industries, especially those on the right side of the graph, show very little variability in the coefficients. This is likely due to the very small number of FDI in these sectors, which, from 84 to 99, are related to the public sector and receive very few foreign investments.

The upper graph shows that the coefficient of ΔFDI turns negative, although still not significant, when excluding FDI in food processing from manufacturing, among which it attracts the greatest number of FDI, as indicated by the dotted line. This would suggest that possible negative spillovers from FDI are lower in this industry.

As a second robustness check, we restrict our analysis to formal employment. Since the questions that could identify formal workers in the GLSS have very low rates of response, we remove self- and presumably precarious employment from the sample and include only paid employees in the analysis, similar to what done by Aryeetey, Baah-Boateng et al. (2007) and Baah-Boateng (2015). The distribution of paid employees across ISIC sectors is shown in Figure A.1 in the Appendix. Tables 8 and 9 largely confirm our previous findings. The main difference in results relates to female educated workers in manufacturing, who are negatively affected by FDI (Table 11). A negative coefficient for

[7] We have also conducted the analysis looking at the different categories of workers (female, educated and female educated) as well as different number of hours worked. Results are very similar to the ones we show here and are available upon request.

FIGURE 6. Robustness: Coefficient of FDI for manufacturing and services when removing one ISIC at a time (Y=ΔEmp40)



manufacturing is also there for the overall sample of educated workers, although it does not get to be statistically significant. As mentioned above, our interpretation of this result

is that foreign MNEs entering the manufacturing industries in Ghana primarily compete with, and crowd out, better performing, formally operating, domestic firms, causing the release of more educated employees and female ones in the first place. As for the other industry categories, results are similar to those in Table 4 except that the coefficients for the no-agriculture and the service samples are much more significant (Table 8). Positive effects emerge for all categories of workers in services, including women, and especially the most educated (Tables 9, 10 and 11)[8]. The industry dynamics seem to follow the same pattern found in the main results, with the coefficients of $\Delta firms$ being positive and significant only for manufacturing and, looking at the different categories of workers, only for the more educated. In this case, however, the same coefficients turn negative and weakly significant for female workers in services. Along with the positive effect found for FDI in this sector, this result seems to suggest that the transition to formal work for women in Ghana is more likely to take place through the entry of foreign MNEs.

Table 8. Paid employees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI$_{ist}$	0.036***	0.035***	0.042***	0.003	0.013	0.016	0.036***	0.035***	0.040***
	(0.008)	(0.007)	(0.008)	(0.019)	(0.021)	(0.024)	(0.008)	(0.007)	(0.008)
Δfirms$_{ist}$	0.047	0.039	0.021	0.288**	0.270**	0.261*	0.051	0.036	0.016
	(0.065)	(0.067)	(0.077)	(0.118)	(0.136)	(0.153)	(0.074)	(0.073)	(0.084)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.688	0.740	0.620	0.276	0.265	0.867	0.764	0.666	0.730

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

[8]We have conducted the analysis both including and excluding public services (ISIC codes from 84) and results remain unvaried.

TABLE 9. Paid employees - female workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.023*	0.025**	0.040***	-0.024	-0.003	0.011	0.028**	0.027**	0.038**
	(0.012)	(0.012)	(0.014)	(0.016)	(0.014)	(0.024)	(0.013)	(0.014)	(0.016)
$\Delta firms_{ist}$	-0.139	-0.147*	-0.175**	0.016	-0.017	-0.117	-0.131	-0.152*	-0.171*
	(0.087)	(0.081)	(0.080)	(0.068)	(0.065)	(0.187)	(0.097)	(0.091)	(0.088)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.287	0.310	0.150	0.207	0.350	0.238	0.740	0.674	0.669

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

TABLE 10. Paid employees - educated workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.039***	0.039***	0.052***	-0.026	-0.020	-0.036	0.047***	0.047***	0.062***
	(0.009)	(0.009)	(0.010)	(0.024)	(0.023)	(0.027)	(0.008)	(0.008)	(0.009)
$\Delta firms_{ist}$	0.042	0.016	0.035	0.330***	0.305**	0.336**	0.055	0.026	0.058
	(0.062)	(0.054)	(0.068)	(0.108)	(0.120)	(0.145)	(0.071)	(0.061)	(0.079)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.938	0.775	0.288	0.089	0.094	0.588	0.294	0.193	0.237

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

TABLE 11. Paid employees - female educated workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No agriculture			Manufacturing			Services		
	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40	ΔEmp	ΔEmp20	ΔEmp40
ΔFDI_{ist}	0.039***	0.039***	0.063***	-0.051**	-0.035**	-0.051**	0.050***	0.049***	0.075***
	(0.014)	(0.015)	(0.018)	(0.022)	(0.016)	(0.024)	(0.013)	(0.014)	(0.019)
$\Delta firms_{ist}$	-0.069	-0.078	-0.037	0.123	0.069	0.187	-0.043	-0.058	-0.000
	(0.073)	(0.071)	(0.094)	(0.107)	(0.085)	(0.149)	(0.079)	(0.076)	(0.107)
N	140	140	140	38	38	38	90	90	90
F stat	47.159	47.159	47.159	32.212	32.212	32.212	103.393	103.393	103.393
J stat	0.109	0.052	0.013	0.962	0.301	0.325	0.237	0.164	0.169

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All the regressions include macrosector, year and macrosector-year fixed effects

5. Concluding remarks

In this paper, we aimed at investigating the role of FDI on structural change and employment in developing economies by focusing on the interesting case of Ghana. Ghana has been among the fastest growing countries in Africa and a major FDI destination.

As other African countries, to make this growth sustainable Ghana needs to undertake a stable path of structural change by shifting its economy, largely based on agriculture, towards higher value-added activities. Foreign investors may be key allies in this transition, but their impact is not forgone since they may end up crowding out domestic competitors and causing important displacements of workers back into low-paid informal activities.

Using a much higher level of industry disaggregation compared to previous analyses, this paper matches individual-level information on workers with data on greenfield FDI projects in different industries in Ghana and shows that FDI cause an increase in the employment shares of the service industries in which they enter, whereas no effect is detected for manufacturing. Quite interestingly, this effect is especially strong for educated workers, particularly women. The increase in services interests all the industries, although it is stronger for retail trade, which is the second sector of investment in the country. The relationship between FDI and the share of employment appears instead null across all manufacturing industries.

An analysis linking FDI to the movement of labour towards more productive industries at such a high level of disaggregation was previously missing. Our results constitute an important addition to the literature, since they help shed more light on the actual employment effects of FDI in African countries, which should be taken into account when designing development strategies that include FDI. Furthermore, our findings contribute to the debate around the premature deindustrialization of African economies (Rodrik, 2016), suggesting that FDI play a role in this phenomenon. In turn, the implications of this strongly depend on the specific industries that are interested by the relative growth of employment.

The expansion of retail trade may have a positive impact especially on female workers that, in Ghana as in several African countries, are prevalently employed in this industry, although often informally (Baah-Boateng and Vanek, 2020). While the effect on the overall sample of female workers in services is quite weak, we detect an especially strong effect on educated women and, to a slightly lesser extent, on educated workers in general. In this sense, our results support some of the previous literature looking at the increasing global importance of less physically demanding activities as an opportunity to improve female labour participation (Rendall, 2013; Ngai and Petrongolo, 2017), conditioning this effect on a certain level of education. The positive effect is even more evident when narrowing the focus to formal employment only, for all categories of workers in services

and educated women in the first place. Our findings are also in line with previous literature assessing the role of foreign MNEs in introducing skill-biased technological change in developing host countries (Lipsey and Sjöholm, 2004; Narula and Van der Straaten, 2020) and point at the importance of human capital, especially after automation made low-skilled labour less important.

While the stronger effect on retail trade among the service industries does not go in the direction of a key role of FDI in the structural transformation of Ghana, our results show that FDI increase the employment shares also in higher value-added industries such as those related to finance and ICT. This is consistent with what observed by McMillan et al. (2014), showing that, after experiencing a shift towards low productivity and highly informal industries in the 1990s, structural change in Africa led to productivity growth since 2000. Besides being more skill-intensive, ICT- and finance-related services are also highly tradable. Considering that one-half of global trade is now in services (Africa Growth Initiative, 2018), this carries a high development potential for African countries in terms of global value chain integration and upgrading and may counterbalance the weak growth of manufacturing in these countries (Africa Growth Initiative, 2018; Eckert et al., 2019). As pointed out in a report from the Africa Growth Initiative (2018), ICT-based services present some of the desirable characteristics of manufacturing, i.e. tradability, high value-added per worker and the capacity to absorb large numbers of medium-skilled workers.

The absence of any effect for manufacturing is not surprising considering the very small number of greenfield FDI in most of these industries, as shown in Figure 4. Differently from what experienced by East Asian countries, whose growth was largely manufacturing-led, most sub-Saharan African countries struggle to attract FDI in manufacturing, which may have several explanations. First, as already mentioned, the introduction of labour-saving technologies associated to automation, robotics and Industry 4.0 reduces the importance of low-cost labour, which was a key comparative advantage for many African countries. As several analyses show, foreign investors in manufacturing in developing countries are instead increasingly attracted by an adequately educated and still relatively cheap workforce (Jaumotte, 2004; Asiedu, 2006; Rodriguez-Pose and Cols, 2017; Benfratello et al., 2023b), equipped with the necessary skills to learn new processes, absorb new technologies and face the challenges that technological change may raise. Secondly, the low complexity of economic systems in sub-Saharan African countries hinders the ability

to accumulate productive capabilities and diversify into more complex activities, limiting investment opportunities in manufacturing and hampering structural transformation processes (Africa Growth Initiative, 2018; Bhorat et al., 2019).

In Ghana, the economic complexity could be raised by developing activities related to agribusiness, such as agro-processing and horticulture, which are relatively less affected by the displacement caused by labour-saving technologies since they entail less tradable goods and are less subject to international competition, and have potential for growth and structural change, increasing the value-added per worker while still absorbing large numbers of mid-skill workers (Byerlee et al., 2013; Africa Growth Initiative, 2018). While FDI may play a crucial role in transferring the know-how needed to upgrade the productive capabilities of the agricultural sector in African destinations and create new opportunities in agro-processing industries, to attract more of these kinds of FDI these countries need to improve their infrastructure systems and their regulatory and business environments, which are among the major obstacles to manufacturing FDI in Africa (Asiedu, 2006; Kinda, 2010; Moran, 2014).

While this study brings new evidence on the relationship between FDI and structural change, one limitation is that it only considers the "horizontal" effect of FDI, that is, the impact on the employment share in the same industry of the investment. Instead, FDI may create new job opportunities in connected industries in upstream and downstream sectors, creating linkages with local suppliers and buyers (Farole and Winkler, 2014). A development of the present analysis should therefore integrate the effects of FDI in vertically connected industries. Furthermore, further research is needed to assess whether local firms in Ghana actually benefited from productivity spillovers deriving from competition with foreign firms in the same industries (horizontal productivity spillovers) and whether these have led to a beneficial restructuring of the manufacturing industries in the longer run, through the creation of new opportunities for better-performing domestic companies.

Appendix

I. Data appendix

The dataset we use originate from the linkage of two main data sources, namely the Financial Times *fDi Markets* database for information on FDI and different waves of the Ghana Living Standards Survey for data on employment.

The Ghana Living Standards Survey, whose data and documentation are freely available on the Ghana Statistical Service website[9], provide information on several aspects of the living conditions of the population in Ghana and include questions on the individuals' occupation. The surveys are repeated cross-sections available for the years 1987/88, 1988/89, 1991/92, 1998/99, 2005/06, 2012/13 and 2016/17. Since the first year available in *fDi Markets* is 2003, we derived our dependent variable from the 2005/06, 2012/13 and 2016/17 Ghana Living Standards Survey (GLSS 5, GLSS 6 and GLSS 7). To get the number of individuals working in each sector, we aggregated at the industry level the answers to the question *"During the past 7 days what kind of goods and services or industry is this work connected with?"*, for which 4-digit ISIC codes were available, in relation to the main occupation. To aggregate correctly, we used the weights provided in the survey. Using correspondence tables from Eurostat[10], we converted the answers in the GLSS 5, originally using the ISIC rev.3.1, to the rev.4 used in GLSS 6 and 7. The total number of respondents to the question was 15,952 in 2005/06, 38,164 in 2012/13 and 28,333 in 2016/17. In each wave, the interviews lasted several months at the turn of two different years. We associated all the responses to the second years of survey, i.e. 2006, 2013, 2017, since the majority of the interviews were realized in those months. For each wave of survey, we also retrieved information on the gender, education level and hours worked by the individuals and conducted different aggregations to get information specifically on female and more educated workers and for individuals declaring to work at least 20 and 40 hours per week. We did this latter aggregations since the surveys also include individuals working extremely low or extremely high amounts of hours per week, even few declaring an amount of hours that is higher than the total number of hours in a week. We therefore created the ΔEmp20 and ΔEmp40 variables excluding those declaring to work more than 90 hours/week, to avoid possible misleading effects of outliers and have more representative categories of workers. As for educated workers, we included in this

[9]https://www2.statsghana.gov.gh/nada/index.php/catalog/central

[10]https://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_REL

category those having attained at least a secondary education qualification, which cover 33 to 38 % of workers across the waves. Female educated individuals are around 20% of the sample, women representing approximately half of the total sample in each wave.

FDI data are drawn from the *fDi Markets* database, a comprehensive and regularly updated online database of announced cross-border greenfield investments constructed by the Financial Times Intelligence Unit.[11] It covers all countries and sectors worldwide from 2003. We extracted from this repository the data relating to inward FDI in Ghana and in other West African countries over the 2003-2017 period. These correspond to almost 438 projects in Ghana and 1,533 projects in the other West African countries. To match this information with the one from the GLSS, we summed the projects to obtain the cumulated number of FDI in 2006, 2013 and 2017 in each sector. The most complicated part was to find a correspondence between sectors and industries in our FDI and employment data, since *fDi Markets* does not associate any code to its sectoral classification. Therefore, we manually created a correspondence table between the *fDi Markets* classification of industries, sectors and sub-sectors and the 2-digit ISIC sectors, ending up with 72 sectors largely corresponding to the "division" column of the ISIC rev.4. These "adjusted" ISIC sectors for 2006, 2013 and 2017 are the observation units in our analysis. The nature of the information available in *fDi Markets* does not allow a perfect match with the ISIC codes nor a deeper disaggregation.

Along with data on employment and FDI, we also included information on import tariffs in the West African region and on the total number of firms in each sector and year in Ghana. We retrieved data on import weighted tariffs in West Africa from the World Bank-UNCTAD World Integrated Trade Solution platform (WITS), which we used to instrument FDI in Ghana after excluding the country. Data on the total number of firms per sector and year in Ghana is taken from the Bureau Van Dyke's Orbis database. In this case, we calculated the stock of firms in each sector and year using the information on the date of constitution of the firm. One limitation of this methodology is that it does not allow to take into account firm mortality. However, the Orbis database is, to our knowledge, the most comprehensive source of data on firms operating in Ghana and using its information is the only way to account for industry dynamics in our analysis. We could easily match both WITS and Orbis data with those on employment and FDI

[11] https://www.fdimarkets.com/

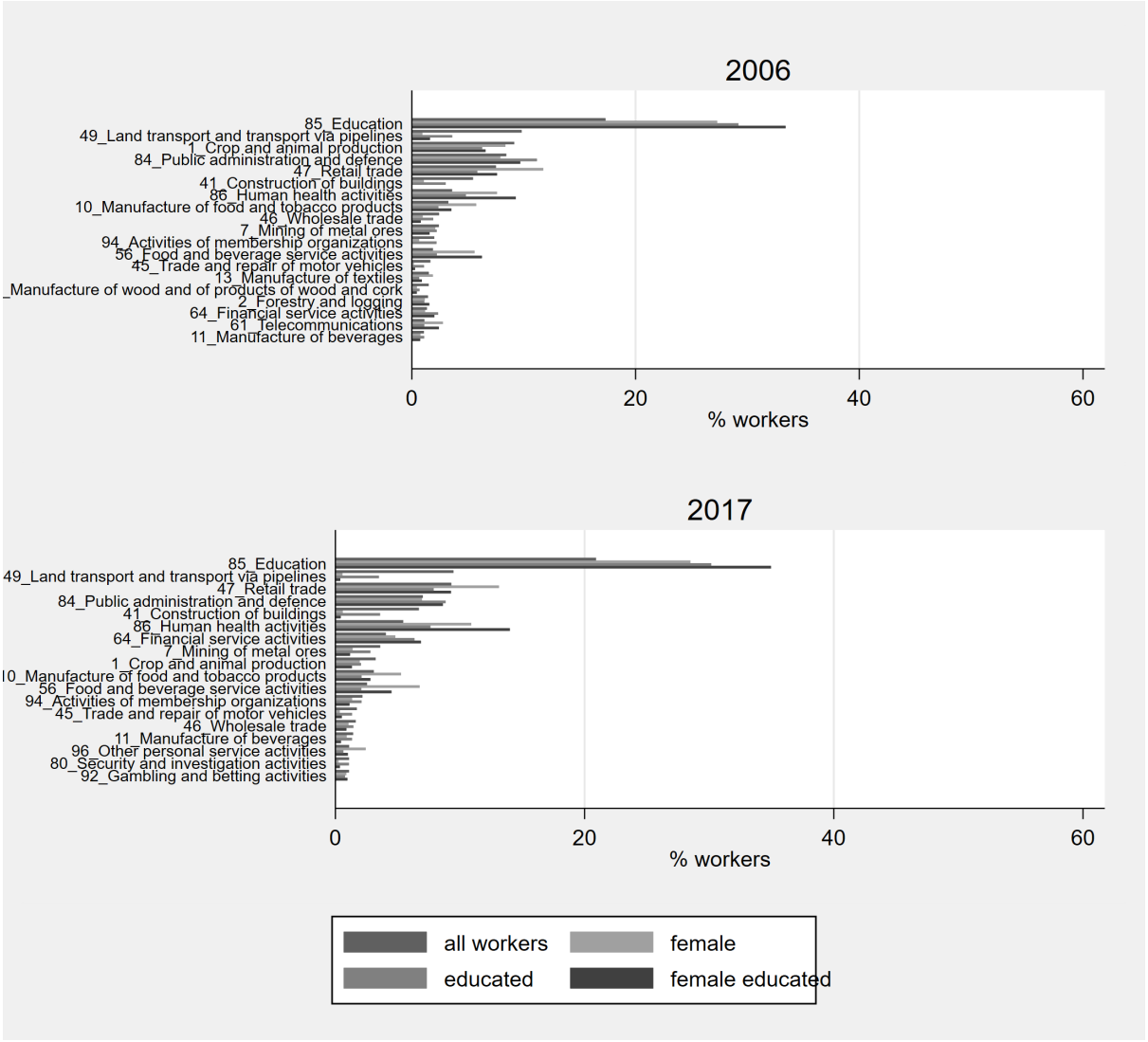
since import tariffs data included indication of the ISIC sector, while we used Eurostat correspondence tables to convert the NACE codes in Orbis to ISIC.

With the data thus retrieved, we built all the variables we use in the analysis, which are listed in Table 1, as the difference between the value at t and $t-1$, in each sector. For all the employment variables and for the data on the total firms, the difference refers to the share of workers/firms in each sector, since we are interested in having a measure of the weight of each sector and not of the absolute numbers. Only ΔFDI (and $\Delta FDI\ west$) refers to the difference in absolute number of firms, since we are interested in assessing the effect of one additional investment.

Table A.1. ISIC sectors

Code	Description	Macrosector
1	Crop and animal production, hunting and related service activities; Fishing and aquaculture	Agriculture
2	Forestry and logging	Agriculture
5	Mining of coal and lignite; Extraction of crude petroleum and natural gas; Support activities for petroleum and natural gas extraction	
7	Mining of metal ores	Mining
8	Other mining and quarrying; Support activities for other mining and quarrying	Mining
10	Manufacture of food and tobacco products	Manufacturing
11	Manufacture of beverages	Manufacturing
13	Manufacture of textiles, wearing apparel and leather products	Manufacturing
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Manufacturing
17	Manufacture of paper and paper products; Printing and reproduction of recorded media	Manufacturing
19	Manufacture of coke and refined petroleum products	Manufacturing
20	Manufacture of chemicals and chemical products	Manufacturing
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	Manufacturing
22	Manufacture of rubber and plastics products	Manufacturing
23	Manufacture of other non-metallic mineral products	Manufacturing
24	Manufacture of basic metals	Manufacturing
25	Manufacture of fabricated metal products, except machinery and equipment	Manufacturing
26	Manufacture of optical instruments and photographic equipment; Manufacture of electrical equipment	Manufacturing
28	Manufacture of machinery and equipment n.e.c.	Manufacturing
29	Manufacture of motor vehicles, trailers and semi-trailers	Manufacturing
30	Manufacture of other transport equipment	Manufacturing
31	Manufacture of furniture	Manufacturing
32	Other manufacturing	Manufacturing
33	Repair and installation of machinery and equipment	Manufacturing
35	Electricity, gas, steam and air conditioning supply	Utilities
36	Water collection, treatment and supply; Sewerage; Waste collection, treatment and disposal activities; materials recovery; Remediation activities and other waste management services	Utilities
41	Construction of buildings; Civil engineering; Specialized construction activities	Construction
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	Trade
46	Wholesale trade, except of motor vehicles and motorcycles	Trade
47	Retail trade, except of motor vehicles and motorcycles	Trade
49	Land transport and transport via pipelines	Trade
50	Water transport	Transport
51	Air transport	Transport
52	Warehousing and support activities for transportation	Transport
53	Postal and courier activities	Transport
55	Accommodation	Trade
56	Food and beverage service activities	Trade
58	Publishing activities	Business
59	Motion picture, video and television programme production, sound recording and music publishing activities	Business
60	Programming and broadcasting activities	Business
61	Telecommunications	Business
62	Computer programming, consultancy and related activities	Business
63	Information service activities	Business
64	Financial service activities, except insurance and pension funding	Finance
65	Insurance, reinsurance and pension funding, except compulsory social security	Finance
66	Activities auxiliary to financial service and insurance activities	Finance
68	Real estate activities	Real estate
69	Legal and accounting activities	Business
70	Activities of head offices; management consultancy activities	Business
71	Architectural and engineering activities; technical testing and analysis	Business
72	Scientific research and development	Business
73	Advertising and market research	Business
74	Other professional, scientific and technical activities; Veterinary activities	Business
77	Rental and leasing activities	Business
78	Employment activities	Business
79	Travel agency, tour operator, reservation service and related activities	Business
80	Security and investigation activities	Business
81	Services to buildings and landscape activities; Office administrative, office support and other business support activities	Business
84	Public administration and defence; compulsory social security	Government
85	Education	Government
86	Human health activities	Government
87	Residential care activities	Government
88	Social work activities without accommodation	Government
90	Creative, arts and entertainment activities	Other
91	Libraries, archives, museums and other cultural activities	Other
92	Gambling and betting activities	Other
93	Sports activities and amusement and recreation activities	Other
94	Activities of membership organizations	Other
95	Repair of computers and personal and household goods	Other
96	Other personal service activities	Other
98	Undifferentiated goods- and services-producing activities of private households for own use	Other
99	Activities of extraterritorial organizations and bodies	Other

FIGURE A.1. Distribution of formal employment (paid employees) across ISIC sectors (main sectors)



Source: own elaboration on GLSS data

Conclusions

The aim of this thesis was to shed light on the factors driving or hindering FDI flows to Africa and on the effects of these investments in African destinations. In spite of a considerable increase in inflows, FDI in Africa still account for only 5% of global FDI. Africa could benefit from the location of foreign MNEs, whose capital and technologies may be key allies in the transition of highly rural and informal African economies to more productive systems. At the same time, the entry of more productive and technologically advanced foreign firms does not come without drawbacks, making it crucial to disentangle what are the effects of FDI and how these can be influenced and shaped to make sure that the entry of foreign firms lead to inclusive growth.

To investigate these issues, this thesis was articulated in three parts.

In chapter one, a comprehensive and updated review of the literature has shown that, despite the considerable increase in studies focusing on FDI determinants and effects in the last decades, the evidence on these topics for African countries is scant. The bulk of the available literature shows that Africa could potentially attract more foreign investment thanks to the size and the fast growth of its markets and the presence of unexploited business opportunities, and that a mix of poor infrastructure, high corruption, macroeconomic instability, limited access to global markets and low education limits the inflows of FDI in the continent. Our review points at other potential drivers of FDI in African economies that, by mitigating the investment risk and offering specific incentives and favourable conditions to foreign investors, may reduce the liability of foreignness connected to the investment, which may be crucial for relatively unstable contexts such as those of several African countries. However, many of these factors, which include agglomeration economies, international investment and trade agreements, Special Economic Zones, fiscal incentives, Investment Promotion Agencies, and different measures of distance, have been largely overlooked by the literature and evidence on their effects is ambiguous or not available. Furthermore, also traditionally investigated determinants should be analysed from a more heterogeneous perspective, since the importance of specific location factors

differs according to the origin and destination countries and areas, sectors and motives of investment.

This review also shows that the effects of FDI are all but univocal. While there is evidence that foreign firms pay higher wages, the relationship between FDI and growth, entrepreneurship, employment and structural change is ambiguous and depends on a number of factors connected, as for the determinants, to the FDI motives and sectors and to the origin and destination of the investment, especially the technology gap that, when too wide, limits the diffusion of positive spillovers. Finally, our review identifies among the variables that have the potential to mediate for positive spillovers a set of host country policies aimed at increasing the absorptive capacity of domestic firms and deepening the linkages with foreign MNEs. In this framework, the most successful policies appear to be those acting on the business environment of the destinations, such as liberalization policies and measures to improve the institutional quality and simplify the regulatory frameworks. Once again, our review finds that the literature empirically addressing the effectiveness of these measures and of different mediating factors in general is very scarce for African countries, also given the difficulties in finding consistent and comparable data for this area.

In chapter two, some of the research gaps identified in the previous chapter's review on the determinants side are empirically addressed. Specifically, the analysis entails a comparison of the determinants of Chinese and non-Chinese FDI in Africa focusing on the role of some of the underinvestigated factors that influence foreign MNEs location choices, namely those relating to the management of risk and uncertainty associated to FDI. We find that, when investing in Africa, intra-firm and country-of-origin agglomerations and investment agreements affect Chinese MNEs less than MNEs from both advanced and other emerging economies. This interesting result can be interpreted in light of the systemic engagement of the Chinese government in Africa, providing direction and support to Chinese investors in several ways beyond state ownership and reducing their liability of foreignness. Instead, Chinese FDI rely more on industry agglomeration, showing that MNEs from China are in pursue of knowledge spillovers when investing in Africa. Furthermore, they are more market-seeking and manufacturing-oriented, and they do not differ from Western investors when targeting politically unstable resource-rich destinations in Africa.

These results are a valuable addition to the previous literature and a substantial step towards the understanding of the increasingly important role of emerging investors in Africa. On the one hand, we find that the determinants of Chinese FDI in Africa are not systematically different from those of traditional investors, thus supporting the idea that the general theory of FDI, although built on the experience of industrialized country investors, is still applicable to emerging countries MNEs (Buckley et al., 2007). On the other hand, the specific ownership advantages that characterize Chinese MNEs and that allow them to be less concerned with the risk of investing abroad may carry important consequences in terms of their impact on destination countries. Chinese investors may be more eager to invest also where and when traditional investors do not, and this could be positive especially for those African destinations that are less targeted by investors from advanced countries or in periods of widespread economic crisis in which Western FDI generally drop. Whether this will ultimately bring positive outcomes to the destinations involved depends on the actual impact of these investments. Evidence available for Africa shows that Chinese MNEs tend to employ more low-skilled workers at lower wages, although it remains unclear to what extent local versus Chinese workforce is employed. More generally, government support may reduce the incentive to integrate into the host economies and reduce the potential for positive FDI spillovers (Mazé and Chailan, 2021). Empirical studies at the firm level are crucial to produce evidence on these points, as well as to shed more light on the role of other emerging investors in Africa.

Finally, chapter three empirically addressed the issue of the contribution of FDI to structural change in Africa, so far scarcely investigated. This topic is especially important for African countries, many of which are still largely rural and whose transition to more productive economic systems may be accelerated by the entry of foreign capital and firms. Focusing on the case of Ghana – one of the main FDI destinations, whose growth has been considerable in the last decades – this analysis showed that FDI had an active role in the shift towards a service-based economy. In fact, a positive effect of FDI on service employment shares emerges across industries and for all categories of workers, including female ones, often the most vulnerable in developing countries, and more markedly for educated workers.

In this sense, the analysis in this chapter suggests that FDI have a role in the "premature deindustrialization" (Rodrik, 2016) of African countries, whose implications, in turn, depend on the specific industries that are interested by the relative growth of employment.

Since positive FDI spillovers are most often associated to FDI in manufacturing, the increasing share of service FDI raises concerns on whether African countries should rely on these kinds of investments within their development strategies. On the other hand, more skill-intensive services, such as those related to the finance and ICT, carry a high potential for positive spillovers since they present some of the characteristics that make manufacturing FDI more desirable, i.e. they are tradable, they have higher value-added and they can absorb large numbers of medium-skilled workers (Africa Growth Initiative, 2018). With this in mind, African economies should make a substantial investment on the education of their populations, whose skills emerge as a central element in structural change processes as well in attracting and enabling positive spillovers from FDI.

The evidence emerged from this thesis carries some important implications for African countries and delineates some directions for future research.

First, since the most important positive effects are associated to FDI in manufacturing, improving on the factors that the literature identifies as especially important to attract manufacturing FDI, such as well functioning infrastructure and the availability of an adequately skilled and still relatively cheap labour force, would help increase the inflows of FDI in manufacturing industries and should be a priority for African governments seeking to leverage foreign investment within their development strategies. The institution of SEZ may play a role in this regard, although our review showed that the effectiveness of these policies in attracting more FDI and enabling positive spillovers seems so far quite limited and mostly affected by broader factors. On the other hand, FDI in services should be target of more disaggregated analyses to understand which industries have the greatest spillover potential and assess if they fit into the development strategy of the destination. As pointed out in relation to FDI in Ghana, a substantial portion of these investments target low value-added activities such as retail trade, which are unlikely to lead towards value chain upgrading and structural change, whereas more skill-intensive services are more likely to lead to desirable labour outcomes and structural change.

Secondly, the role of SEZ, the effects of service FDI and a wide series of other issues such as the effectiveness of FDI-specific measures and policies in increasing investment flows and enable positive spillovers for African countries should be object of further and deeper investigation. More attention should be devoted at assessing the effects of different FDI determinants, including the most consolidated ones, and the impacts and spillovers of FDI in heterogeneous settings, i.e., different origin and destination countries,

sectors and motives of investment. In particular, further research should be devoted to more systematically compare different areas within the African continent and to better differentiate within the pool of investors, especially emerging ones, which have been mostly analysed as a unique block or identified with China. In this framework, more attention should be placed on intra-African FDI and on the role of South Africa and other prominent African economies such as Nigeria and Kenya, which have been growing fast in the last two decades and have become major investors in the continent. Being more embedded in the African context, MNEs from these countries may be better equipped to deal with the idiosyncrasies of African destinations and may have a role as regional leaders and focal points for foreign investment.

However, more in depth and heterogeneous analyses on both the determinants and the effects of FDI are hindered by the lack of consistent information at the national, sub-national and regional level and for the whole African continent. The collection of reliable and comparable data, especially at the firm-level, should be a priority for African and international institutions seeking to leverage FDI to improve the well-being in those areas.

Third, a point that emerges from this thesis and that would require further analysis is the crucial role of education in affecting FDI patterns and impacts. The evidence shows that foreign firms require a certain level of human capital in FDI destinations to be able to carry on their activities, suggesting that African countries should invest in educating their population. Furthermore, human capital emerges as a key factor to increase absorptive capacities and enable positive spillovers, as the analysis in the third chapter has suggested. At the same time, while wages increase with the level of education, foreign MNEs are also attracted by lower wages in developing countries and this is especially so in Africa, after wage levels raised in previously cheaper Asian destinations. In this framework, comparative analyses may be extremely useful to understand what mix of labour cost and quality works more for different destinations in Africa, and how human capital and absorptive capacity thresholds change according to specific comparative advantages and specializations of different destinations.

More in depth analyses are also needed to shed light on the relationship between FDI and some underinvestigated labour outcomes, i.e. those related to labour standards and workers' rights. Although FDI are often looked at as possible sources of better labour standards in host countries compared to domestic firms, this consideration is not

supported by the scant literature addressing these aspects, and some types of FDI, such as those locating in SEZ, do not always comply with decent work standards and are frequently associated with labour rights violations. These negative outcomes may more heavily concern FDI from specific origin areas or in specific industries, making once again pressing having more disaggregated analyses to evaluate the actual impacts of FDI.

Finally, a major theme that calls for further research is the impact that technological change has and will increasingly have on developing countries through FDI. This issue becomes even more urgent considering the rapid diffusion of Artificial Intelligence technologies, which may represent an upheaval in the world of work for both developed and developing countries and, together with new opportunities, may carry several challenges that the latter may not be adequately equipped to address.

These and several other issues remain open for future research. It appears clear that there is no univocal answer to the issue of whether FDI are beneficial to African countries and that any efforts of these to attract FDI should be inscribed into broader industrial and development strategies, to maximise the opportunities offered by foreign investments and make sure that these are beneficial to the destinations involved.

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