Can FDI Improve the Socio-Economic Conditions in African Countries?

Master's Thesis Industrial Dynamics and Strategy

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Abstract

Mobilising resources via foreign direct investment (FDI) has become an important channel to achieve economic progress in African countries due to a lack of domestic resource mobilisation. Along with its recent socio-economic expansion and increasing integration into the global economy, Africa has experienced major developments in inward FDI. The question then arises whether the increase in FDI inflows has contributed to the improved socio-economic conditions in African countries, in terms of providing a better quality of life and employment prospects. By empirically analysing data from the Financial Times (fDi Markets) and World Bank (Open Data) using instrumental variable (IV) estimation over 2003-2017, this study finds that FDI can contribute to improving the quality of life and employment prospects of people living in African countries. There is also evidence that the type of FDI conducted matters for job creation as well as the relative employment rates of women in Sub-Saharan Africa (SSA). Only when FDI is labour-intensive, do positive direct employment effects exist while there is no evidence of indirect spillover effects. The results from this study bring to light the skills gap that exists in the continent, in which a lack of skills prevents African countries from reaping the employment benefits associated with more skills-demanding (knowledge-intensive) FDI. Remarkably, women in SSA seem to be an exception and are actually able to gain from knowledge-intensive FDI activities brought in by multinational enterprises (MNEs).

KEYWORDS: Foreign Direct Investment (FDI), Multinational Enterprises (MNEs), Instrumental Variable (IV) Analysis, Economic Development, Quality of Life, Employment, Socio-Economic Conditions, Africa, Developing Countries.

Contents

List of Figures

List of Tables

1 Introduction

Not too long ago, the African continent was considered to be home to some of the worst economic disasters and social tragedies of the 20th century. With deteriorating income levels and persistent poverty rates, the slow yet remarkable improvement of the socio-economic conditions in Africa that has occurred over the past two decades was almost unimaginable in recent history (African Development Bank, 2018). One of the reasons for the turnaround of the African economy has been attributed to the significant improvement of foreign direct investment (FDI) inflows into Africa (Zedillo, 2015).

Despite the recent progress and the overall mood surrounding the economic prospects of Africa becoming far more optimistic, domestic revenue mobilisation remains low in the continent (EY, 2018). As such, African economies are heavily dependent on foreign sources of financing, including FDI (African Development Bank, 2018). More than half of private capital flows into Africa arrives in the form of FDI, which is especially relevant for the continent as FDI is considered to be the least volatile type of inflow that is unlikely to be (negatively) affected by fluctuating market conditions (African Progress Panel, 2014). In the wake of the Asian and South American financial crises, FDI has become the "capital flow of choice" for developing countries after portfolio flows proved to be unreliable and unstable (Braunstein, 2002). It is already well established in the literature that FDI can contribute to economic growth but there is not enough evidence demonstrating the societal and developmental impact of FDI. This research paper therefore investigates whether FDI can contribute to improving specific socio-economic conditions in the African continent and if the type of FDI conducted matters for socio-economic outcomes.

FDI is a crucial part of the globalization process that has accelerated over the past few decades and it has experienced major developments in terms of increasing global flows (Anyanwu, 2012). However, in the more recent years, global FDI flows have declined for three consecutive years sliding back to the low point that was reached after the 2007-2008 financial crisis. The decline has been concentrated in developed countries while developing economies have accounted for a growing share of global FDI inflows (UNCTAD, 2019). This steady increase in FDI towards developing countries has been a "welcome trend" for Africa as a means to face its developmental challenges. Nevertheless, this growing influx of FDI into Africa only constitutes about 5% of the total world FDI volume, which is concerning given its 15% share of world population and more than 30%

share of global poverty (Wall, 2018).

Historically, Africa has not been a major recipient of FDI. In the 1990s, the continent was unable to attract more than 2% of the global share of FDI flows in any year (Naudé & Krugell, 2007). The determinants of FDI, and FDI inflows into Africa in particular, have therefore featured prominently in the literature as researchers tend to focus on investigating why the continent lags behind in terms of capturing global FDI volumes and what drives FDI into the continent (Anyanwu, 2012; Asiedu, 2006; Naudé & Krugell, 2007; Wahid, Sawkut, & Seetanah, 2009). What seems to be overlooked by many researchers, however, is the socio-economic impact of FDI flows into the African continent.

It has become a stylized fact that the (economic) returns to FDI inflows into African countries is higher than FDI to other regions (Asiedu, 2002) while no consensus has been reached in terms of FDI's contribution to the continent's socio-economic conditions. Despite having achieved "one of the fastest and most sustained growth spurts in the past two decades", the growth in African economies has not been pro-employment or translated into a uniform development path (African Development Bank, 2019). Yet, most mainstream studies on the effects of FDI look at "simple" economic or productivity growth as their dependent variable, while neglecting that economic growth may not necessarily imply economic development and social equity (Dunning & Fortanier, 2007).

This research paper will take into consideration the New Development Paradigm proposed by Dunning and Fortanier (2007) that acknowledges the relevance of investigating the impact of FDI beyond economic and productivity growth, by taking into account a whole range of new developmental factors to which multinational enterprises (MNEs) can potentially contribute. This paper aims to address the gap in the existing literature by using panel data from 2003 to 2017 to empirically analyse the socio-economic impact of FDI flows into Africa. Since "socio-economic impact" encompasses a wide variety of indicators that can extend to diverse yet convoluted avenues of research, this paper primarily focuses on the impact of FDI on poverty reduction and the job prospects of people living in African countries. Two main questions are addressed in this research. Firstly, can FDI improve the socio-economic conditions in African countries? To be more specific, can FDI improve the quality of life and employment prospects of people living in African countries? Secondly, does the impact differ by the level of skills associated with the FDI projects? In particular, do labour-intensive FDI and knowledge-intensive FDI have the same socio-economic impact?

By using instrumental variable (IV) estimation, this research paper finds that an improvement in the quality of life of people living in African countries is empirically associated with the presence of FDI inflows. Moreover, an increase in FDI projects in Africa also seems to increase the labour prospects for women in the continent. What is also revealed is that the employment effect of FDI differs by the level of skills associated with the FDI projects. There is robust empirical evidence of a positive direct employment effect of labour-intensive FDI while knowledge-intensive FDI has no effect on general labour prospects. In terms of the labour prospects for women in Sub-Saharan Africa (SSA), however, knowledge-intensive FDI surprisingly improves the opportunities for women in the labour market. These findings bring to light the skills gap that exists in Africa, in which a lack of skills prevents these countries from reaping the employment benefits associated with more skills-demanding (knowledge-intensive) FDI. Yet remarkably, women in the SSA labour market seem to be an exception and are actually able to gain from the knowledge-intensive FDI activities brought in by MNEs.

The remainder of the paper is organised as follows. The theoretical framework is discussed in the next section (Section 2) that provides a conceptualisation of FDI and a literature review to formulate the proposed hypotheses. Section 3 then describes the empirical framework in which the data and methodology used in this study are provided. Thereafter, the main regression results are presented in Section 4 and Section 5 will draw some final conclusions.

2 Theoretical Framework

The theoretical framework of this paper is divided into two parts: a conceptualisation of FDI and a literature review to formulate the proposed hypotheses. Before reviewing the relevant literature, it is necessary to briefly discuss the concept of FDI in order to understand how it can contribute to the socio-economic progress in African countries.

2.1 Conceptualising FDI

MNEs that own or control value-added activities in more than one country are firms that engage in FDI. FDI is considered to be the traditional means by which a firm can expand its production outside of its national boundaries. This territorial expansion occurs through the transfer of a combination of physical assets such as technology and financial capital, as well as non-physical assets such as incentive structures, values and cultural norms, management and organisational expertise (Dunning & Lundan, 2008). The process whereby a corporation in one country conducts business operations in another country and sets up a new wholly-owned affiliate, acquires a local company or forms a joint venture therefore reflects FDI activity (Moran, 2012).

Unlike foreign portfolio investment in which the exchange of assets and intermediate products takes place in the form of arm's-length trade via market organisation, there is no change in ownership involved with FDI. Instead, the control of the transferred resources remains in power of the investing entity that administers a direct exchange of assets and intermediate products (Dunning & Lundan, 2008). According to the International Monetary Fund (IMF) (1993), FDI can be defined as "investment that involves a long-term relationship reflecting a lasting interest of a resident entity in one economy (direct investor) in an entity resident in an economy other than that of the investor. The direct investor's purpose is to exert a significant degree of influence on the management of the enterprise resident in the other economy". FDI is therefore able to provide a distinct contribution to economic development by generating positive spillovers (Yamin & Sinkovics, 2009). Interesting implications thus arise for both the home and host countries of FDI. This paper will focus on the socio-economic repercussions of FDI for African host countries. The rest of this section will provide a review of the relevant literature concerning the socio-economic impact of FDI and present the hypotheses that are tested in this research paper.

2.2 Literature Review and Hypotheses

FDI is widely considered to be an integral part of the international economic system as well as a major catalyst for economic growth and development (OECD, 2002). Research has shown that FDI is a key agent for a country's integration into the global economy and has a positive effect on host countries (Wall, 2018). It has become a stylized fact that FDI has a positive impact on economic growth (Campos & Kinoshita, 2002) and empirical evidence has indeed demonstrated that FDI can have a favourable influence on the Gross Domestic Product (GDP) of developing countries (Hansen & Rand, 2006). Since "the very essence" of economic development is argued to be the rapid and efficient transfer of "best practice" across borders, FDI is considered to be especially important for the economic growth of developing countries (Klein, Aaron & Hadjimichael, 2001).

The large body of empirical literature examining the impact of FDI on the economic growth of developing countries reveals that FDI (generally) plays a positive role in terms of generating economic growth (Herzer, Klasen, & Nowak-Lehmann, 2008). Two main channels have been proposed in the literature through which FDI may enhance economic growth: capital spillovers from FDI can firstly encourage the adoption of new technology and secondly, knowledge transfers can be stimulated (de Mello, 1997). Studies in both developing and transition countries have confirmed that the positive impact of FDI on economic growth can be attributed to the transfer of knowledge and technology (Campos & Kinoshita, 2002; Hansen & Rand, 2006). Some studies have even indicated that FDI can be favourable for developing countries by crowding in domestic investment (Agosin & Machado, 2005; Ndikumana & Verick, 2006).

For developing and transition economies in particular, mobilising international resources is considered to be a vital contribution towards the achievement of national development priorities (UN, 2002). Since African countries are primarily characterized by developing and transition economies, it is worth investigating the socio-economic impact of FDI in the continent. Due to the relatively low GDP and domestic capital levels in African countries, FDI and other types of foreign finance is crucial for the continent's development (Asiedu, 2002). FDI is argued to be more important for the continent due to its potential to alleviate poverty compared to other, more developed, regions (Asiedu & Gyimah-Brempong, 2008). In the African context, FDI can therefore be considered as a key resource to leverage the continent's growth potential by bringing in new technologies, knowledge and expertise in addition to financial resources.

Although the literature has yet to provide substantial empirical evidence of the socio-economic impact of FDI, there seems to be a widespread recognition of the socio-economic importance of FDI. There is a general consensus that it can help reduce poverty and improve social conditions (OECD, 2002). As an important channel for technology and knowledge transfer as well as its potential to "create jobs, boost overall productivity, enhance competitiveness and entrepreneurship", FDI is recognised as an important tool to eradicate poverty through its contribution to financing sustained economic growth and development over the long term (UN, 2002). Recent studies analysing developing countries (Ucal, 2014) and African countries (Fowowe & Shuaibu, 2014; Gohou & Soumaré, 2012) have confirmed that FDI is indeed associated with poverty reduction and improved development. However, this optimism recognising FDI as "an engine of development" has been contested by some authors that argue FDI has a low development potential in developing countries due to the strategies of MNEs that can be unfavourable for poorer countries (Yamin & Sinkovics, 2009).

The measurement and definition of "poverty" is also highly contested in the literature and changes according to different researchers. As such, this research paper focuses on the quality of life of people living in African countries by narrowing down the definition to investigate whether a decrease in energy poverty (i.e. an increase in access to electricity) can be associated with higher levels of FDI inflows. It is important to consider the impact of FDI on the quality of life as it is widely acknowledged that "true development" does not take place without a raise in general living standards (Firebaugh & Beck, 1994).

A way to improve general living standards is through infrastructure development. Faced with a large infrastructure gap, the urgency of Africa's industrialisation has therefore been highlighted by many scholars and policymakers. The building of critical and productive infrastructure in the continent is required for it to overcome its developmental challenges and transform its socio-economic structure (African Development Bank, 2018). One of the major developmental challenges that the continent is still facing can be attributed to low access rates and a lack of reliable and affordable electricity (The World Bank, 2018). Without access to electricity, people in African countries are excluded from key livelihood opportunities such as having the necessary amenities to store their food. Therefore, access to electricity has been considered in the literature as an indicator for quality of life (Copestake & Camfield, 2010; Ghosh, Anderson, Elvidge, & Sutton, 2013). Moreover, it has been established in the (development economics) literature that access to infrastructure is essential for poverty reduction, which is argued

to be more effectively delivered when there is well developed infrastructure (Yamin & Sinkovics, 2009).

Since FDI is often linked with infrastructure development in the African context (Odusola, 2018), it can be expected that FDI might have positive spillover effects for spreading access to electricity across such regions. As an attempt to contribute to the scant literature investigating the links between FDI and poverty levels, this paper will specifically consider the effect of FDI on the access to electricity for people living in African countries by testing the first hypothesis (H1):

Hypothesis 1 *Inward FDI increases the quality of life of people living in African countries (via an increased access to electricity).*

In addition to potentially decreasing poverty via improving the quality of life of people in African countries, employment prospects could be another socio-economic outcome affected by FDI. One of the key objectives for reducing poverty in African economies is through the creation of employment. It has therefore been argued that by generating employment opportunities, FDI can be an important vehicle for African countries to achieve its poverty reduction goals[1]. (Wall, 2018). Some studies have shown that FDI can introduce labour saving techniques that leads to a creative destruction in which there is an initial negative effect on employment that eventually converges toward a positive long term effect (Jude & Silaghi, 2016). Other studies show liberalisation programs can increase FDI and employment from MNEs and therefore indirectly contribute to poverty alleviation (Asiedu & Gyimah-Brempong, 2008). However, the (scare) literature on the impact of FDI on employment in African countries has yet to reach a consensus (Wall, Mehta & Kaur, 2018).

Nevertheless, it is widely acknowledged that the type of FDI conducted is likely to affect the employment prospects for those living in host countries (Dunning & Lundan, 2008) and the characteristics of FDI have demonstrated to be important in explaining FDI-development relationships in the literature (Dunning & Fortanier, 2007). A study examining the impact of FDI in Nigeria suggests that while FDI in the manufacturing sector may have a positive relationship with employment rates, the opposite holds for FDI in the services sector (Inekwe, 2013). The type of skills that are targeted by FDI

[1]The African Union's Agenda 2063, UN-Habitat's New Urban Agenda (2016), AfDB's 2013-2022 Strategy and the UN's SDG 1, among others.

activities could therefore possibly lead to different outcomes.

According to the Dependency Theory, developing countries can become economically reliant on advanced economies as a result of FDI, which could result in increasing inequality between workers with disparate skillsets (Kaur, Wall & Fransen, 2018). The argument is based on the idea that a(n) (over-)reliance on MNEs for capital can be a major impediment to development in host countries as MNEs lock these countries into an inferior position in the global economy (Firebaugh & Beck, 1994). FDI is often related to restructuring in developing countries as a means to integrate local firms into the production chain of the MNE. As such, (human) capital is usually acquired from foreign suppliers within the MNE network rather than local suppliers (Herzer et al., 2008). An uneven distribution of the international labour market could therefore be the result as the highly skilled employment opportunities would remain in the more developed home countries of MNEs while the (developing) host countries are confined to the lower-skilled jobs.

FDI is likely to influence the host country's labour market in several respects: levels of employment, employee compensation and skills demand (Dunning & Lundan, 2008). This research will focus on levels of employment, taking into consideration the demand for different types of skills. The labour market in African countries is still primarily characterised by unskilled labour and many employers in Africa have identified the inadequately skilled workforce in the continent as a major hindrance to the success of their businesses (Samans & Zahidi, 2017). Furthermore, there is evidence that FDI is associated with a skills bias (Jude & Silaghi, 2016; Villa, 2010), which could be a result of the tendency of FDI to hire skilled labour (Asiedu & Gyimah-Brempong, 2008).

African countries may, as a result, lack the necessary supporting skilled labour to leverage the potential advantages from an influx of FDI. Since there is a relatively low level of skilled labour in Africa, it can therefore be conjectured that knowledge-intensive FDI (which requires more skilled labour than labour-intensive FDI) could possibly lead to negative job prospects for people living in African countries. In contrast, labour-intensive FDI is more likely to favour the African population, which is generally more qualified for labour-intensive jobs. Studies have indeed found that the beneficial effects of FDI on poverty reduction are potentially stronger when FDI can contribute to the development of labour-intensive industries (OECD, 2002). As such, the next set of hypotheses (H2a and H2b) will differentiate between knowledge-intensive and labour-

intensive FDI under the assumption that knowledge-intensive FDI has the potential to substitute local (human) capital with foreign (human) capital:

Hypothesis 2a *Inward labour-intensive FDI positively influences the job prospects of people living in African countries.*

Hypothesis 2b *Inward knowledge-intensive FDI negatively influences the job prospects of people living in African countries.*

This disparity in terms of job market prospects as a result of labour-intensive versus knowledge-intensive FDI could be reinforced by gender dynamics when taking into account that women in Africa are more likely to work in lower-skilled and less productive sectors (The World Bank, 2014). Gender inequality in the labour market has therefore been argued, on the one hand, to be a potential unintended side effect of FDI as women tend to possess relatively lower levels of skills capacity to partake in MNE activities that tend to be more knowledge-intensive (Siegmann, 2006).

On the other hand, it can also be the case that the adoption of more skill-intensive technologies as a result of FDI may be more complementary with female labour, that tends to be less labour-intensive (i.e. involving relatively less manual labour), and therefore increase the relative demand of women in the labour market (Aguayo-Tellez, 2012). Moreover, it has been argued that employer discrimination, including gender-based discrimination, is expected to decrease when the degree of competition in the product market increases (Becker, 1957). This argument has been applied to globalisation as a catalyst for increased competition (Baliamoune-Lutz, 2006) and implies that if MNEs can facilitate competition in host countries, then employment discrimination against women is reduced with more FDI.

In semi-industrialised countries, FDI has indeed been empirically linked with favourable employment opportunities for women (Braunstein, 2002). However, empirical evidence also shows that this is not the case for women in developing countries who are often more concentrated in low-skilled sectors while FDI occurs mainly in skill-intensive industries (Baliamoune-Lutz, 2006). Although the empirical literature remains inconclusive, the final hypothesis (H3) that will be tested therefore leans more towards a negative effect of FDI under the assumption that women in developing countries generally possess lower levels of skills than men to participate in the labour market:

Hypothesis 3 *Inward FDI negatively influences the opportunity for women in the African labour market.*

3 Empirical Framework

The empirical framework used in this research study is provided in this third section, which consists of a discussion of the datasets that were analysed as well as the methodology that has been employed to test these aforementioned hypotheses.

3.1 Data

To analyse the socio-economic impact of aggregated FDI inflows (the main independent variable of interest) and different types of FDI inflows (Labour-Intensive and Knowledge-Intensive FDI), data from the Financial Times (fDi Markets) that includes 10,342 projects that took place in Africa from 2003-2017 is used. Information regarding the direct employment generated by these FDI projects is also retrieved from this dataset to test the second set of hypotheses. Recognised as the most comprehensive database of cross-border greenfield investments available to date, fDi Markets provides a reliable dataset in which all investment projects are cross-referenced with multiple sources, primarily focusing on company sources. A potential drawback of this data is that it does not include mergers and acquisitions (M&A) and other equity investments since it only tracks greenfield investments (i.e. investments in new physical projects or expansion of an existing project which creates new jobs and capital investment). This could underestimate the outcome of the regressions as M&As have been argued to lead to more technology diffusion in host countries (compared to greenfield investments), which in turn can have a favourable impact on local firm productivity and the overall economy (Wall et al., 2018). Nevertheless, it can also be argued that for employment effects at least, M&As might confound the regression results due to its associated job cuts (Dunning & Lundan, 2008).

Country-level data from World Bank Open Data is used to investigate the outcome variables. The World Bank is a well-recognised, consistent and reliable source of information because it applies internationally accepted standards and norms. However, a limitation of this dataset could be linked to the fact that the international datasets provided are based on data generated by national statistics systems. As such, developing countries often struggle to meet the criteria of the standard practices and methodology and produce poor quality data, which leads to a substantial amount of data omitted from the sample. Missing data for many of the African countries then poses a challenge to have an ideally large sample size required for obtaining reliable estimates (Wooldridge,

2014). Since the World Bank database does not contain information from the two French African territories (Mayotte or Réunion), these two countries have been dropped from the sample, leaving a final dataset with information from 54 African countries.[2] Due to the lack of consistent (real) exchange rate estimates on the World Bank database for the African countries over the period of interest, additional information acquired from the International Financial Statistics (IFS) database (collected by the IMF from its member countries) is also used.

Finally, additional control variables are retrieved from the World Governance Indicators (WGI) dataset developed by the World Bank and the Emergency Events Database (EM-DAT) developed by the Centre for Research on the Epidemiology of Disasters (CRED). The WGI provides aggregate and individual indicators for several dimensions of governance derived from the views of a large number of enterprise, citizen and expert surveys based on over 30 individual data sources produced by various institutes, think tanks, non-governmental organisations (NGOs), international organisations and private sector firms. The EM-DAT is composed of essential core data on the occurrence and effects of mass disasters across the world and compiled from sources such as the United Nations agencies, NGOs, insurance companies, research institutes and press agencies. Additional information about these aforementioned data sources used in this study can be retrieved from the websites of each respective source.[3]

Table 1 reflects a summary of the descriptive statistics of the variables used in the main analyses. Detailed definitions of the variables used in the analyses can be found in Appendix A.1. Figure 1 shows the pattern of the 10,342 FDI investments that took place over the period 2003 to 2017 in each of the 54 African countries under investigation, with each line representing a different African country. South Africa exhibits exceptionally high number of investments compared to the rest of the region, which appears to have relatively low levels of greenfield FDI projects in each year. The countries in the sample seem to have similar experiences over time in general, e.g. most countries in the sample seem to have a dramatic spike in investments 2013 and a decline thereafter. The general peak in 2013 could be attributed to the "commodities super-cycle"[4] while the decline in 2014 could be an effect of the end thereof, as well as the rise of the Emerging

[2]Since Sudan and South Sudan segregated in 2011, data prior to 2011 is completely missing for South Sudan.

[3]http://www.fdimarkets.com, https://data.worldbank.org, http://data.imf.org/ifs, www.govindicators.org and https://www.emdat.be/.

[4]The sustained rise of commodity prices since the start of the new millennium.

Market (Currency) Crisis (EY, 2018; KPMG, 2016). For South Africa in particular, the extremely high number of investments in 2013 of 387 projects can be explained by multiple factors that could have dramatically increased the attractability of investing in the country: the decrease in corporation tax from 34.6 percent to 28 percent (The Financial Times, 2015), its leading ranking (over consecutive years) in terms of providing an investor friendly business environment (KPMG, 2016) and the introduction of the National Development Plan at the end of 2012 as a new strategic framework to tackle the country's socio-economic issues (Zarenda, 2013).

The average number of investments for each of the 54 African countries in the sample over the period of interest (2003 to 2017) is displayed in the map in Figure 2.[5] It is clear that during these years, the majority of FDI has been concentrated in South Africa, Egypt and Morocco. A correlation matrix is provided in Table 2, indicating moderate levels of correlation coefficients that are not of particular concern, besides the expected high correlations between *JobsCreated* and the FDI variables (since all FDI in the dataset represents greenfield investments that inevitably create new jobs).[6]

[5]The missing area by the northwest coast represents the disputed territory of Western Sahara, which has no available FDI data recorded.

[6]Considered as "moderate" and "high" based on thresholds provided by Farrar & Gluber (1967) and Wang (1996). The issues associated with high correlations are diminished by using lagged FDI in the regression analyses.

Table 1: Descriptive Statistics

	Obs.	Mean	Std.Dev.	Min	Max
$FDIinflow_{it}$ (# of projects)					
$TotalFDI$	810	12.76	26.37	0	387
$LabourIntensiveFDI$	810	5.85	11.43	0	132
$KnowledgeIntensiveFDI$	810	7.84	16.28	0	257
Y_{it}					
Electricity (in %)	742	42.5	29.91	0.01	100
$(\#)JobsCreated$	810	2776.68	5335.93	0	42799
$LFPR$ (in %)	780	64.98	12.73	41.41	89.05
Unemployment (in %)	780	9.36	7.13	0.32	38.04
$LFPRg$ (in %)	780	74.69	22.33	16.96	111.01
X_{it}					
$GDPpc$ (in current US$)	779	2338.15	3250.51	112.85	22742.38
$Inflation$ (in %)	763	7.78	10.83	-29.69	100.63
Population (in thousands)	789	19800	28200	82.475	191000
$Trade$ (% of GDP)	738	76.72	37.16	19.10	311.35
$GrossPrimaryEnrollment$ (% gross)	629	99.98	20.94	40.19	149.31
$NaturalResources$ (% of GDP)	721	13.87	13.45	0	63.49
$(\#)NaturalDisasters$	810	1.55	1.68	0	11
$CorruptionControl$ (score in units of standard normal distribution)	803	-0.64	0.61	-1.87	1.22
$PoliticalStability$ (score in units of standard normal distribution)	802	-0.57	0.91	-3.31	1.20

Notes: Labour Force Participation Rate ($LFPR$); Gendered Labour Force Participation Rate ($LFPRg$); Gross Domestic Product per capita ($GDPpc$). See Appendix A.1 for further information. Appendix A.2 provides details about how $LabourIntensiveFDI$ and $KnowledgeIntensiveFDI$ have been classified.

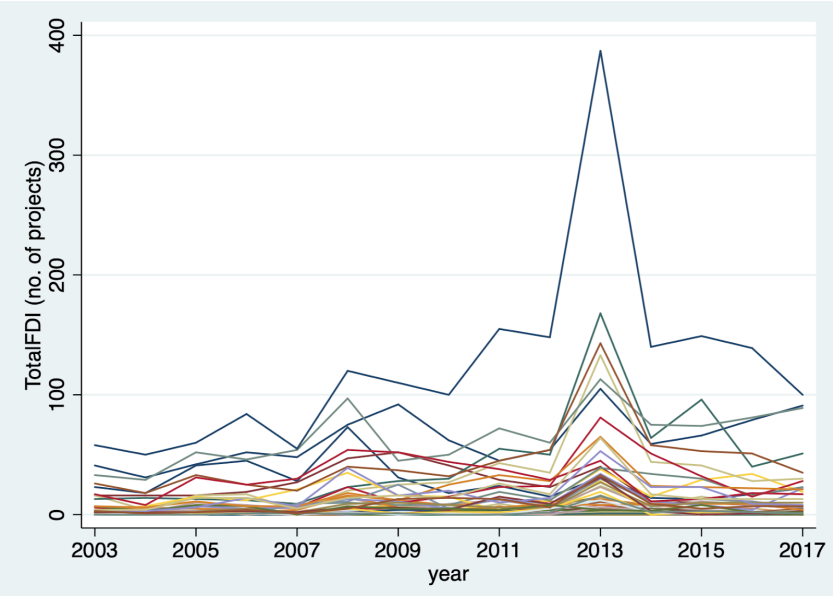

Figure 1: Number of Total FDI Investments in the Sample of African Countries
Source: Compiled on Stata15, based on data from fDi Markets (Financial Times)

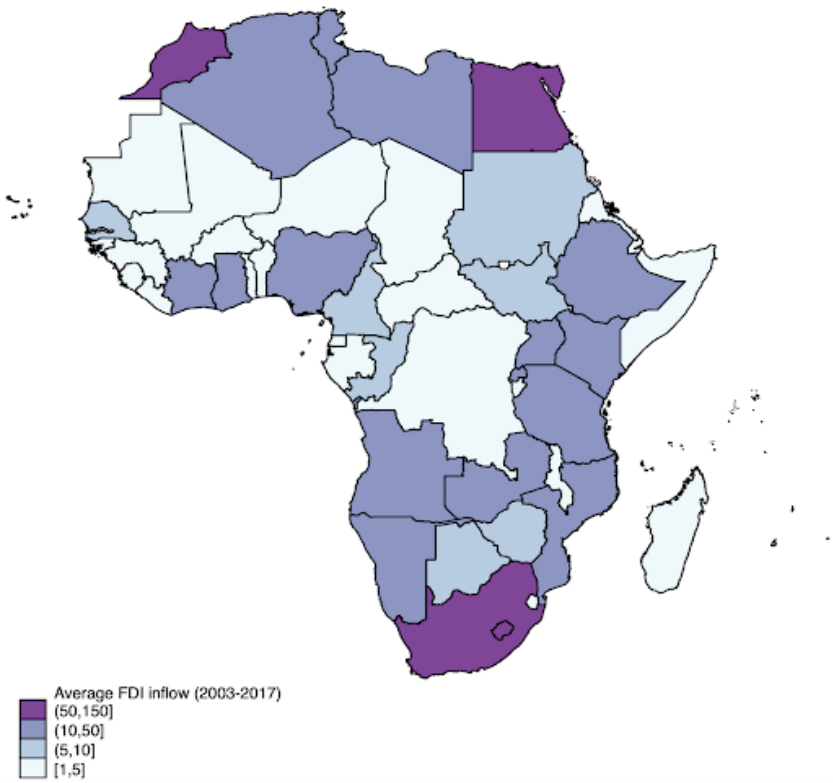

Figure 2: Average Number of FDI Projects from 2003-2017
Source: Compiled on Stata15, based on data from fDi Markets (Financial Times)

Table 2: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
$TotalFDI$	1.00																
$LabourIntensiveFDI$	0.95	1.00															
$KnowledgeIntensiveFDI$	0.98	0.90	1.00														
$Electricity$	0.42	0.49	0.38	1.00													
$JobsCreated$	0.79	0.89	0.73	0.46	1.00												
$LFPR$	-0.23	-0.30	-0.20	-0.67	-0.27	1.00											
$Unemployment$	0.26	0.29	0.26	0.31	0.23	-0.40	1.00										
$LFPRg$	-0.17	-0.27	-0.12	-0.66	-0.28	0.81	-0.29	1.00									
$GDPpc$	0.24	0.24	0.25	0.58	0.19	-0.39	0.32	-0.25	1.00								
$Inflation$	0.03	0.03	0.05	-0.09	0.05	0.10	-0.02	0.11	-0.05	1.00							
$Population$	0.45	0.46	0.43	0.16	0.47	-0.12	-0.08	-0.08	-0.03	0.13	1.00						
$Trade$	-0.09	-0.07	-0.08	0.19	-0.05	-0.17	0.42	-0.03	0.35	-0.09	-0.37	1.00					
$GrossPrimaryEnrollment$	0.06	0.06	0.06	0.04	0.05	0.21	0.04	0.22	-0.02	0.01	-0.05	0.10	1.00				
$NaturalResources$	-0.08	-0.07	-0.06	-0.19	-0.04	0.04	-0.10	0.13	0.07	0.19	0.05	0.26	-0.04	1.00			
$NaturalDisasters$	0.06	0.06	0.08	-0.28	0.02	0.20	-0.08	0.18	-0.23	0.13	0.34	-0.27	-0.01	0.12	1.00		
$CorruptionControl$	0.13	0.14	0.13	0.36	0.11	-0.12	0.36	-0.16	0.23	-0.10	-0.22	0.24	0.21	-0.50	-0.25	1.00	
$PoliticalStability$	-0.00	-0.00	0.02	0.24	-0.03	0.02	0.28	0.04	0.33	-0.14	-0.43	0.37	0.24	-0.31	-0.27	0.69	1.00

3.2 Model Specification and Estimation Strategy

Now that the details regarding the data used in this study have been discussed, the research methodology used to test the hypothesized relationships in the available data can be considered. To test whether more FDI leads to better or worse socio-economic outcomes, $FDIinflow_{it}$ is used as the independent variable of interest, which is represented by the number of investments in each African country. $FDIinflow_{it}$ is categorised into $TotalFDI$, $LabourIntensiveFDI$ and $KnowledgeIntensiveFDI$ to test the second and third set of hypotheses.[7] The following general regression equation is applied to test all of the aforementioned hypotheses according to specific outcome variables (Y_{it}) that relate to different socio-economic conditions:

$$Y_{it} = \beta_0 + \beta_1 FDIinflow_{it-1} + \beta_2 X_{it} + \alpha_i + \gamma_t + \mu_{it} \quad (1)$$

The socio-economic outcomes (Y_{it}) that are investigated are: access to electricity ($Electricity$) for H1; $JobsCreated$, Labour Force Participation Rate ($LFPR$) and $Unemployment$ for H2a and H2b; and lastly, $LFPRg$ (female to male) for H3. By testing the impact of FDI on access to electricity in H1, important implications regarding the well-being of people in African countries and the opportunity for them to integrate into the modern economy can be drawn (Pachauri & Spreng, 2004). The distinction for the second set of hypotheses is warranted as the operation of foreign affiliates of MNEs as a result of greenfield investments can lead to direct employment effects (captured by $JobsCreated$) that occur internally at the site of the MNEs and its affiliates, as well as indirect effects of employment (captured by $LFPR$) that occur external to the MNE with related firms (Dunning & Fortanier, 2007; Dunning & Lundan, 2008). Moreover, it is interesting to investigate the spillover effects on the job market in terms of the potential impact of FDI on unemployment levels, given that the African growth experience has not been pro-employment (African Development Bank, 2019). By considering a gendered LFPR (i.e. women's relative employment rates), H3 extends the analyses to understand if (different types of) FDI can have an impact on gender inequality (Aguayo-Tellez, 2012).

A vector of control variables (X_{it}) is included in the analysis that takes into account factors that could have a bearing upon FDI and the dependent variables. It is impor-

[7] See Appendix A.2 for more details regarding the categorisation of FDI.

tant to take into consideration the economic and technological conditions of the host countries, since studies suggest that it is likely to affect the way in which FDI can impact economic growth (de Mello, 1997; Klein et al., 2001; OECD, 2002). Therefore, this study controls for $GDPpc$ (per capita), $Inflation$, $Population$, Primary Enrollment rate in schools ($GrossPrimaryEnrollment$), $NaturalResources$, $Trade$, $NaturalDisasters$ and governance factors ($CorruptionControl$ and $PoliticalStability$). Country fixed effects such as political, cultural, religious and geographical issues (α_i), year fixed effects such as year-specific economic shocks (γ_t) as well as time-varying idiosyncratic effects such as unobserved productivity shocks (μ_{it}) are captured in the respective error terms.

Two main econometric methods are used to estimate Equation 1 on panel data over the period 2003-2017: ordinary least squares (OLS) and two-stage least squares (2SLS). Panel data regression analysis often entails either fixed effects (FE) or random effects (RE) estimation techniques to be employed. However, the outcome of the Hausman tests for each of the models did not derive consistent results for each of the hypotheses and sub-hypotheses, i.e. the results did not suggest that RE would be more efficient or FE would be consistent for all of the regressions. As such, the final regression estimation techniques were conducted based on whether the results derived from each of the Hausman tests suggested that FE or RE would be the better option based on the consistency (FE) and efficiency (RE) of the coefficients. Therefore, both FE and RE estimation techniques are used in the analyses depending on the outcome of the Hausman tests.

Taking into consideration that FDI is unlikely to have an immediate impact on the socio-economic conditions in the African countries under investigation and to minimize the causal effect of socio-economic factors impacting FDI, the main independent variable of interest ($FDIinflow_{it}$) enters into the regressions in lagged form ($FDIinflow_{it-1}$).[8] The inclusion of lagged explanatory variables in panel procedures can control for endogeneity bias (Herzer et al., 2008). However, lagging explanatory variables is often not enough to account for the potential endogeneity that may arise when faced with reverse causality concerns (Bellemare, Masaki & Pepinksy, 2017; Reed, 2015). Since the attractiveness of FDI is also likely to depend on the socio-economic factors that are investigated in this paper, instrumental variable (IV) analysis is implemented using 2SLS to allow for this potential endogeneity.

[8]Following the intuition provided by Cole, Elliott and Fredriksson (2006).

Five potential instruments have been considered for $TotalFDI_{it-1}$: $Currency_{it-1}$, official exchange rates ($Xrate_{it-1}$), real effective exchange rates ($REER_{it-1}$), one-period lagged FDI ($TotalFDI_{it-2}$) and $BartikIV_{it-1}$.[9] As with any IV regression analyses, it is important to consider the validity and relevance of the IV, Z_{it}. In other words, the instrument must satisfy two conditions: instrument exogeneity and instrument relevance. The instrument exogeneity condition, $Cov(error_{it}; Z_{it}) = 0$, means that for an IV to be valid, it must only affect the socio-economic outcomes (Y_{it}) through its impact on the potentially endogenous variable, $TotalFDI_{it-1}$. The instrument relevance condition, $Cov(TotalFDI_{it}; Z_{it}) \neq 0$, entails that the variation in $TotalFDI_{it-1}$ should be explained by the IVs, Z_{it} (Wooldridge, 2014).

Real exchange rates have demonstrated to be one of the most consistently robust determinants of FDI in the empirical literature (Malesky, 2009). By altering relative costs or wealth, real exchange rate movements can influence the decisions of MNEs to conduct FDI activities (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004). Therefore, real exchange rates have been employed as successful IVs in several studies as it often satisfies the instrument relevance condition (Alfaro et al., 2004; Malesky, 2009). It can be argued that exchange rates are exogenous to the socio-economic outcomes in this specific study as it is unlikely that there is a direct relationship between living conditions or job prospects and exchange rates. Rather, the impact of exchange rates on such socio-economic outcomes seems to be only able to occur through its effect on FDI. For these reasons, $Currency_{it-1}$, $Xrate_{it-1}$, and $REER_{it-1}$ were considered as potential candidates for IVs.

Lagged explanatory variables are often used as IVs (Reed, 2015), and specifically lagged FDI (Alfaro et al., 2004; Borensztein, De Gregorio & Lee, 1998), as a means to tackle endogeneity and avoid simultaneity. The instrument relevance of lagged FDI is sensible as past FDI inflows often affect the pattern of current FDI inflows, through a path dependency in which already established international investment provides a basis for future FDI activity. There is evidence of such a self-reinforcing mechanism of FDI whereby the existing stock of FDI is a significant determinant of current FDI (Wheeler and Mody, 1992) and therefore one-period lagged FDI is also considered as an instrument in the regression analyses. Since one-period lagged FDI entails that the instrument

[9]These IVs are only applicable to $TotalFDI$ and not $LabourIntensiveFDI$ or $KnowledgeIntensiveFDI$ because it is difficult to determine the type of FDI with these instruments.

is lagged by two periods, the exogeneity of the IV is also sensible given the time lapse involved in relation to the socio-economic outcome under investigation.

The final IV that is considered ($BartikIV$) has been constructed by interacting the historical share of total FDI for each country (in 1993)[10] with values of net FDI inflows[11] under the period of investigation (2003-2017). This approach to deal with the endogeneity issue, as introduced by Bartik (1991), has been used across a variety of fields in the economics literature, ranging from labour, public and development to international trade, finance and macroeconomics (Goldsmith-Pinkham, Sorkin & Swift, 2018). The rationale behind such a so-called "shift-share" instrument is to combine aggregate-level shifts (in recent FDI inflows) with local economic compositions (the historical share of FDI) to predict variation in the variable of interest (Jaeger, Ruist, & Stuhler, 2018). The relevance of $BartikIV$ would make sense due to the FDI values used in the calculation of the variable. The exogeneity of the $BartikIV$ is also plausible when taking into consideration that while there is a clear relationship between the instrument and the number of FDI projects, the interaction between past and current FDI flows is unlikely to be directly correlated with the socio-economic factors under investigation due to the time passed since the historical share of FDI was calculated.

Table 3 shows the first-stage regression results for the instruments considered for $TotalFDI_{it-1}$. It is clear that the only consistently robust determinant for $TotalFDI_{it-1}$ is its lagged form, $TotalFDI_{it-2}$. As such, only $FDIinflow_{it-2}$[12] is used as the IV in the final regression analyses to avoid using weak and irrelevant instruments. The next section provides an analysis of the main regression results, which includes a discussion on further tests conducted for determining the relevance and strength of the IVs employed.

[10] 1993 chosen as an arbitrary threshold for at least as long as a decade ago.

[11] Net FDI inflows (% of GDP) is acquired from World Bank Open Data.

[12] This entails $TotalFDI_{it-2}$ to instrument for $TotalFDI_{it-1}$, $LabourIntensiveFDI_{it-2}$ to instrument for $LabourIntensiveFDI_{it-1}$ and $KnowledgeIntensiveFDI_{it-2}$ to instrument for $KnowledgeIntensiveFDI_{it-1}$.

Table 3: First-Stage Regression Results for Considered Instruments

	H1	**H2**	**H2a**	**H2b**	**H3**
	(1)	(2)	(3)	(4)	(5)
	$\boldsymbol{TotalFDI_{t-1}}$	$\boldsymbol{TotalFDI_{t-1}}$	$\boldsymbol{TotalFDI_{t-1}}$	$\boldsymbol{TotalFDI_{t-1}}$	$\boldsymbol{TotalFDI_{t-1}}$
$TotalFDI_{t-2}$	1.383***	1.383***	1.4116**	1.383***	1.383***
	(0.218)	(0.218)	(0.595)	(0.218)	(0.597)
$Currency_{t-1}$	-129386.4	-157382.3	-139856.6	-157382.3	-157382.3
	(91275.3)	(96376.3)	(114351.6)	(96376.3)	(96376.3)
$XRate_{t-1}$	1.3632	1.8356*	1.6558	1.8356*	1.8356*
	(1.111)	(1.079)	(1.536)	(1.079)	(1.079)
$REER_{t-1}$	-0.5795	-0.0532	-0.0546	-0.0532	-0.0532
	(0.148)	(0.145)	(0.123)	(0.145)	(0.145)
$BartikIV_{t-1}$	0.0351	0.0350	0.0248	0.0350	0.0350
	(0.408)	(0.041)	(0.036)	(0.041)	(0.041)
Observations	318	320	320	320	320
R^2	0.3718	0.3713	0.3713	0.3713	0.3713

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4 Regression Results

4.1 Main Analyses

An analysis of the main regression results is provided in this section, along with a discussion of the results from the robustness checks. The analysis follows the order of the proposed hypotheses, with each output table representing a different hypothesis and/or estimation method.[13]

Table 4 reports OLS and 2SLS estimates for the first hypothesis (H1) that investigates the impact of FDI on the quality of life of people living in African countries. Both the OLS and 2SLS results suggest that more FDI projects can lead to an increase in the percentage of the African population with access to electricity, holding all else constant at a 10 percent level of statistical significance. When taking endogeneity into account, FDI seems to have an even greater contribution to improving the quality of life of people living in African countries than the simple OLS regression analysis. What the 2SLS results suggest is that having an additional 26 FDI projects can approximately increase the population of a country's access to electricity by 4 percentage points (=0.144*29.91), *ceteris paribus*. The first-stage F-test statistic indicates that the IV used in the 2SLS regressions is relevant (i.e. significant at all conventional levels) and strong (i.e. exceeds the threshold of 10). Moreover, the null hypothesis of the underidentification test (that the model is underidentified) can be rejected at the 5% level of significance, which implies that the instrument is correctly identified. As such, the results indicating that FDI can increase the quality of life of people living in African countries (via an increased access to electricity) is indeed reliable.

OLS estimates for the second set of hypotheses are reported in Table 5, which suggests that there is no direct employment effect of FDI, regardless of the type of FDI project, since these results yield no statistically significant FDI coefficients. When it comes to indirect employment effects, however, it seems that FDI, in general, can contribute to increasing the unemployment rate in African countries. This negative influence on the job prospects of people living in Africa only holds for knowledge-intensive FDI. In particular, at a 10 percent level of statistical significance, an additional 26 FDI projects (in general) seems to increase the unemployment rate by roughly 0.13 percentage points (=0.0176*7.13), holding all else constant. Furthermore, at a 5 percent level of statistical

[13] All variables are standardized to minimise risks of multicollinearity.

significance, an additional 16 knowledge-intensive FDI projects seems to increase the unemployment rate by roughly 0.16 percentage points (=0.0230*7.13), holding all else constant.

After taking into account that FDI may be endogenous, the 2SLS results (Table 6) suggest that only labour-intensive FDI projects can positively contribute to job creation while total FDI and knowledge-intensive FDI seem to have no effect on job prospects at all. Having an additional 11 labour-intensive FDI projects can roughly lead to 4,322 more jobs (=0.810*5335.93) created, keeping all else constant. This result holds for all conventional levels of statistical significance. According to the first-stage F-test statistic, the instrument employed in this model is reliable as it proves to be relevant (i.e. significant at all conventional levels), strong (i.e. exceeds the threshold of 10) and correctly identified (i.e. at a 5 percent level of statistical significance, the null that the model is underidentified can be rejected). Together, the OLS and 2SLS results report findings that are in line with the second set of hypotheses postulating a positive influence of labour-intensive FDI (H2a) and a negative influence of knowledge-intensive FDI (H2b).

Finally, regression analyses for the last hypothesis (H3) (Table 7), investigating whether there is a gendered effect of FDI, finds results contradictory to the expected negative influence of FDI on the job prospects for women in African countries. Instead, the 2SLS regression results in Column 2 suggest that an additional 26 FDI projects roughly translates into a 0.66 percentage point (=0.0296*22.33) increase in the amount of women participating in the labour force, *ceteris paribus*. This result holds for a 10 percent level of statistical significance and first-stage statistics imply that the instrument employed is indeed reliable (in terms of strength and relevance) and the IV model is not underidentified.

Table 4: Regression Output for H1

	(1) OLS Regression Results ***Electricity***	(2) 2SLS Regression Results ***Electricity***
$TotalFDI_{t-1}$	0.0318*	0.144*
	(0.016)	(0.087)
$GDPpc$	0.0686	0.0264
	(0.066)	(0.052)
$Inflation$	-0.0177**	-0.0166*
	(0.008)	(0.009)
$Population$	0.511***	0.268
	(0.180)	(0.226)
$Trade$	-0.0560	-0.0624
	(0.045)	(0.041)
$GrossPrimaryEnrollment$	0.0565*	0.0442
	(0.034)	(0.035)
$NaturalResources$	0.0885**	0.0665*
	(0.035)	(0.035)
$NaturalDisasters$	-0.00984	-0.0133
	(0.008)	(0.009)
$CorruptionControl$	0.0639	0.0876*
	(0.050)	(0.050)
$PoliticalStability$	-0.0341	-0.0302
	(0.038)	(0.042)
_cons	-0.0261**	-0.0248**
	(0.013)	(0.012)
Observations	519	479
R^2	0.0336	0.0753
First-stage F-test (p-value)		141.22
		(0.0000)
Underidentification test (p-value)		2.90
		(0.0888)
Weak identification test		141.219

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Underidentification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic.

Table 5: OLS Regression Output for H2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	JobsCreated	***JobsCreated***	***JobsCreated***	***LFPR***	***LFPR***	***LFPR***	***Unempl.***	***Unempl.***	***Unempl.***
$TotalFDI_{t-1}$	0.0259			-0.00644			0.0176*		
	(0.060)			(0.007)			(0.010)		
$LabourIntensiveFDI_{t-1}$		0.0206			-0.0133			0.00880	
		(0.067)			(0.009)			(0.014)	
$KnowledgeIntensiveFDI_{t-1}$			0.0480			-0.00328			0.0230**
			(0.068)			(0.006)			(0.009)
$GDPpc$	0.188	0.192	0.180	0.0582	0.0586	0.0573	-0.166*	-0.162*	-0.169*
	(0.161)	(0.160)	(0.159)	(0.052)	(0.052)	(0.052)	(0.097)	(0.096)	(0.098)
$Inflation$	0.0211	0.0209	0.0214	-0.00461	-0.00467	-0.00454	0.0129	0.0127	0.0130
	(0.039)	(0.039)	(0.039)	(0.005)	(0.005)	(0.005)	(0.013)	(0.013)	(0.013)
$Population$	0.748**	0.781**	0.705**	-0.0782	-0.0774	-0.0853	0.00753	0.0356	-0.00186
	(0.343)	(0.326)	(0.339)	(0.062)	(0.060)	(0.064)	(0.129)	(0.127)	(0.129)
$Trade$	0.182	0.182	0.178	-0.00584	-0.00500	-0.00612	0.0717	0.0726	0.0707
	(0.113)	(0.113)	(0.112)	(0.035)	(0.034)	(0.035)	(0.055)	(0.055)	(0.055)
$GrossPrimaryEnrollment$	-0.0266	-0.0281	-0.0261	-0.0766***	-0.0759***	-0.0765***	0.00753	0.00678	0.00764
	(0.067)	(0.066)	(0.066)	(0.028)	(0.028)	(0.028)	(0.038)	(0.038)	(0.038)
$NaturalResources$	0.196**	0.196**	0.194**	-0.0246	-0.0243	-0.0248	-0.000215	0.000338	-0.000580
	(0.085)	(0.085)	(0.084)	(0.027)	(0.027)	(0.027)	(0.041)	(0.041)	(0.040)
$NaturalDisasters$	-0.0481	-0.0485	-0.0473	0.00947	0.00955	0.00949	-0.000498	-0.000778	-0.000178
	(0.036)	(0.036)	(0.036)	(0.007)	(0.007)	(0.007)	(0.015)	(0.016)	(0.015)
$CorruptionControl$	-0.0378	-0.0400	-0.0314	-0.0166	-0.0177	-0.0159	0.00977	0.00720	0.0117
	(0.115)	(0.115)	(0.113)	(0.029)	(0.029)	(0.029)	(0.059)	(0.060)	(0.059)
$PoliticalStability$	0.155*	0.155*	0.152*	-0.110	-0.110	-0.111	-0.0626	-0.0620	-0.0633
	(0.091)	(0.091)	(0.091)	(0.086)	(0.086)	(0.086)	(0.068)	(0.068)	(0.068)
_cons	0.0780***	0.0770**	0.0768***	0.0596***	0.0606***	0.0596***	-0.0678***	-0.0682***	-0.0684***
	(0.027)	(0.029)	(0.026)	(0.011)	(0.011)	(0.011)	(0.018)	(0.018)	(0.018)
Observations	521	521	521	508	508	508	508	508	508
R^2	0.050	0.049	0.051	0.154	0.157	0.153	0.063	0.060	0.067

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: 2SLS Regression Output for H2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	JobsCreated	***JobsCreated***	***JobsCreated***	***LFPR***	***LFPR***	***LFPR***	***Unempl.***	***Unempl.***	***Unempl.***
$TotalFDI_{t-1}$	0.163			-0.00932			0.0580		
	(0.225)			(0.030)			(0.049)		
$LabourIntensiveFDI_{t-1}$		0.810***			-0.119			0.229	
		(0.134)			(0.121)			(0.249)	
$KnowledgeIntensiveFDI_{t-1}$			0.180			-0.000424			0.0463
			(0.184)			(0.022)			(0.036)
$GDPpc$	0.0606	-0.0557*	0.0485	0.0311	0.0392	0.0490	-0.149*	-0.163	-0.147*
	(0.127)	(0.031)	(0.119)	(0.048)	(0.049)	(0.051)	(0.087)	(0.103)	(0.087)
$Inflation$	0.0241	0.0466	0.0244	-0.00369	-0.00531	-0.00451	0.0112	0.0137	0.0111
	(0.038)	(0.030)	(0.038)	(0.006)	(0.007)	(0.006)	(0.013)	(0.018)	(0.012)
$Population$	0.190	0.167*	0.175	-0.0709	0.0436	-0.104	-0.0560	-0.203	-0.0229
	(0.566)	(0.092)	(0.442)	(0.063)	(0.130)	(0.072)	(0.189)	(0.379)	(0.169)
$Trade$	0.151	0.0165	0.145	-0.00889	0.00272	-0.00691	0.0859	0.0668	0.0866
	(0.107)	(0.033)	(0.105)	(0.033)	(0.028)	(0.034)	(0.053)	(0.067)	(0.053)
$GrossPrimaryEnrollment$	-0.0271	-0.0149	-0.0274	-0.0733**	-0.0652**	-0.0789***	0.00871	-0.00307	0.00795
	(0.071)	(0.019)	(0.070)	(0.029)	(0.031)	(0.029)	(0.043)	(0.042)	(0.043)
$NaturalResources$	0.173**	0.0782**	0.171**	-0.0206	-0.0154	-0.0230	0.0106	-0.0000582	0.00981
	(0.079)	(0.039)	(0.078)	(0.026)	(0.028)	(0.027)	(0.044)	(0.050)	(0.043)
$NaturalDisasters$	-0.0456	-0.0813**	-0.0431	0.00850	0.00653	0.00797	0.00116	0.00383	0.00165
	(0.033)	(0.040)	(0.034)	(0.010)	(0.012)	(0.010)	(0.014)	(0.016)	(0.014)
$CorruptionControl$	0.0308	0.0443	0.0400	-0.0354	-0.0530	-0.0325	0.0164	0.0443	0.0161
	(0.112)	(0.047)	(0.105)	(0.033)	(0.043)	(0.032)	(0.066)	(0.090)	(0.066)
$PoliticalStability$	0.136	0.0543	0.134	-0.0984	-0.0873	-0.101	-0.0600	-0.0771	-0.0591
	(0.106)	(0.043)	(0.105)	(0.078)	(0.077)	(0.078)	(0.074)	(0.080)	(0.073)
_cons	0.0959***	0.0244	0.0924***	0.0490	0.0528	0.0645***	-0.0706***	-0.0878***	-0.0740***
	(0.025)	(0.033)	(0.024)	(0.145)	(0.143)	(0.012)	(0.019)	(0.029)	(0.018)
Observations	481	481	481	469	469	469	466	469	469
R^2	0.2358	0.4720	0.2343	0.0128	0.0017	0.0235	0.0005	0.0765	0.0003
First-stage F-test (p-value)	141.77	215.51	174.21	156.69	3.07	175.13	141.06	2.55	175.13
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0861)	(0.0000)	(0.0000)	(0.1169)	(0.0000)
Underidentification test (p-value)	2.90	5.35	2.32	2.981	3.18	2.33	2.904	2.81	2.33
	(0.0886)	(0.0207)	(0.1277)	(0.0843)	(0.0744)	(0.1268)	(0.0883)	(0.0935)	(0.1268)
Weak identification test	141.773	215.509	174.206	156.694	3.069	175.126	141.063	2.550	175.126

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Underidentification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic.

Table 7: Regression Output for H3

	(1) OLS Results ***LFPRg***	(2) 2SLS Results ***LFPRg***	(3) OLS Results ***LFPRg***	(4) 2SLS Results ***LFPRg***	(5) OLS Results ***LFPRg***	(6) 2SLS Results ***LFPRg***
$TotalFDI_{t-1}$	0.00669	0.0296*				
	(0.004)	(0.017)				
$LabourIntensiveFDI_{t-1}$			0.00806	0.0842		
			(0.006)	(0.078)		
$KnowledgeIntensiveFDI_{t-1}$					0.00587	0.0218
					(0.004)	(0.013)
$GDPpc$	0.120**	0.0954*	0.121**	0.0824	0.115**	0.0967*
	(0.055)	(0.051)	(0.056)	(0.050)	(0.051)	(0.051)
$Inflation$	-0.0136***	-0.0117**	-0.0136***	-0.0109**	-0.0136***	-0.0119**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
$Population$	0.105	0.0738	0.110	0.0248	0.0972	0.0946
	(0.073)	(0.080)	(0.074)	(0.121)	(0.067)	(0.075)
$Trade$	-0.0114	-0.0156	-0.0116	-0.0227	-0.0119	-0.0152
	(0.022)	(0.020)	(0.022)	(0.020)	(0.022)	(0.020)
$GrossPrimaryEnrollment$	0.0159	0.0128	0.0154	0.0126	0.0180	0.0125
	(0.024)	(0.028)	(0.024)	(0.027)	(0.024)	(0.028)
$NaturalResources$	-0.00672	-0.00782	-0.00676	-0.00994	-0.00639	-0.00739
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
$NaturalDisasters$	-0.0129*	-0.0125*	-0.0130*	-0.0117	-0.0129**	-0.0125*
	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)
$CorruptionControl$	0.0472	0.0517	0.0472	0.0544	0.0444	0.0508
	(0.030)	(0.034)	(0.030)	(0.040)	(0.029)	(0.034)
$PoliticalStability$	-0.0755	-0.0717	-0.0757	-0.0766	-0.0751	-0.0713
	(0.052)	(0.052)	(0.052)	(0.050)	(0.052)	(0.052)
_cons	0.0280**	0.0321***	0.0275**	0.0682	0.0690	0.0314***
	(0.011)	(0.011)	(0.011)	(0.145)	(0.144)	(0.011)
Observations	508	469	508	469	508	469
R^2	0.252	0.1039	0.253	0.1457	0.0820	0.0864
First-stage F-test (p-value)		141.06		2.88		175.13
		(0.0000)		(0.0961)		(0.0000)
Underidentification test (p-value)		2.90		3.058		2.33
		(0.0883)		(0.0803)		(0.1268)
Weak identification test		141.063		2.879		175.126

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Underidentification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic.

4.2 Robustness Checks and Extended Analyses

Two types of model variation tests have been employed to check the robustness of the results: a change in the main regressor and the changes in the sample. The 2SLS regression outputs are provided in Appendix A.3

Firstly, net FDI inflows in US$ is used as an alternative definition for the independent variable of interest (instead of the total number of greenfield investments) in order to analyse whether the data is sensitive to such a change. The output in Table 10 shows that the results are not robust to the alternative variable definition with one exception - FDI seems to still contribute to improving the employment prospects of women in African countries. However, upon further investigation, the first-stage test results yield statistics that imply that this result could be unreliable as the strength of the instrument employed in the 2SLS regression is questionable. The first-stage F-stat of 8.48 is below the threshold (of 10) to serve as a strong instrument, which suggests that not enough variation in FDI is explained by the IV. The main analyses is therefore not robust to the alternative variable definition.

As an extension to check whether the main results are robust to regional differences and differences in terms of levels of development, subsample regressions restricted to Sub-Saharan Africa (SSA) and countries categorised as Least Developed Countries (LDCs) were conducted to capture whether these types of countries have different experiences in terms of the socio-economic consequences of FDI.[14] It is clear that the support for H2a found in the main analyses (that labour-intensive FDI projects have a positive direct employment effect) is robust to the SSA subsample (Table 11) as well as the LDC subsample (Table 12). Furthermore, the positive influence found of total FDI on women's opportunity in the African labour market also holds for SSA countries (Table 11).

Interesting estimates emerged indicating a positive influence of knowledge-intensive FDI activities for the employment prospects for women in SSA.[15] Column 13 in Table 11 shows that, at a 10 percent level of statistical significance, an additional 16 knowledge-intensive FDI projects seems to have the potential to increase the ratio of female to male LFPR in SSA by 0.65 percentage points (=0.0291*22.33), holding all else constant. At a first glance, it also seems that interesting results yield for LDCs. Based purely on the the

[14] Based on the United Nation (UN) classifications (https://unstats.un.org/unsd/methodology/m49/).

[15] The coefficient for $LabourIntensiveFDI_{t-1}$ is not interpreted since it yields unreliable estimates due to the weakness of the instrument employed.

statistical significance of the coefficients in Table 12, it is apparent that FDI, regardless of type, may have a detrimental indirect employment effect by negatively influencing the LFPR in LDCs. However, upon further investigation, it is clear that the first-stage F-test yields low statistics and therefore this effect cannot be certain. The poorly identified models in Table 12 can be attributed to the small sample size pertaining to the subsample of LDCs that has almost half the amount of observations as the rest of the models estimated.

4.3 Discussion

From the above analyses, it is clear that when MNEs conduct FDI projects in African countries, they indeed have some potential to improve the quality of life of people living in Africa (by increasing their access to electricity) as proposed by H1. These results are unfortunately not robust to an alternative specification of FDI (measured in net FDI inflows in US$) or different subsamples. The lack of robust evidence for the contribution of FDI to improve the quality of life of all people living in African countries could be due to the possibility that attracting FDI might divert resources from public investment in infrastructure and thereby constrain the development of infrastructure such as electrical grids. An overemphasis on foreign capital, in this sense, could potentially undermine local infrastructure development. Another explanation could be attributed to the fact that FDI is often associated with low levels of resource commitment in developing countries. Such so-called "shallow" or "footloose" investment therefore has a low potential for providing positive spillovers in developing countries (Yamin & Sinkovics, 2009).

The main analyses also support H2a that labour-intensive FDI can positively influence the job prospects of people living in African countries, which is robust to two different subsample specifications. A greater effect of labour-intensive FDI on job creation was found in the LDC subsample when compared to the SSA subsample as well as the full sample. This suggests that already existing socio-economic differences indeed matter, especially with regards to LDCs that tend to have a generally lower-skilled population. These results furthermore imply that these (less developed) countries experience a higher positive contribution of labour-intensive FDI to direct employment because its population is better suited for such jobs that require less skills.

For H2b, however, there is no reliable evidence that knowledge-intensive FDI has

any detrimental effect on the job prospects for people in Africa. This might imply that African countries do not have the assumed skills gap significant enough to experience negative employment effects when FDI is more skills demanding (i.e. knowledge-intensive). Rather, the labour market in African countries is more equipped for the higher-skilled jobs provided by MNEs and their knowledge-intensive activities than expected. Nevertheless, the results pertaining to the second set of hypotheses in general show no evidence of a spillover effect of FDI into the labour market. The advantages gained from FDI are therefore restricted to direct employment effects involved with the corresponding MNEs when considering general employment levels.

In contrast, an analysis of women's relative employment levels imply that FDI can indeed generate benefits that are not fully captured by the investing MNEs, i.e. provide indirect employment effects for women. Results contradictory to H3 emerged in the analyses indicating that inward FDI actually positively influences the opportunity for women in the African labour market. This is robust to the SSA subsample, which also yields a surprising result of a positive influence of knowledge-intensive FDI for women's employment prospects. This is in line with other findings that the LFPR in SSA is characterised by a "strong economic participation of women" (Samans & Zahidi, 2017). It also suggests that the women in the SSA labour force, compared to the women in the general African labour force, are better equipped for the more skills demanding jobs that MNEs bring to the economy. The relatively more developed countries in SSA are therefore able to absorb the benefits of FDI because these countries may be less labour-intensive (Yamin & Sinkovics, 2009). Overall, these results imply that the assumption that women in developing countries possess less skills than men to perform in knowledge-intensive industries is invalid for African countries.

5 Conclusions

What has been demonstrated in this paper is that FDI can improve the socio-economic conditions in African countries by increasing the quality of life (via an increased access to electricity). Robust findings in this study also suggest that labour-intensive FDI can directly contribute to improving the employment prospects of people living in Africa by creating jobs. Furthermore, women in African economies can also benefit from FDI, which has proved to increase women's relative employment rates.

While there is no explicit evidence of a detrimental effect of knowledge-intensive FDI on the employment prospects of people living in African countries, the results still imply that there is a skills gap as there is no evidence that the continent is able to reap the potential employment benefits associated knowledge-intensive FDI. Urgent efforts are therefore required for closing the continent's skills gap, as recommended by many other scholars in the literature (Samans & Zahidi, 2017; Wall et al., 2018). Especially since the trajectory of FDI is likely to head towards even more highly-skilled sectors given the recent (and rapid) developments in technology, policymakers should take into consideration that the type of FDI that is being facilitated into the African continent indeed matters for its economy and its people.

Moreover, it is important to note that Africa is not a homogeneous entity with countries that have similar socio-economic experiences when it comes to the impact of FDI. LDCs seem to have greater direct employment benefits in terms of more jobs created from labour-intensive FDI projects. Policymakers in the developmental field should therefore specifically focus on upgrading the skills of people in LDCs so that these countries can also reap the benefits acquired from knowledge-intensive FDI and avoid being locked into a cycle of primarily supplying low skilled labour. Furthermore, only SSA countries (that tend to be relatively more developed) experience a positive gendered effect of FDI in favour for women. Women in SSA have also been revealed to have sufficient skills to gain from the positive spillover effects generated by knowledge-intensive FDI. These results are in line with cross-country studies suggesting that the impact of FDI in developing countries is conditional on various factors such as income and human capital levels (Herzer et al., 2008).

To answer the main research questions presented at the outset of this paper: Can FDI improve the quality of life and employment prospects of people living in African

countries? Do labour-intensive FDI and knowledge-intensive FDI have the same socio-economic impact? It can be concluded that, after controlling for various factors, inward FDI (specifically, 26 greenfield investment projects) can improve the quality of life in African countries by increasing a country's access to electricity by approximately 4 percentage points. FDI can also contribute to the employment prospects of people in African countries and the type of FDI indeed matters since only labour-intensive FDI is able to contribute to job creation. In particular, 11 greenfield labour-intensive FDI projects alone can create 4,322 jobs in African countries, *ceteris paribus*. Moreover, 26 greenfield FDI projects can increase women's relative employment rates by 0.66 percentage points, holding all else constant.

However, there are several limitations in this study that ought to be addressed. Firstly, only lagged FDI was employed as the IV to control for potential endogeneity. This yielded some significant results with weak instruments that are unable to explain enough variation in FDI. The efficiency of the IVs employed in the models can therefore be questioned as several models were poorly identified. A second limitation is related to the exogeneity of the IVs employed. Formal tests (such as the Sargan-Hansen test) could not be conducted as only one IV was used for each model and the validity of the IVs can thus not be confirmed empirically. Finally, the poor data availability of socio-economic variables for African countries resulted in only one type of indicator for quality of life that was examined. Direct conclusions can therefore not be drawn with regards to the contribution of FDI to improving poverty levels in general and can only be restricted to interpreting an increased access to electricity.

As an attempt to fill the current gap in the literature, it is clear that this paper also leads to further avenues of research. Firstly, since access to electricity is only one type of infrastructure that affects the livelihood of people in African countries, other measures can also be explored. Another way to construe the socio-economic impact of FDI could therefore be to investigate how it affects access to basic needs, such as clean water or housing. Secondly, an extension to this study could analyse the potential channels that may influence these socio-economic outcomes via moderating or mediating effects. It could also be interesting to take into consideration that the majority of employment in Africa takes place in the informal sector, which is "characterised by low skills and low pay in unhealthy working conditions" (Wall et al., 2018). MNEs not only affect the levels and standards of employment, but also have the potential to influence the conditions of employment in their host countries (Dunning & Lundan, 2008). Therefore, a final

suggestion is for future researchers to consider the working conditions of people living in African countries in their analyses of the socio-economic impact of FDI.

6 Bibliography

Africa Progress Panel. (2014). *Grain Fish Money, Financing Africa's Green and Blue Revolutions. Africa Progress Report 2014.* Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Africa_Progress_Report_2014.*pdf*

African Development Bank. (2018). *African Economic Outlook 2018.* Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/African_Economic_Outlook_2018_-_EN.pdf.

African Development Bank. (2019). *African Economic Outlook 2019.* Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf

Agosin, M. R. & Machado, R. (2005). Foreign Investment in Developing Countries: Does it Crowd in Domestic Investment? *Oxford Development Studies, 33*(2),149-162.

Aguayo-Tellez, E. (2012). *The Impact of Trade Liberalization Policies and FDI on Gender Inequalities: a Literature Review.* Retrieved from https://openknowledge-worldbank-org.eur.idm.oclc.org/bitstream/handle/10986/9220/WDR2012-0009.pdf

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and Economic Growth: the Role of Local Financial Markets. *Journal of International Economics, 64*(1), 89-112.

Anyanwu, J. C. (2012). Why Does Foreign Direct Investment Go Where It Goes?: New Evidence From African Countries. *Annals of Economics & Finance, 13*(2), 425-462.

Asiedu, E. (2002). On the Determinants of Foreign Direct Investment to Developing countries: is Africa Different? *World Development, 30*(1), 107-119.

Asiedu, E. (2006). Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability. *World Economy, 29*(1), 63-77.

Asiedu, E., & Gyimah-Brempong, K. (2008). The Effect of the Liberalization of Investment Policies on Employment and Investment of Multinational Corporations in Africa. *African Development Review, 20*(1), 49-66.

Baliamoune-Lutz, M. (2006). Globalisation and Gender Inequality: Is Africa different? *Journal of African Economies, 16*(2), 301-348.

Bartik, T. J. (1991). *Who Benefits from State and Local Economic Development Policies?* Kalamazoo, MI:W.E. Upjohn Institute for Employment Research.

Becker, G. S. (1957). *The Economics of Discrimination.* Chicago: The University of Chicago Press.

Bellemare, M. F., Masaki, T., & Pepinsky, T. B. (2017). Lagged Explanatory Variables and the Estimation of Causal Effect. *The Journal of Politics, 79*(3), 949-963.

Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How Does Foreign Direct Investment Affect Economic Growth? *Journal of International Economics, 45*(1), 115-135.

Braunstein, E. (2002). *Gender, FDI and Women's Autonomy: A Research Note on Empirical Analysis.* (Political Economy Research Institute Working Paper 49). Retrieved from http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_1-50/WP49.pdf

Campos, N.F. & Kinoshita, Y. (2002). Foreign Direct Investment as Technology Transferred: Some Panel Evidence from the Transition Economies. *The Manchester School, 70*(3), 398–419.

Cole, M. A., Elliott, R. J., & Fredriksson, P. G. (2006). Endogenous Pollution Havens: Does FDI influence Environmental Regulations?. *Scandinavian Journal of Economics, 108*(1), 157-178.

Copestake, J., & Camfield, L. (2010). Measuring Multidimensional Aspiration Gaps: A Means to Understanding Cultural Aspects of Poverty. *Development Policy Review, 28*(5), 617-633.

de Mello, L. R. (1997). Foreign Direct Investment in Developing Countries and Growth: A Selective Survey. *Journal of Development Studies, 34*(1), 1-34.

Dunning, J. H. & Fortanier, F. (2007). Multinational Enterprises and the New Development Paradigm: Consequences for Host Country Development. *Multinational Business Review, 15*(1), 25-46.

Dunning, J. H., & Lundan, S. M. (2008). *Multinational Enterprises and the Global Economy (Second Ed.).* Northampton, MA: Edward Elgar Publishing.

Ernst & Young (EY). (2018). *Turning Tides: EY Attractiveness Program Africa.* Retrieved from https://www.ey.com/za/en/issues/business-environment/ey-attractiveness-program-africa-2018.

Farrar, D. E., & Glauber, R. R. (1967). Multicollinearity in Regression Analysis: the Problem Revisited. *The Review of Economic and Statistics, 49*(1), 92-107.

Firebaugh, G. & Beck, F. D. (1994). Does Economic Growth Benefit the Masses? Growth, Dependence, and Welfare in the Third World. *American Sociological Association, 59*(5), 631-653.

Fowowe, B., & Shuaibu, M. I. (2014). Is Foreign Direct Investment Good for the Poor? New Evidence from African Countries. *Economic Change and Restructuring, 47*(4), 321-339.

Ghosh, T., Anderson, S., Elvidge, C., & Sutton, P. (2013). Using Nighttime Satellite Imagery as a Proxy Measure of Human Well-being. *Sustainability, 5*(12), 4988-5019.

Gohou, G., & Soumaré, I. (2012). Does Foreign Direct Investment Reduce Poverty in Africa and are there Regional Differences? *World Development, 40*(1), 75-95.

Goldsmith-Pinkham, P., Sorkin, I., & Swift, H. (2018). *Bartik Instruments: What, When, Why, and How.* (National Bureau of Economic Research (NBER) Working Paper No. 24408). Retrieved from https://www.nber.org/papers/w24408.pdf.

Hansen, H. & Rand, J. (2006). On the Causal Links Between FDI and Growth in Developing Countries. *World Economy, 29*(1), 21-41.

Herzer, D., Klasen, S., & Nowak-Lehmann, D. (2008). In Search of FDI-led Growth in Developing Countries: The Way Forward. *Economic Modelling, 25*(5), 793-810.

International Monetary Fund (IMF) (1993). *Balance of Payments Manual (Fifth Ed.).* Washington, DC: IMF.

Inekwe, J. N. (2013). FDI, Employment and Economic Growth in Nigeria. *African Development Review, 25*(4), 421-433.

Jaeger, D. A., Ruist, J., & Stuhler, J. (2018). *Shift-Share Instruments and the Impact of Immigration.* (IZA DP No. 11307). Retrieved from http://ftp.iza.org/dp11307.pdf.

Jude, C., & Silaghi, M. I. P. (2016). Employment Effects of Foreign Direct Investment: New Evidence from Central and Eastern European countries. *International Economics, 145*, 32-49.

Kaur, R., Wall, R. S. & Fransen, J. (2018). The Impact of Foreign Direct Investment on Income Inequality in Africa. In Wall R.S., Maseland J., Rochell K. and Spaliviero M (Eds.), *The State of African Cities 2018: The Geography of African Investment* (pp.128-139). London, UK: UN-Habitat and IHS-Erasmus University Rotterdam. Retrieved from https://unhabitat.org/books/the-state-of-african-cities-2018-the-geography-of-african-investment

Klein M., Aaron C. & Hadjimichael B. (2001). *Foreign Direct Investment and Poverty Reduction.* (World Bank Policy Research Working Paper No. 2613). Retrieved from https://elibrary-worldbank-org.eur.idm.oclc.org/doi/pdf/10.1596/1813-9450-2613

Klynveld Peat Marwick Goerdeler (KPMG). (2016). *What Influences Foreign Direct Investment into Africa: Insights into African Capital Markets.* Retrieved from https://assets.kpmg/content/dam/kpmg/pdf/2016/07/What-influences-FDI-into-Africa.pdf

Malesky, E. J. (2009). Foreign Direct Investors as Agents of Economic Transition: An Instrumental Variables Analysis. *Quarterly Journal of Political Science, 4*(1), 59-85.

Moran, T. H. (2012). Foreign Direct Investment and Development. In G. Ritzer (Ed.), *The Wiley-Blackwell Encyclopedia of Globalization.* Retrieved from https://onlinelibrary-wiley-com.eur.idm.oclc.org/doi/pdf/10.1002/9780470670590.wbeog217

Naudé, W. A. & Krugell, W. F. (2007). Investigating Geography and Institutions as Determinants of Foreign Direct Investment in Africa using Panel Data. *Applied Economics, 39*(10), 1223-1233.

Ndikumana, L. & Verick, S. (2006). The Linkages Between FDI and Domestic Investment: Unravelling the Developmental Impact of Foreign Investment in Sub-Saharan Africa. *Development Policy Review, 26*(6), 713-726.

Odusola, A. (2018, June 11). *Addressing the Foreign Direct Investment Paradox in Africa.* Retrieved from http://www.africa.undp.org/content/rba/en/home/blog/2018/addressing-the-foreign-direct-investment-paradox-in-africa.html

Organisation for Economic Co-operation and Development (OECD). (2002). *Foreign Direct Investment for Development: Maximizing Benefits, Minimizing Costs.* Retrieved from https://www.oecd.org/investment/investmentfordevelopment/1959815.pdf

Pachauri, S., & Spreng, D. (2004). Energy Use and Energy Access in Relation to Poverty. *Economic and Political Weekly, 39*(3):271-278.

Reed, W. R. (2015). On the Practice of Lagging Variables to Avoid Simultaneity. *Oxford Bulletin of Economics and Statistics, 77*(6), 897-905.

Samans, R. & Zahidi, S. (2017). *The Future of Jobs and Skills in Africa: Preparing the Region for the Fourth Industrial Revolution.* Retrieved from http://www3.weforum.org/docs/WEF_EGW_FOJ_Africa.pdf

Siegmann, K. A., (2006). Gender and Globalisation in South Asia. *South Asian Journal, 12,* 50-64.

The Financial Times. (2015). *The Africa Investment Report 2015: An FDI Destination on the rise.* Retrieved from https://www.africanbusinesscentral.com/wp-content/uploads/2016/01/The-Africa-Investment-Report-2015-fDi-Intelligence-Report.pdf

The World Bank (2014, February 5). *Improving Gender Equality in Africa.* Retrieved from http://www.worldbank.org/en/region/afr/brief/improving-gender-equality-in-africa

The World Bank (2018, April 18). *Boosting Access to Electricity in Africa through Innovation, Better Regulation.* Retrieved from https://www-worldbank-org.eur.idm.oclc.org/en/region/afr/publication/boosting-access-to-electricity-in-africa-through-innovation-better-regulation

Ucal, M. Ş. (2014). Panel Data Analysis of Foreign Direct Investment and Poverty from the Perspective of Developing Countries. *Procedia-Social and Behavioral Sciences, 109,* 1101-1105.

United Nations (UN). (2002). *Report of the International Conference on Financing for Development (A/CONF/198/11).* Retrieved from http://archive.ipu.org/splz-e/ffd08/monterrey.pdf

United Nations Conference on Trade and Development (UNCTAD). (2019). *Investment Trends Monitor.* Retrieved from https://unctad.org/en/PublicationsLibrary/ diaeiainf2019d1_en.pdf

Villa, S. (2010). *Exploring the Linkages between Investment and Employment in Moldova: a time-series analysis.* (International Labour Office (ILO) Employment Working Paper No. 52). Retrieved from https://www.ilo.org/public/libdoc/ilo/2010/110B09_132_engl.pdf

Wahid, A. N., Sawkut, R., & Seetanah, B. (2009). Determinants of Foreign Direct Investments (FDI): Lessons from the African Economies. *The Journal of Applied Business and Economics, 9*(1), 70.

Wall, R. S. (2018). The Economic Geography of African Foreign Direct Investment (FDI). In Wall R.S., Maseland J., Rochell K. and Spaliviero M (Eds.), *The State of African Cities 2018: The Geography of African Investment* (pp.26-105). London, UK: UN-Habitat and IHS-Erasmus University Rotterdam. Retrieved from https://unhabitat.org/books/the-state-of-african-cities-2018-the-geography-of-african-investment/

Wall, R. S., Mehta, P. & Kaur, R. (2018). The Impact of Foreign Direct Investment on Employment in Africa. In Wall R.S., Maseland J., Rochell K. and Spaliviero M (Eds.), *The State of African Cities 2018: The Geography of African Investment* (pp. 140-151). London, UK: UN-Habitat and IHS-Erasmus University Rotterdam. Retrieved from https://unhabitat.org/books/ the-state-of-african-cities-2018-the-geography-of-african-investment/

Wang, G. C. (1996). How to Handle Multicollinearity in Regression Modeling. *The Journal of Business Forecasting, 15*(1), 23.

Wheeler, D., & Mody, A. (1992). International Investment Location Decisions: The Case of US firms. *Journal of International Economics, 33*(1-2), 57-76.

Wooldridge, J. M. (2014). *Introduction to Econometrics, Europe, Middle East and Africa Edition.* Hampshire, UK: Cengage Learning EMEA.

Yamin, M., & Sinkovics, R. R. (2009). Infrastructure or Foreign Direct Investment?: An examination of the Implications of MNE strategy for Economic Development. *Journal of World Business, 44*(2), 144-157.

Zarenda, H. (2013). *South Africa's National Development Plan and its Implications for Regional Development.* (Trade Law Centre (tralac) Working Paper No. D13WP01/2013). Retrieved from https://pdfs.semanticscholar.org/51c5/b6b89e99e38a1e06df3ed0ebfef6295f58fe.pdf

Zedillo, E. (2015). Overview. In Zedillo, E., Cattaneo, O. & Wheeler, H. (Eds.), *Africa at a Fork in the Road: Taking Off or Disappointment Once Again?* (pp. 19-36). New Haven, CT: Yale Centre for the Study of Globalization. Retrieved from https://ycsg.yale.edu/sites/default/files/files/africa.pdf

A Appendices

A.1 Variable Definitions

Table 8: Formal Variable Definitions and Sources

Variable	Definition	Source
$FDIinflow_{it}$	$TotalFDI$: Total number of crossborder investments in a new physical project or expansion of an existing investment which creates new jobs and capital investment. $LabourIntensiveFDI$: Number of crossborder investments that imply relatively more labour-intensive (low-skilled) activities. $KnowledgeIntensiveFDI$: Number of crossborder investments that imply relatively more knowledge-intensive (high-skilled) activities.	Financial Times (FT) fDi Markets
Socio-Economic Outcome Indicators (Y_{it})	*Electricity*: Percentage of the total population with access to electricity. Electrification data collected from industry, national surveys and international sources	World Bank (WB) Open Data
	$JobsCreated$ Number of jobs created in the host/destination country from an investment project.	FT fDi Markets
	$LFPR$ (Labour Force Participation Rate): The proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period - modelled ILO estimate.	WB Open Data
	$Unemployment$ Total unemployment as a percentage of the total labour force: share of the labour force that is without work but available for and seeking employment - modelled ILO estimate.	WB Open Data
	$LFPRg$ (Gendered Labour Force Participation Rate): Ratio of female to male labour force participation rate	WB Open Data

Continued on next page

Table 8 – continued from previous page

Variable	Definition	Source
	calculated by dividing female labour force participation rate by male labour force participation rate and multiplying by 100.	
Control Variables (X_{it})	*GDPpc* (current US$): Gross domestic product (GDP) divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	WB Open Data
	Inlfation (GDP deflator, annual %): Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	WB Open Data
	Population: Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.	WB Open Data
	Trade (% of GDP): Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	WB Open Data
	GrossPrimaryEnrollment: Gross enrollment ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the primary level of education. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.	WB Open Data

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Table 8 – continued from previous page

Variable	Definition	Source
	NaturalResources: Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.	WB Open Data
	NaturalDisasters: Number of natural disaster occurrences, in which a disaster conforms to at least one of the following criteria: 10 or more people dead; 100 or more people affected; declaration of a state of emergency; call for international assistance.	Emergency Events Database (EM-DAT)
	CorruptionControl Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	World Governance Indicators (WGI)
	PoliticalStability Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	WGI
Instrumental Variables (Z_{it})	*Currency* (number of units): National currency per SDR (Special Drawing Right), period average. The SDR is a basket of currencies and the value is determined daily based on market exchange rates.	IFS (International Financial Statistics)
	XRate (Offical Exchange Rates): Official exchange rate refers to the exchange rate determined legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency	WB Open Data

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Table 8 – continued from previous page

Variable	Definition	Source
	units relative to the U.S. dollar). $REER$ (Real Effective Exchange Rate): Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by CPI (Consumer Price Index).	IFS
Robustness Check ($FDIinflow_{t-1}$)	Net FDI inflows (BoP, current US$): Sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship.	WB Open Data

A.2 Taxonomy of Investments

Table 9: Categorisation of Labour- vs. Knowledge-Intensive FDI

Categorisation	$LabourIntensiveFDI$	$KnowledgeIntensiveFDI$
Industry Cluster:	Construction; Industrial; Transport Equipment; Transportation, Warehousing & Storage; Wood, Apparel & Related Products; Food, Beverages& Tobacco	Environmental Technology; Energy; Financial Services; ICT & Electronics; Life Sciences; Physical Sciences; Professional Services
Industry Activity:	Construction; Logistics; Distribution & Transport; Extraction; Manufacturing; Recycling	Business Services; Design, Development & Testing; Headquarters; ICT & Internet Infrastructure; Shared Services Centre; Research & Development; Electricity; Maintenance & Servicing

A.3 Robustness Checks

Table 10: Robustness Check with Alternative Variable Definition

	H1	**H2**			**H3**
	(1)	(2)	(3)	(4)	(5)
	Electricity	***JobsCreated***	***LFPR***	***Unempl.***	***LFPRg***
$FDIinflow_{t-1}$	0.0406	0.183	-0.0260	-0.0186	0.0301**
	(0.028)	(0.227)	(0.051)	(0.062)	(0.015)
$GDPpc$	0.0448	0.0274	0.0391	-0.125	0.0898
	(0.064)	(0.161)	(0.050)	(0.088)	(0.055)
$Inflation$	-0.0177**	0.0302	-0.00490	0.00881	-0.0107*
	(0.008)	(0.040)	(0.007)	(0.012)	(0.005)
$Population$	0.567***	0.427	-0.0706	0.0893	0.120
	(0.185)	(0.314)	(0.057)	(0.136)	(0.079)
$Trade$	-0.0575	0.119	-0.00314	0.0976*	-0.0204
	(0.043)	(0.092)	(0.031)	(0.053)	(0.018)
$GrossPrimaryEnrollment$	0.0389	-0.0459	-0.0722**	0.00905	0.0110
	(0.042)	(0.084)	(0.033)	(0.049)	(0.032)
$NaturalResources$	0.0776**	0.189**	-0.0216	0.0127	-0.00507
	(0.036)	(0.083)	(0.026)	(0.041)	(0.016)
$NaturalDisasters$	-0.0174**	-0.0497*	0.00867	-0.000273	-0.0132*
	(0.008)	(0.030)	(0.009)	(0.015)	(0.007)
$CorruptionControl$	0.0655	0.0354	-0.0381	0.000626	0.0510
	(0.052)	(0.116)	(0.033)	(0.066)	(0.034)
$PoliticalStability$	-0.0202	0.146	-0.0991	-0.0551	-0.0695
	(0.039)	(0.101)	(0.078)	(0.074)	(0.052)
_cons	-0.0261	0.0824***	0.0501	-0.0686***	0.0252**
	(0.016)	(0.032)	(0.145)	(0.016)	(0.012)
Observations	478	480	468	468	468
R^2	0.0248	0.2982	0.0110	0.0281	0.0700
First-stage F-test (p-value)	8.53	8.53	8.57	8.48	8.48
	(0.0053)	(0.0053)	(0.0052)	(0.0054)	(0.0054)
Underidentification test (p-value)	3.22	3.22	3.25	3.20	3.20
	(0.0726)	(0.0726)	(0.0713)	(0.0734)	(0.0734)
Weak identification test	8.529	8.527	8.567	8.480	8.480

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Underidentification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic.

Table 11: Robustness Check for SSA Subsample

	H1	**H2**								**H3**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Electricity	**JobsCreated**			***LFPR***			***Unemployment***			***LFPRg***		
$TotalFDI_{t-1}$	0.142	0.164			-0.0200			0.0464			0.0427***		
	(0.099)	(0.250)			(0.038)			(0.064)			(0.015)		
$LabourIntensiveFDI_{t-1}$			0.677***			-0.203			0.261			0.143**	
			(0.050)			(0.138)			(0.401)			(0.065)	
$KnowledgeIntensiveFDI_{t-1}$				0.185			-0.00707			0.0429			0.0291**
				(0.201)			(0.027)			(0.040)			(0.012)
_cons	-0.169	-0.0702*	-0.0410	-0.0814*	0.239*	0.281***	0.239*	-0.144***	-0.109	-0.123	0.363***	0.367***	0.362***
	(0.103)	(0.042)	(0.025)	(0.045)	(0.140)	(0.016)	(0.140)	(0.017)	(0.140)	(0.149)	(0.097)	(0.097)	(0.097)
Observations	419	421	421	421	409	409	409	409	409	409	409	409	409
R^2	0.0181	0.3340	0.4576	0.3485	0.0051	0.0041	0.0234	0.0065	0.1060	0.0047	0.0050	0.0000	0.0012
First-stage F-test (p-value)	108.02	108.76	206.27	146.35	127.00	4.43	148.00	108.07	2.78	148.00	108.07	4.79	148.00
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0411)	(0.0000)	(0.0000)	(0.1027)	(0.0000)	(0.0000)	(0.0341)	(0.0000)
Underidentification test (p-value)	2.34	2.35	2.32	1.92	2.46	5.89	1.93	2.35	5.09	1.93	2.35	5.89	1.93
	(0.1257)	(0.1254)	(0.1278)	(0.1662)	(0.1169)	(0.0153)	(0.1651)	(0.1249)	(0.0241)	(0.1651)	(0.1249)	(0.0152)	(0.1651)
Weak identification test	108.016	108.756	206.271	146.347	126.996	4.433	147.995	108.069	2.784	147.995	108.069	4.790	147.995

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Under-identification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic. Only the coefficients of interest are reported here. Column 1 pertains to regressions for ***Electricity***. Columns 2 to 4 pertain to regressions for ***JobsCreated*** Columns 5 to 7 pertain to regressions for ***LFPR***. Columns 8 to 10 pertain to regressions for ***Unemployment***. Columns 11 to 13 pertain to regressions for ***LFPRg***.

Table 12: Robustness Check for LDC Subsample

	H1	**H2**								**H3**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Electricity	**JobsCreated**			***LFPR***			***Unemployment***			***LFPRg***		
$TotalFDI_{t-1}$	0.200	-0.0237			-0.390**			0.0738			0.0370		
	(0.177)	(0.777)			(0.168)			(0.411)			(0.110)		
$LabourIntensiveFDI_{t-1}$			0.915***			-0.371**			0.220			0.102	
			(0.152)			(0.162)			(0.309)			(0.075)	
$KnowledgeIntensiveFDI_{t-1}$				-0.0719			-0.430*			0.101			-0.0471
				(0.959)			(0.248)			(0.445)			(0.191)
_cons	-0.309***	-0.00763	-0.0366	-0.00873	0.239	0.192	0.300**	-0.676***	-0.650***	-0.674***	0.427***	0.436***	0.427***
	(0.117)	(0.205)	(0.047)	(0.221)	(0.249)	(0.228)	(0.119)	(0.245)	(0.248)	(0.245)	(0.040)	(0.149)	(0.048)
Observations	287	289	289	289	289	289	289	289	289	289	289	289	289
R^2	0.0001	0.2207	0.3652	0.2080	0.0029	0.0008	0.0268	0.0006	0.0094	0.0006	0.0333	0.0081	0.0239
First-stage F-test (p-value)	3.38	3.42	63.16	2.19	5.01	7.91	2.19	3.42	8.08	2.19	3.42	7.93	2.19
	(0.0764)	(0.0746)	(0.0000)	(0.1496)	(0.0330)	(0.0087)	(0.1496)	(0.0746)	(0.0081)	(0.1496)	(0.0746)	(0.0087)	(0.1496)
Underidentification test (p-value)	1.64	1.66	2.55	1.69	2.04	1.67	1.69	1.66	1.70	1.69	1.66	1.68	1.69
	(0.2004)	(0.1981)	(0.1106)	(0.1939)	(0.1535)	(0.1967)	(0.1939)	(0.1981)	(0.1924)	(0.1939)	(0.1981)	(0.1954)	(0.1939)
Weak identification test	3.376	3.420	63.164	2.191	5.014	7.912	2.191	3.420	8.077	2.191	3.420	7.929	2.191

Notes: Robust Standard Errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The F-test reports the Sanderson-Windmeijer multivariate F-test of excluded instruments. The Under-identification test reports the Kleibergen-Paap rk LM statistic. The Weak identification test reports the Kleibergen-Paap Wald rk F statistic. Only the coefficients of interest are reported here. Column 1 pertains to regressions for ***Electricity***. Columns 2 to 4 pertain to regressions for ***JobsCreated*** Columns 5 to 7 pertain to regressions for ***LFPR***. Columns 8 to 10 pertain to regressions for ***Unemployment***. Columns 11 to 13 pertain to regressions for ***LFPRg***.