The Impact of Chinese Foreign Direct Investment on employment and economic growth in Sub-Saharan Africa

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by

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To my mother, Nora Mukoyi, though you are gone your legacy lives on, thank you for pouring your life's work in me.

ABSTRACT

The recent surge in Chinese Foreign Direct Investments (FDI) in the African continent has brought about much debate and speculation around the potential implications both for the continent as a whole, and for individual African countries. There are mixed sentiments regarding the impact of Chinese FDI in Africa and speculation as to whether the continent has been benefiting more from Chinese investments than it has been losing. Shen (2013) points to two opposing views on China's investment in Africa. On one side China is hailed for bridging the technological and capital gap that has been hampering economic growth in Africa, and for coming to Africa's rescue by being more willing to invest in the continent than the West has been, especially after the financial crisis of 2008. However, the other side sees China as a ruthless investor, intent on plundering the African continent's resources and ultimately taking over its economies (Kolstad & Wiig, 2012). The current research focuses on an area of particular interest and importance for the African continent: specific ways in which Chinese FDI has impacted economic growth and employment in Sub Saharan Africa (SSA). The study employed a panel Autoregressive Distributed Lag model and conducted Granger causality tests on a sample of the top ten SSA recipients of Chinese FDI for the period 2003 to 2017.

The results of the analysis revealed that Chinese FDI had a positive effect during this period on both employment and economic growth in Sub-Saharan Africa, with a 1% increase in Chinese FDI resulting in a marginal 0.20% increase in employment, and a 0.17 % increase in economic growth. The findings of the research support the FDI-Led economic growth theory and Robert Solow's neo-classical growth model, which argues that economic growth is achieved through an increase in capital growth, labour force, and technical knowledge (Solow, 1957). Granger causality tests indicated the presence of a bi-directional relationship between Chinese FDI and economic growth. As this was a quantitative study, and significant factors pertaining to Chinese FDI in developing countries in Africa are qualitative in nature, it is recommended that qualitative studies be conducted in order to obtain a more comprehensive picture of the impact of Chinese FDI in African countries.

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GLOSSARY OF TERMS

AEI	American Enterprise Institute
BRICS	Brazil, Russia, India, China and South Africa
CARI	China-Africa Research Initiative
CNPC	China National Petroleum Corporation
FDI	Foreign Direct Investment
FOCAC	Forum for China-Africa Cooperation
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
IFDI	Inward Foreign Direct Investment
IMF	International Monetary Fund
MNE	Multinational Enterprises
MOFCOM	China Ministry of Commerce
NPO	Non-Profit Organisation
ODA	Overseas Development Assistance
OECD	Organisation for Economic Cooperation and Development
OFDI	Outward Foreign Direct Investment
SAIS	School of Advanced International Studies
SOE	State Owned Enterprise
SSA	Sub-Saharan Africa
UNDP	United Nations Development Programme
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Chapter 1
Introduction

1.1 Background of the study

Foreign Direct Investment (FDI) is defined as a minimum of a 10% ownership of a foreign party in a local company, with an emphasis on a long-term investment horizon (IMF, 2009). According to the United Nations Conference on Trade and Development UNCTAD (1997), the key feature of FDI is the long-term investment time frame and the ability of the investor to both exert control and have a residual interest in the investee organisation. FDI is widely perceived as a tool for economic growth, and its increase is usually linked to the economic growth of the host country (OECD, 2008). According to the neo-classical growth model, FDI results in the increased production capacity of the host country by increasing its capital, which in turn boosts savings and investments, thereby resulting in economic growth (Herzer et al., 2008).

According to Dupasquier and Osakwe (2006), indirect spill-over benefits of FDI are also significant and linked to economic growth. They see FDI as facilitating the transfer of the latest technology and skills and enabling the host country to benefit from technology cheaply, thereby making the country competitive on the global market. In addition, Loungani and Razin (2001), and Ericsson and Irandoust (2001) argue that FDI ushers in new diversities of capital inputs other than those acquired through trade and financial investments. Competition in the host country is also increased as local firms are forced to invest in modern equipment, thereby increasing efficiency which leads to a reduction in prices (Blomstrom & Kokko, 1998; Dupasquier & Osakwe, 2006).

Jenkins and Thomas (2002), in their study on FDI in Southern Africa, highlight the creation of formal and reliable employment opportunities as a key factor in the quest to eradicate poverty, especially in developing economies such as those in SSA. Hence, the role of FDI in this regard is important as it has the perceived potential to create notable formal employment in host countries. This can be through direct jobs created by Multinational Enterprises (MNEs), or through indirect channels, such as increased linkages with local firms (Dupasquier & Osakwe, 2006). This is achieved when MNEs

source their inputs from local suppliers, which results in an increased demand for labour.

Employment creation is undeniably an important factor for African countries as most are facing high unemployment levels which contribute towards increased poverty . Gohou and Soumare (2011), however, caution that the jobs created should outweigh those which are lost due to related processes, such as mergers and acquisitions, and closure of local companies. Furthermore, they argue that these jobs should be created in industries such as the agricultural industry, which are labour intensive and employ mainly poor community members.

MNEs have, however, been criticized globally, including by human rights organisations, for violating local labour laws and for exploitative and sub-standard labour practices and working conditions (Ojakorotu & Kamidza, 2018). Jobs have also been found to be lost due to the crowding out of local firms which may not be sufficiently competitive. In addition, as noted by Jenkins and Thomas (2002), this may result in the total contraction of both local industry and employment sectors. As argued by Gohou and Soumare (2011), Coniglo, Prota, and Seric (2015) also emphasize that the jobs created by MNEs should be weighed against those which are lost due to the crowding out effect. In some African countries, such as the Democratic Republic of Congo (DRC), MNEs are accused by human rights organisations of using child labour and subjecting employees to poor and dangerous working conditions (Sweeny, 2012).

In most emerging countries, FDI is preferred over other external income sources, such as Overseas Development Assistance (ODA), portfolio flows, and debt, as it is perceived to be more stable long-term and does not get withdrawn quickly in response to adverse conditions, such as economic downturns (Loungani & Razin, 2001; Wentworth, Schoeman, & Langalanga, 2015; UNCTAD, 2017; UNCTAD, 2018). This perceived characteristic of FDI makes it attractive to governments of those African countries concerned about increasing and sustaining economic growth and stability, particularly on a continent where most countries continue to be characterised by political and economic instability, and thus in need of investments that do not react quickly to any changes in the local environment.

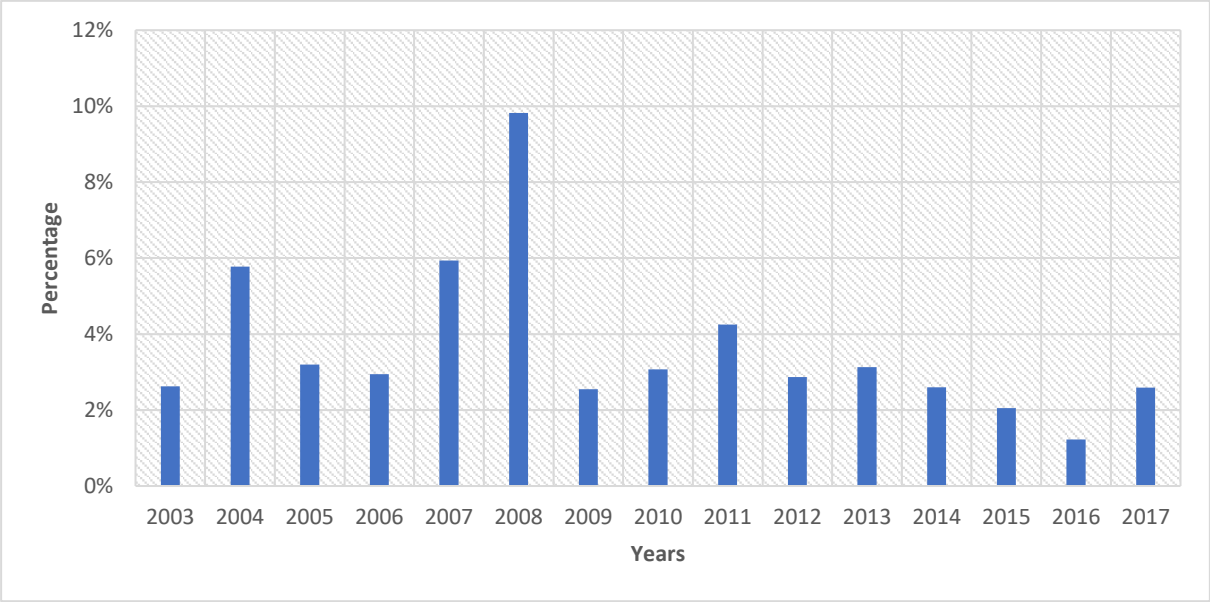
The recent surge in Chinese FDI to the African continent has brought about much debate and speculation regarding the potential implications, both for the continent as a whole, and for individual African countries. Research reveals mixed sentiments regarding the impact of Chinese FDI in Africa, and an ongoing debate around whether the continent has benefited more than it has lost from Chinese investments (Okoro & Oyewole, 2011; Koumou & Manyi, 2016; Kolstad & Wiig, 2011). Shen (2013) points to two schools of thought regarding China's investment in Africa. On the one hand China is hailed for bridging the technological and capital gap that has long been hampering economic growth in Africa, and for coming to Africa's rescue by being more willing to invest than the West, especially after the financial crisis of 2008. However, another school of thought sees China as a ruthless investor, intent on plundering the African continent's resources, ultimately taking over its economies, and enticing African countries into over-indebtedness.

On a global scale, China has recently become the largest developing or emerging economy to invest in Africa and other developing countries, Busse, Erdogan and Mühlen, (2016), and itself has also been one of the largest recipients of FDI internationally (Yeung & Liu, 2008). In 2015 Chinese FDI flows constituted only 5% of the total capital investment flows in Africa, compared with Italy and the United States that contributed 11% and 10% respectively (Analyse Africa, 2016). However, by 2016 China's share of FDI to Africa constituted a significant 39% of FDI capital investment, making China the fourth largest FDI contributor to the African Continent after the United States, United Kingdom, and France, in that order (UNCTAD 2018). Thus, while China is not the largest FDI contributor to Africa, the rate at which China has recently increased its investment and trade in Africa exceeds that of other FDI investment nations, this notable surge is also highlighted by (Biggeri & Sanfilippo, 2009).

While, from an African perspective, it may appear that China's African investments are aggressive, this is not the case when taking into consideration China's investments as a whole: African investments do not appear to be its main focus. Besada, Wang and Whalley (2008) note that China's increased investments in Africa may be viewed as only a part of the general increase in Outward Foreign Direct Investments (OFDI) on the part of China, as the bulk of its investments are outside Africa. Figures 1 and 2 below show that, over the period 2003 to 2017, Chinese FDI in Africa was only 9,8%

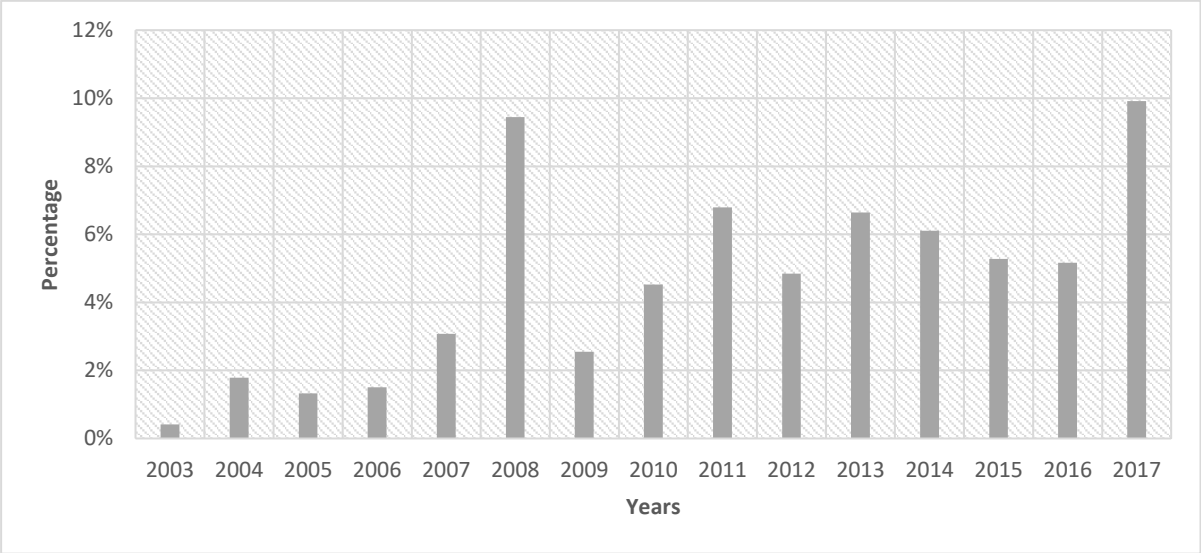
percent of the total FDI from the rest of the world, and accounted for only an average of 4% of China's overall FDI outward flows for the same period. At its peak Chinese FDI contributed just over 9% of total FDI inflows to Africa from 2003 to 2017, with an average of 5% over the given period

Figure 1: Africa's share in China's Global FDI Outflows



Source: Compiled from UNCTAD and China-Africa Research Initiative data.

Figure 2: Chinese FDI as a % of Africa's Global FDI inflows



Source: Compiled from UNCTAD and China-Africa Research Initiative data

For Africa, looking east is perceived as having provided the continent with a “new lease of life” in sources of FDI, international trade, and ODA, (Koumou & Manyi, 2016). In countries, such as Zimbabwe, which no longer receives significant investment and aid from Europe and the United States, Chinese investment is seen as a welcome relief. This partnership with Zimbabwe has seen Chinese companies being involved in multiple construction and mining projects despite a downturn in Zimbabwe’s political and economic environment (Youde, 2007; Ojakorotu & Kamidza, 2018). Similar scenarios are dotted across the African continent in countries such as the Democratic Republic of Congo and Sudan. Ayodele and Sotola (2014) note that many African countries have welcomed China as it provides an alternative development model and a source of debt issued on better terms, and without the need for cumbersome pre-requisites, compared with those provided by the IMF and World Bank.

China is, however, infamous for being willing to invest in African countries with undesirable political and human rights practices due to its apparent ‘non-interference’ policy. Chen et al. (2015) highlight that the level of Chinese investments in African countries is not related to the host country’s governance practices or enforcement of property rights, factors important to investors from the West. Khodeir (2016) further notes that, in contrast to OECD investments into Africa, China is seen to differentiate between the political and economic landscapes within countries and as willing to enter into economic investments despite a lack of security or stability in a country. This observation or view is echoed by Besada, Wang, and Whalley (2008), who point out that China believes that the setting of certain political and human rights pre-conditions before economic participation amounts to a violation of the host country’s independence.

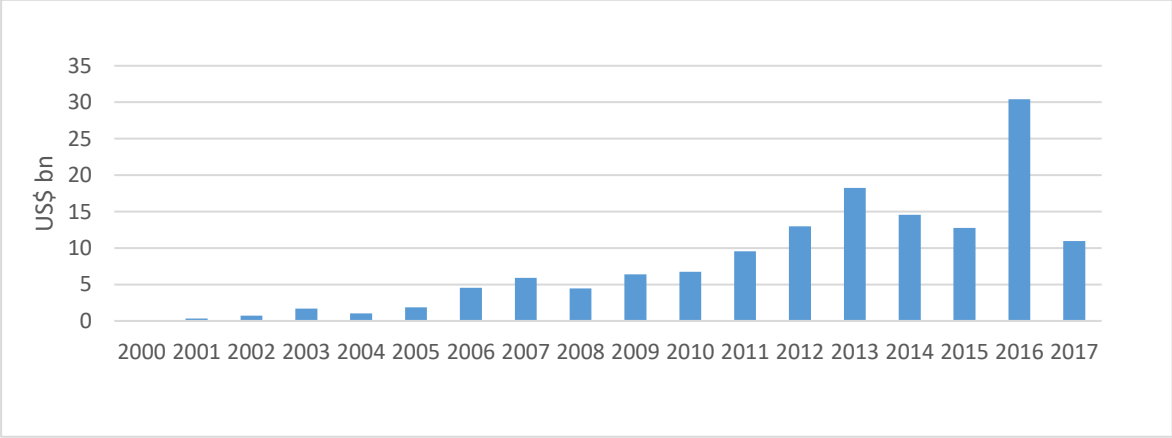
Thus, Chinese FDI in Africa has been met with much controversy and suspicion as it is usually perceived to be on terms that are less than favourable and at times detrimental to the host countries’ economic growth and development. Matters such as environmental damage, crowding out of local competition, pillage of natural resources, corruption, and sub-standard labour practices have been associated with Chinese FDI across the African continent, especially in the DRC and Zambia (Zafar, 2007; Okoro & Oyewole, 2011; Koumou & Manyi, 2016). Kolstad and Wiig (2012) have likened China to a ‘ravenous dragon’ due to its seemingly insatiable demand for natural resources,

while Esposito and Tse (2015) describe Chinese investments and processes as the equivalent of modern day "colonisation."

Furthermore, China has also been criticized for availing excessive loans to emerging and developing economies without considering their ability to service these loans and requesting that the countries put up critical national infrastructure, such as ports and power sources, as collateral. This has led to some countries defaulting on their repayments and having to face the possibility of surrendering ownership of key national assets to Chinese ownership.[1]

Figure 3 below presents a compilation of China's loans to Africa in the period 2000 to 2017. As can be seen, Chinese loans to Africa have been increasing over the years, with an average of nearly USD7 billion per annum.

Figure 3: Chinese Loans to Africa



Source: China-African Research Initiative (CARI)

In recent years, research conducted into Chinese FDI in Africa has sought to identify the determinants of Chinese investments in Africa in an effort to determine how African countries can increase their appeal to the Chinese investor (Gu, 2009; Khodeir, 2016). Chen et al. (2015) and Kolstad and Wiig (2012) conclude that Chinese FDI is attracted to natural resources and large markets and is more prevalent and aggressive in

[1] The Hambantota port in Sri Lanka was handed over to China in December 2017 as the country failed to service its USD 1,1Billion debt (Liang, 2017). As at December 2017, Sri Lanka owed China a total of USD $8 Billion including its other infrastructure development loans *(Ibid).* This debt to China, according to World Bank Data, amounted to approximately 9% of Sri Lanka's total GDP in 2017.

countries which do not have good governance practices, and/or have a high level of corruption in government. Furthermore, Koumou and Manyi, (2016) credit the surge in Chinese FDI in Africa to the formation of the Forum on China- Africa Cooperation (FOCAC) in 2000.

1.2 Problem Definition

FDI is widely viewed as a tool for economic growth, and an increase in FDI is typically linked to the economic growth of the host country (OECD, 2008). As discussed in the previous section, African countries prefer FDI over other external income sources such as Overseas Development Assistance (ODA), portfolio flows, and debt. As explained in the previous section, the reason for this is that FDI is perceived to be more stable than other sources of investment, due to its lack of responsiveness to adverse environmental conditions, making for greater economic stability (Loungani & Razin, 2001; Wentworth, Schoeman, & Langalanga, 2015; UNCTAD, 2017; UNCTAD, 2018).

The reasons for the recent rapid increase in Chinese FDI in Africa, and whether this has benefited or harmed the continent, have also been discussed above, particularly in terms of whether the continent has benefited more than it has lost from Chinese investments (Okoro & Oyewole, 2011; Koumou & Manyi, 2016; Kolstad & Wiig, 2011). The positive effects of Chinese FDI in Africa were seen in terms of China helping to bridge the technological and capital gap standing in the way of economic growth in Africa, and China's greater willingness to invest compared to the West. Perceptions of China as a ruthless investor and plunderer of Africa's resources including its drawing of African countries into over-indebtedness were described in the above section.

In addition to the impact of Chinese FDI on economic growth, its impact on employment in host countries has been noted in the literature as a matter of concern and debate. FDI is a notable source of employment, especially where it consists of greenfield investments rather than mergers and takeovers. Jenkins and Thomas(2002) emphasize the creation of formal and reliable employment opportunities as a key factor in developing African countries' quest to alleviate poverty. Employment creation is therefore a crucial issue for those countries with high unemployment levels.

Allegations of violations of labour laws and the subjection of workers to poor working conditions, low wages, and the use of child labour (Ojakorotu & Kamidza, 2018) was noted in the previous section. Chinese MNEs often possess the ability to produce cheaper goods than local firms can, due to more efficient production processes, which in turn leads to job losses through the crowding out of local firms which may not be sufficiently competitive. As Jenkins and Thomas (2002) note, this may result in the total overall contraction of the local industry and employment

Based on the preceding discussion of the perceived beneficial and negative outcomes of Chinese FDI for the economies of SSA countries, this research aims to add to the existing literature on the effects – positive and negative - of this investment, focussing on the extent to which Chinese FDI has impacted levels of employment and economic growth in the region. The study investigates the impact of this investment on economic growth and employment in ten SSA recipient countries for the period 2003-2017. The sample of countries (listed in Table 1 below) covers approximately 70% of the Chinese FDI received in SSA over the period under study.

This study presents empirical evidence, gleaned from secondary data sources, on the extent to which Chinese FDI in SSA has made, or has not made, a significant contribution towards job creation and economic growth in the region during the period under study. The extant body of literature was found to be inconclusive about the impact to date of Chinese FDI in SSA region, and its ability to contribute meaningfully towards job creation and economic development. Ado and Su (2016) conclude that existing studies on China's investment impact in Africa are limited, and that research done in this area requires more clarification, detail, and theoretical support.

1.3 Research Questions

The primary research question the study seeks to answer is:

Has Chinese FDI had a positive effect on employment and economic growth in Sub-Saharan Africa over the period 2003-2017?

In addition to the primary research question, this study attempts to answer the following sub-questions:

i. What has been the impact of Chinese FDI on employment in SSA?
ii. What has been the impact of Chinese FDI on economic growth in SSA?

1.4 Organization of the study

This study is structured as follows: Chapter 2 provides a comprehensive review of the existing relevant literature on the area of study and identifies the knowledge gap which the current research has the potential to fill. The chapter presents a description and discussion of the various FDI trends in Africa, together with a discussion of the complex nature of the relationship between FDI and economic growth and employment, both globally and in Africa, with a particular focus on the SSA region. It looks at both theoretical and empirical studies conducted in developed and developing economies. The chapter concludes with a summary of the key themes.

The methodology used to conduct the research, and the rationale for this methodology, is described and discussed in Chapter 3. The chapter provides further details of the research design and the methods of data analysis employed. The chapter goes on to further describe the data types and sources and lists the limitations and assumptions that shape the empirical estimations. Chapter 4 presents the research findings, together with analyses of the results from the data; the results are compared with those of existing studies to demonstrate the contribution the current study has made to existing knowledge of the field. Chapter 5 concludes the research by summarising the specific ways in which the research and its findings have answered the research questions. From this, the positive and negative implications for SSA countries of Chinese FDI are considered and evaluated. Recommendations for African governments and economic policy makers in the region, as well as recommendations for future research, are suggested.

Chapter 2
Literature Review

2.1 Introduction

This section presents a review of existing literature in the field of FDI. It begins with a review of the overarching theoretical studies pertaining to the relationship between FDI and economic growth, studies which are split between, and compare, the FDI-led growth hypothesis and the growth driven-FDI hypothesis. A review of the theory on the relationship between FDI and employment is then discussed before the existing empirical evidence in extant literature pertaining to FDI and economic growth and employment is compared and evaluated. Finally, the studies focusing on Chinese FDI in Africa are reviewed, focusing specifically on empirical studies on the nature of the impact of Chinese FDI on both economic growth and employment in Africa.

2.2 FDI in Africa

Over the last 10 years (2008-2017), Africa has been the recipient of significant FDI capital inflows amounting to USD 514 Billion (UNCTAD, 2018). FDI into Africa rose steadily during these years. However, notable increases emerged as early as the 1990s, as Africa became an attractive destination for investment as a result of increased democratization and more favourable foreign investment policies in African countries (Adams & Opoku, 2015). In addition, the increased commodity prices in the early 2000s also made it more profitable for MNEs to set up their operations in Africa (Berge, 2011).

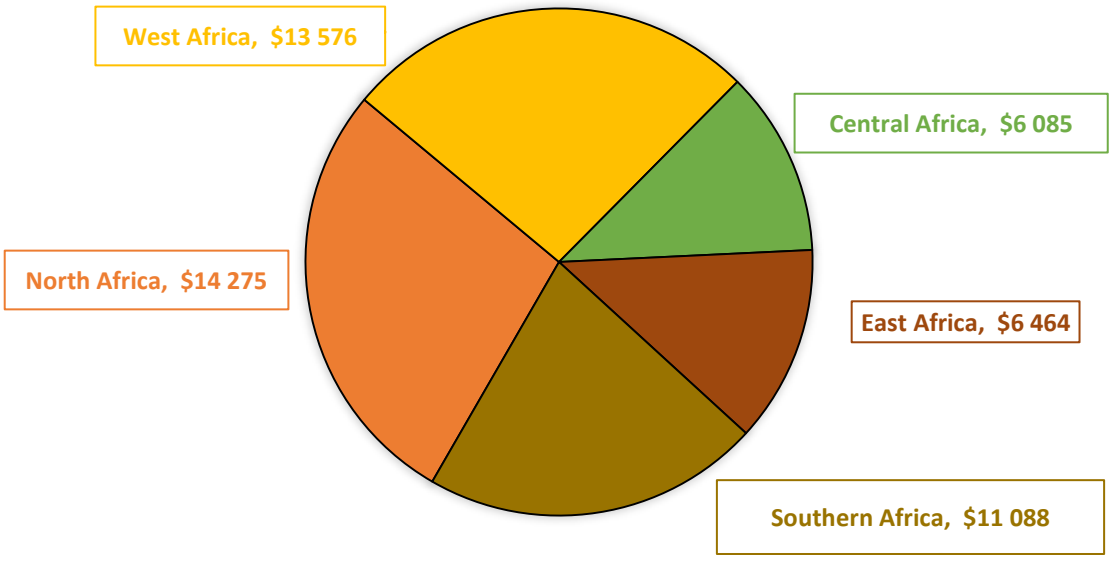
However, as can be seen from Figure 4 below, the distribution of FDI varies across different African regions. North Africa is shown to be the most significant recipient of FDI in the last ten years, closely followed by West Africa; this is mostly linked to the availability of natural resources, especially oil in both regions (Besada, 2006). In the Northern region Egypt has been the favoured destination for FDI, having received an average of approximately USD 6 Billion in the 10 year period between 2008 and 2017, an amount which accounts for almost half of the region's FDI inflows for that period (UNCTAD, 2018). Besada (2006) notes that, in addition to the attraction of natural

resources, the large amounts of FDI in Egypt are attributed to the investment incentives provided by the government.

In West Africa the scenario is similar, with Nigeria having been the recipient of an average of USD 6 Billion, which makes up just over half of that region's FDI for the same period given above (*ibid*). Southern Africa comes in third place, with South Africa being the lead recipient of close to half of the region's FDI inflows, averaging close to USD 5 Billion for the same period.

East and Central Africa received significantly lower amounts of FDI. Tanzania, Ethiopia, Uganda, and Kenya all received significant FDI inflows in the East African region, and together they account for over 70% of that region's FDI inflows for the period 2008-2017. Central Africa's leading FDI recipients are the Congo, Democratic Republic of Congo (DRC) and Equatorial Guinea, which have a combined allocation of 69% of the total FDI received by the region for the same period.

Figure 4: Africa's Regional FDI Inflows (10-year Averages, Millions of US Dollars (2008-2017))

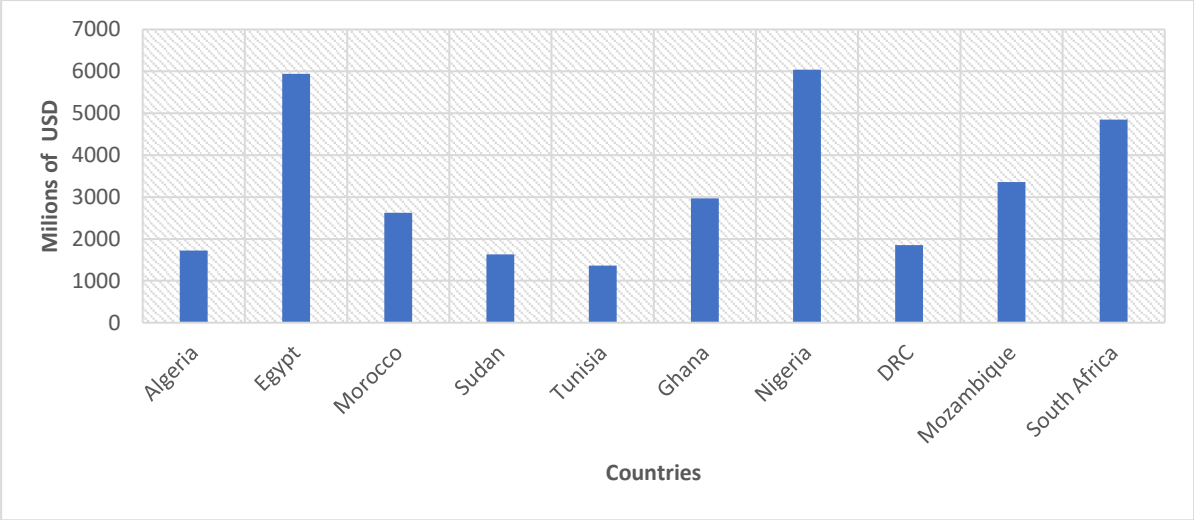


Source: UNCTAD FDI statistics data

An analysis of FDI inflows by individual countries in Africa shows Nigeria to have received the largest share of FDI over the last 10 years 2008-2017, closely followed by Egypt and South Africa. Figure 5 below shows the top ten FDI receiving countries

in Africa over the same period and indicates that those countries which are well endowed with natural resources generally tend to receive larger amounts of FDI.

Figure 5: Top 10 African countries FDI Inflow Recipients (10-year averages, Millions of US Dollars (2008-2017))



Source: UNCTAD FDI Statistics data

2.3 Nature of Chinese Investments in Africa

One of the key differentiating elements between Chinese FDI and FDI from more traditional sources, such as the USA and Europe, is the level of the Chinese state's involvement and its seemingly authoritative and aggressive nature in steering and directing Outward Foreign Direct Investments (OFDI). The Chinese state's involvement is characterised by both direct and indirect participation. Direct involvement proceeds through investments made by State Owned Enterprises (SOEs), and indirect involvement through the establishment of foreign investment incentives and provision of financing to private Chinese companies in order to encourage investments abroad.

Kaplinsky and Morris (2009) note that infrastructure and resource industries emerge as the key focus of big Chinese SOEs, while the smaller private companies concentrate on services and manufacturing industries. In addition, Kolstad and Wiig (2012) highlight the fact that in 2006 SOEs made up the majority of Chinese companies

which were investing abroad (82%).[2] This form of FDI has significant impacts on Africa due to the size and the level of commitment and resources.

China's regulatory framework on OFDI has been identified as the key factor in directing and encouraging OFDI through the enactment of targeted policies and laws to support Chinese companies with access to new overseas markets and resources, and reducing the pressure of local and global competition (Sauvant & Chen, 2014). Wang and Zhao (2017) refer to this as the "going out" strategy, a strategy which was established in the early 2000s and led to a surge in Chinese OFDI.

The level of involvement of the Chinese government in OFDI is of particular interest as it has a bearing on the nature of Chinese FDI and the relationships between China and host nations. State involvement is also widely perceived to be driven by political as well as economic motives as China seeks to position itself as a "Great Power" and can thus command political respect in its foreign policy endeavours (Biggeri & Sanfilippo, 2009).

Although the investment deals concluded by large Chinese SOEs have been the most prominent and most publicized due to their large scale and to the involvement of the host governments, McKinsey (2017) reports that a substantial number of Chinese private companies have also invested in Africa, and the value of their FDI is of equal significance to that of SOEs. McKinsey (2017) further notes that the bulk of these private companies employ private funding, and that only 15% utilise government funding. Thus, most of the private investments are not funded by the Chinese government as is generally believed. In addition to the presence of a large number of Chinese private companies in Africa, McKinsey (2017) also questions the common perception that Chinese FDI is concentrated mostly in the extraction of natural resources, finding instead that Chinese companies invest mostly in manufacturing (31%), services (25%), and trade (22%).

[2] There are various notable case studies of large Chinese SOEs operating across Africa. In the DRC, the China Railway Engineering Corporation acquired 68% of Sicomines, a copper mining company, in a deal worth over USD9 billion, while the DRC government held the remaining 32% (Landry, 2018). In 2013 the China National Petroleum Corporation (CNPC), which is China's largest oil and gas company, concluded a USD4,2 billion investment deal in gas in Mozambique (Chen et al., 2015). Guinea's investment by Chinalco, and Angola's investment from Sinopec are also good examples of significant direct "state to state" investments by Chinese SOEs (ibid).

2.4 Chinese FDI in Sub-Saharan Africa

Chinese FDI to Sub-Saharan Africa over the period 2003-2017 amounted to USD 33.6 billion. However, as can be seen from Table 1 below, most of this investment has been directed to three countries: South Africa, Zambia, and Nigeria. In South Africa Chinese FDI has been characterised by a few significant deals, and by large fluctuations and negative flows in some years, in particular one substantial deal in 2008 involving an investment in Standard bank worth approximately USD 4.8 billion. Zambia and Nigeria, on the other hand, have both received relatively consistent Chinese FDI over the given period

Table1: Top 10 Sub-Saharan Africa recipients of Chinese FDI Flows (2003-2017)

#	Country		Chinese FDI (Millions USD)
1	South Africa		6 347
2	Zambia		2 547
3	Nigeria		2 337
4	DRC		1 772
5	Kenya		1 545
6	Zimbabwe		1 391
7	Ghana		1 386
8	Angola		1 264
9	Ethiopia		1 241
10	Sudan		1 163
	TOTAL		**20 993**

Source: China-African Research Initiative (CARI)

2.5 FDI-Led Economic Growth

There are two main theories widely applied to explain the effect of FDI on the economic growth of host countries. These are the modernisation and the dependency theories (Adams, 2009). These theories are discussed and evaluated in detail in the following two sub-sections as they form the theoretical basis for the relationship between FDI and economic growth.

2.5.1 Modernisation theory

Modernisation theory is built on the foundation of the neo-classical and endogenous growth models, which focus on the capital investment association with economic

growth. The original neo-classical growth model was championed over 70 years ago by Robert Solow (1957). He argued that economic growth is brought about through increased capital growth, labour force, and technical knowledge. According to his theory, FDI is expected to increase the capital stock of the host country, which in turn boosts savings and investments, thereby resulting in economic growth (Borensztein, De Gregorio, & Lee, 1998; Shan, Tian, & Sun, 1997).

Balasubramanyam, Salisu, and Sapsford (1996) classified modernization-related growth theories into three phases: (i) the post- Keynesian growth models (Harrod, 1939; Domar, 1946), which highlighted the function of savings and investment in fostering economic growth; (ii) the neo-classical growth models (Solow, 1957), which stressed the importance of technological advancement in economic growth, known as the Solow Model; and (iii) the relatively more recent new growth models (Romer, 1986), which emphasised the role of research and development, and the importance of human capital and spill over effects.

De Mello (1997) noted that the impact of FDI on economic growth is expected to be diverse because, in his view, FDI generally comes as a combination of capital, technology, and human capital. According to this view, the ultimate impact of FDI on host countries will thus depend on their stages of economic development and the state of technology, as these will determine the extent of a country's interaction with FDI. The new growth theories emphasize the importance of technology, which is often transferred to host countries by the investing country as a component of FDI, and in turn is said to act as a catalyst for sustained economic growth without any diminishing returns (Romer, 1986). Blomstrom and Kokko (1998) argued that the most important reason developing countries seek to attract foreign investment is because of the technology which accompanies it, as most developing countries often lack the capital required to invest in technological research. This theory was supported by Borensztein, De Gregorio and Lee (1998), who postulated that the extent to which host countries experience higher levels of economic growth from FDI is dependent on how quickly they can absorb new technologies and catch up to the more developed/industrialised countries.

De Mello (1999), and Ericsson and Irandoust (2001), argued that FDI has an impact on economic growth through two channels: the accumulation of capital in the host's economy, which brings about the addition of various new inputs and modern technologies, and the boost to the host country's labour skills, and its management and organisational practices.

Technology is thus widely posited by theorists as the key to FDI spillovers (Glass & Saggi, 2002). Technology can also be transferred to local suppliers and buyers through vertical linkages, as MNEs may provide technical assistance and training to ensure that local suppliers are producing inputs which meet their quality standards (OECD, 2002). The transfer of the latest technology and skills also enables the host country to benefit from the technology cheaply, thereby making the country competitive on the global market (Dupasquier & Osakwe, 2006).

2.5.2 The dependency theory

Dependency theory was formulated nearly sixty years ago by Prebisch (1962). It argues against modernisation theory, positing that, not only does FDI not result in economic growth, but it can instead lead to a reduction in economic growth (Baer, 1962). This theory is derived from the observation that, no matter how much investment or trade takes place between countries, the underdeveloped countries tend to remain poor, while the more developed and industrialised countries become ever wealthier (*ibid)*. Cardoso (1977) explained this view by suggesting that FDI leads to host countries opening their markets to MNEs, while the local markets usually remain closed to these international markets; in this process the host country is exploited. Thus, the basis of the argument of dependency theory is that, due to the nature of international capitalism, it is impossible for underdeveloped countries to enter into beneficial economic relationships with developed countries (Hein, 1992).

Thus, according to dependency theory, the only way poor countries can become modernised or industrialised is through a process of internal development, which would be devoid of foreign investments and trade, via import substitution and protectionist measures. This is because MNEs attempt to create monopolies to serve the interests

of their holding companies situated in the foreign country (Hein, 1992; Namkoong, 1999), which in turn results in the underutilisation of local resources and the lack of internal growth (Adams, 2009). Agbebi and Virtanen (2017) emphasise that, due to historical imbalances between industrialised and under-developed countries, there is an inherent inequality in their interactions and a skewed bargaining power, and therefore their economic activities cannot be based on terms beneficial to the underdeveloped party.

Thus, in summary, from the theoretical models and the studies reviewed above, which describe and explore the various FDI theories, we see that the two main theories which attempt to explain the way in which FDI impacts economic growth have conflicting views about whether FDI is positively or negatively related to economic growth and how it generally interacts with the economic environment of the host country. Modernisation theory, rooted on the neo-classical growth model, concludes that FDI does indeed bring about economic growth through the injection of critical development factors, such as capital, technology, human capital, and positive spillovers. Dependency theory, on the other hand, argues that growth can only be attained from within a country's borders, as FDI leads to the exploitation of host countries by their more powerful international economic counterparts.

2.6 Growth Driven FDI hypothesis

Recent studies have challenged the direction of causality between FDI and economic growth, suggesting that foreign investments are attracted to countries that have higher productivity, increased, and increasing, capital growth, and the prospect of bigger markets than many under-developed or developing countries (Kholdy, 1995). Hence, Shan et al. (1997) argued that, while FDI may impact economic growth, it is economic growth that first attracts FDI – the growth-driven FDI hypothesis (Shan et al., 1997). Zhang (2001) argued that a high economic growth rate leads to increased market size, improved infrastructure investment, and various other opportunities for profit making for the foreign investor.

In addition to the reverse causality phenomenon associated with the growth-driven FDI hypothesis, a bi-directional relationship has also been posited. Zhao and Du (2007)

propose that fast paced economic growth will set in motion conditions which result in higher levels of FDI in a host country. High economic growth rates usually lead to a higher per capita income, which is said to result in the potential for higher profits by MNEs due to the increased market share. As a result, more FDI is likely to flow to the host countries. Furthermore, a large capital resource gap is likely to be created, pushing host countries to offer favourable terms in order to attract FDI *(ibid).* Studies that have considered endogeneity have found that the growth driven FDI hypothesis applies in Brazil (De Mello, 1997), Africa (Basu et al., 2003), and Malaysia (Ang, 2008).

Thus, in summary, these studies on the relationship between FDI and economic growth argue that, rather than FDI leading to economic growth, as per the theory detailed in the previous section, economic growth can attract FDI into a host country as high economic growth rates make a country more attractive to foreign investment.

2.7 FDI and Employment Creation

As was discussed in the previous chapter, employment creation is high on the development agenda of most African countries as a prerequisite for poverty alleviation and economic growth. Thus, governments have attempted to establish policies and incentives to attract FDI. Abor and Harvey (2008) argue that, in theory, host countries expect FDI to contribute towards significant job creation in their countries through direct or indirect channels. Direct channels refer to the actual jobs created by MNEs through employing the host country's labour when new operations or expansions are conducted, while the indirect effects on the employment rate are said to be caused by the spillovers experienced as a result of the establishment of MNEs in the host country. MNEs' interaction with local enterprises stimulates labour demand by the increased demand for inputs and distribution (Dupasquier & Osakwe, 2006). Golejewska (2002) noted that it is possible for these indirect effects to be greater than the direct effects, depending on the degree of labour intensity and the level of integration with local businesses. Khodeir (2016) goes further to propose that, in the manufacturing sector, the jobs created indirectly may amount to double those created directly due to the likelihood of these deeper linkages.

However, the number of jobs created is dependent on the extent of import substitution, the quality of labour, and the skills available. In addition, the number of jobs created is also dependent on whether FDI is market seeking or efficiency seeking. Golejewska, (2002) argued that, in the latter case, a higher probability of job losses exists as the dominant motive of the foreign investor is to take advantage of the lower costs of operations. These lower costs may include the reduction of the number of employees or the payment of low wages.

The mode of entry by MNEs is an additional a critical factor impacting the level of employment created. 'Greenfield investments' are seen to create more direct jobs as they result in the establishment of new industries and business operations as opposed to 'brownfield investments', which are usually characterised by restructuring of existing operations. Golejewska (2002) added that mergers and acquisitions merely represent a shift in responsibility for the existing employees with no actual creation of new jobs. Instead he saw the likelihood that jobs could be lost through restructuring and productivity enhancing processes post the investment deal.

Lipsey, Sjöholm, and Sun (2010) further argue that an increase in FDI may also not result in measurable or proportionate job increases, even in cases where the MNE is conducting large operations because there could be a high degree of automation. In addition, job losses may be experienced by host countries where MNEs compete for the same markets with local companies which may not have the capital and other resources necessary to remain viable and competitive. These job losses may then counteract the ones created by MNEs, leading to a marginal change in the employment rate even though there has been substantial capital investment. Javorcik, (2013), and Coniglo, Prota, and Seric (2015), thus argue that developing countries should focus on attracting FDI that results in the creation of good quality, sustainable jobs as opposed to focusing only on the volumes of jobs created. He argues that these 'good' jobs contribute more to sustainable development through higher earnings, leading to a higher potential for reducing poverty, ensuring higher knowledge spillovers, and higher productivity.

Thus, in summary, the theoretical studies reviewed above show a general belief on the part of researchers that, while FDI may possess great potential to create jobs through

both direct and indirect channels, the extent of job creation, particularly sustainable and appropriately gainful employment, is impacted by various factors, such as the mode of entry, import substitution, and the ability of local industry to effectively compete with MNEs.

2.8 Empirical Evidence of FDI and Economic Growth Nexus

While it is generally accepted that FDI brings about economic growth through both direct and indirect channels, in practice various empirical studies have yielded conflicting results (Miniesy & Adams, 2016). The empirical studies conducted on the impact of FDI on economic growth are examined below, and include those done in developing, developed, and mixed country studies.

2.8.1 Developing countries

Balasubramanyam, Salisu, and Sapsford (1996) studied the role of FDI in the promotion of economic growth in 46 developing countries for the period 1970 to 1985 using a cross sectional regression analysis. They found that, at that time, FDI led to higher economic growth than domestic investment did for countries which were at the time pursuing export promoting policies in comparison to those that preferred import substitution. At about the same time, utilising a cross country regression framework, Borensztein, De Gregorio, and Lee (1998), reported similar findings in their investigation into the impact of FDI on economic growth for 69 developing countries for the period 1970-89. Their results reveal that, at the time, FDI was contributing more towards increased economic growth in comparison with domestic investment as FDI was found to involve technology spillovers, and these resulted in the higher productivity. They found that this spillover effect, however, only applied when the host country possessed a basic level of human capital. The authors therefore concluded that FDI had contributed towards economic growth for the given timeframe. They also found technological transfer to be a key growth component, which could be attained through imported technology products, adoption of foreign technology systems, or acquisition of more advanced human capital.

This prerequisite for adequate human capital needing to be in place before economic growth can be realised from FDI is also echoed by the findings of a more recent study done over a longer time period by Bengoa and Sanchez-Robles (2003). Using panel data analysis of 18 Latin American countries for the period 1970 to 1999 to examine the relationship between FDI and economic growth, they found FDI to have a significant and positive impact on economic growth in these host countries. Bengoa and Sanchez-Robles (2003) cautioned, however, that this positive effect is dependent on open markets, economic stability, and the need for sufficient human capital in the host country.

The effect of country specific factors on the relationship between FDI and economic growth was also emphasised by Nair-Reichert and Weinhold (2001), who studied 24 developing countries using Granger causality tests. The results showed a mean positive impact of FDI on economic growth, even though this was shown to vary across the different countries, indicating the relationship between FDI and economic growth to be subject to country specific factors. Choe (2003) investigated the causal relationship between FDI and economic growth for 80 developing countries between 1971 and 1995 using a panel VAR model. His study found there to be a bi-directional relationship between FDI and economic growth. Choe (2003) thus concluded both the FDI-led growth and growth-driven FDI hypotheses to apply in the case of his study, though the relationship was found to be stronger from economic growth to FDI.

Khaliq and Noy (2007) investigated the impact of FDI on economic growth in Indonesia for the period 1997 to 2006, and observed that, at a macroeconomic level, FDI had a positive effect on that country's growth. However, varying effects were detected for the different economic sectors, with only a few sectors revealing positive results, while sectors like mining found a significant negative impact from FDI. The authors therefore concluded that the composition of FDI played a major role in determining the impact on economic growth, and that for most sectors negative impacts were experienced. Similarly Herzer, Klasen, and Nowak-Lehmann (2008), using co-integration techniques to evaluate the FDI-led growth theory in 28 developing countries between 1970 and 2003, found that FDI did not contribute towards economic growth for the majority of the countries included in their study, in either short-term or long term periods.

Wang and Wong (2009) performed a regression analysis of 69 developing countries between 1970 and 1989 and from this concluded FDI to be positively related to growth in these countries, where there existed a certain level of human capital and developed financial markets. This finding is supported by a panel data analysis conducted by Mehic, Silajdzic, and Babic-Hodovic's (2013) using Prais–Winsten regression for seven transition Southeast European countries. The study assessed the impact of FDI on economic growth for the period 1998 to 2007, and reached a similar conclusion to that of the Wang and Wong (2009) study, that FDI was positively linked to economic growth in the seven countries, and the level of domestic investment played a significant role in the economic growth of these countries.

Some extant research shows the industry in which FDI is allocated has a bearing on its ability to bring about economic growth, and the extent to which it does this. Inekwe (2013) examined the nexus between FDI in Nigeria and the country's economic growth for the period 1990 to 2009, using Granger causality tests for the manufacturing and service sectors. FDI was found to be positively related to economic growth in the service sector, while a negative relationship was found in the manufacturing sector. In addition, he found causality to run from growth to FDI in the service sector but running bi- directionally in the manufacturing sector.

2.8.2 Developed Countries

Ericsson and Irandoust (2001) examined the relationship between FDI and economic growth in Denmark, Finland, Norway, and Sweden using a vector autoregression (VAR) model and a Granger causality test covering the period 1970 to 1997. The results revealed no causality in Finland and Denmark, a bi-directional causality in Sweden, and a uni-directional causality in Norway - with FDI impacting economic growth positively. Similar uni-directional results to those of Norway emerged for the United States from a study done by Asheghian (2004) who used Granger causality tests to investigate US FDI over the 40 year period 1960 to 2000.

Contradictory findings to these emerged from a study done by Mencinger (2003) of eight Central European countries which were also candidates for membership of the EU (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and

Slovenia) at the time of the study. Utilising a panel data analysis, Mencinger found the relationship between FDI and economic growth in these countries for the period 1994 to 2001 to be negative. From this he concluded that the mode of entry of FDI, specifically through mergers and acquisitions, was the reason for the negative relationship between FDI and economic growth in this group of developed countries.

In a more recent study Bermejo Carbonell and Werner (2018) utilised the General to Specific Econometric Model (GETS) to evaluate whether, and the extent to which, the FDI led economic growth hypothesis could be said to be valid for Spain. The results showed no significant relationship between FDI and economic growth over the 27-year period 1984 to 2010, and therefore indicated that the FDI led growth hypothesis did not hold for Spain.

2.8.3 Cross-Country Studies

De Mello (1999) evaluated the impact of FDI on total factor production, capital accumulation, and output, using time series and panel data for both OECD and non-OECD countries for the period 1970-1999. He found at the time a positive but weak relationship between FDI and economic growth and concluded that the extent to which FDI could result in economic growth would be dependent on country-specific factors, such as the technological gap between the investing and the host country, and how much the foreign investment could supplement or displace local investment. Li and Liu (2005) assessed the impact of FDI on economic growth for 84 countries (21 developed, and 63 developing) between 1970 and 1999 using simultaneous and single equation models. Their results showed FDI in these countries at the time of the study to result in a substantial increase in economic growth for both the developing and developed countries in the sample, commencing from the mid-1980s onwards. However, for the developing countries the large technology gaps led to a lesser impact on economic growth. Fortanier (2018) investigated the impact of FDI from six major outward investor countries on the economic growth of 71 countries for the period 1989 to 2002. The results indicated a generally positive effect but varied, depending on the destination country’s level of human capital, trade openness, and institutional strength.

Thus, in summary, these studies collectively, conducted over a period of approximately 50 years in a range of countries, showed a general trend of FDI contributing in some way(s) towards economic growth in most of the countries studied. This appeared to apply specially to developing countries as FDI was found to have a more significant and beneficial effect there than it was having in developing countries. The presence of enabling factors in the host country, such as adequate human capital, infrastructure, and level of existing technology were also seen to have been a significant factor in determining the impact, or extent of the impact, that FDI ultimately had on the economic growth of these countries at the time these studies were being conducted. The mode of entry of FDI, whether greenfield or brownfield, was also perceived to influence its interaction with economic growth, with majors and acquisitions not leading to measurable economic growth

2.9 Empirical Evidence for FDI and Employment Creation

Mickiewicz, Radosevic, and Varblane (2000) studied the extent to which FDI was contributing towards job creation in Czech Republic, Hungary, Slovakia, and Estonia over the 34-year period 1970-2003. The results of the descriptive stage model analysis reveal the employment creation capability of FDI was enhanced where the investments were spread across various sectors as this was most likely to create greater spillover opportunities. Mickiewicz et al.(2000) therefore concluded that FDI had a more significant impact on job creation in Hungary than it did in the other three economies, and that this could be attributed to Hungary's more developed status relative to the other three countries, as well as an increased ability to absorb FDI.

With regard to developing countries, Golejewska (2002) studied the direct effects of FDI on employment in the Polish manufacturing industry for the transition period 1993 to 2000, using the same descriptive stage model as that employed by Mickiewicz et al. (2000) to analyse the relationship between FDI and employment. Golejewska (2002) also found that the effect of FDI on employment varied across industries, and that it had, at the time the study was conducted both indirect and direct effects, and furthermore MNEs led to increased labour productivity and capital-intensive processes.

The impact of mergers and acquisitions on employment in the UK manufacturing industry was examined by Girma (2005) for the period 1988 to1998, using propensity score-matching techniques with difference-in-differences analysis. The results indicated that efficiency seeking acquisitions led to increased labour productivity but the direct impact on employment was found to be mixed, with small companies experiencing positive effects and large companies experiencing negative effects. Girma (2005) therefore concluded that smaller mergers and acquisitions tend to create more employment than do larger deals.

In the African context, Abor and Harvey (2008) focussed on the manufacturing industry in Ghana between 1992 and 2002 and investigated the impact of FDI on employment using a simultaneous panel regression model. The results revealed that sectors, such as textiles, wood, furniture, metal, and chemicals, generated more employment from FDI than did other industries due to being more labour intensive. The size and location of the firms were also noted as important factors in job creation, as larger businesses based in the capital Accra were found to create more employment than smaller firms in other towns. Abor and Harvey (2008) concluded that, in the case of their study, FDI had a substantial impact on job creation in Ghana, even though the effect on wages was immaterial for manufacturing companies.

Inekwe (2013) used Granger causality tests to investigate the relationship between FDI and employment in the manufacturing and service industries in Nigeria between 1999 and 2009.The results indicated that, for both the manufacturing and service industries, there was a uni-directional positive relationship running from FDI to economic growth. They concluded from this that FDI had a positive impact on employment in the country. Coniglo, Prota, and Seric (2015) investigated the association between FDI and rates of employment in 19 SSA countries using original firm level data regressions for the year 2010. The results showed MNEs at the time to be generally employing more labour with a low skills ratio. From this, Coniglo et al. (2015) concluded that the employment created by MNEs on average pertained to low blue-collar labour even though the MNEs were normally conducting larger operations than local companies were.

2.10 Chinese FDI and Africa

This section is devoted to the evaluation of empirical studies on the ways in which Chinese FDI specifically has impacted economic growth and employment in Africa.

2.10.1 Chinese FDI and Economic Growth in Africa

Recent empirical studies have been carried out with the purpose of determining whether or not the increased levels of Chinese FDI in Africa have resulted in notable economic growth and to what extent this has occurred. Weisbrod and Whalley (2012) used Solow growth accounting to analyse 13 Sub Saharan African countries that were notable receivers of Chinese FDI over the period 2003 to 2009. The results showed that Chinese FDI only marginally led to increased economic growth for that period.

Zhang, Alon, and Chen (2014) also employed growth accounting to test the impact of Chinese FDI on economic growth in 44 African countries from 2003 to 2010. Their findings were similar to those of Weisbrod and Whalley (2012) and Zhang et al.(2014) who found no significant evidence to support the hypothesis that Chinese FDI results in an increase in a host country's GDP. This result has also more recently been supported by Busse et al. (2016). They investigated the impact of Chinese FDI on economic growth for 43 African countries for the period 1991 to 2010 using a Solow type growth model and similarly found no significant evidence that Chinese FDI had a positive impact on a host country's economic growth.

However, a study conducted by Doku, Akuma, and Owusu-Afriyie (2017), using panel data regressions to examine Chinese FDI in 20 African countries over the period 2003 and 2012 produced a different result . Their results showed a 1% increase in Chinese FDI resulted in a 0.6% increase in GDP; and Granger causality tests further found a uni-directional relationship between Chinese FDI and economic growth. Doku et al. (2017) thus concluded from their study that Chinese FDI was likely to lead to heightened economic growth in a host country.

2.10.2 Chinese FDI and Employment Creation in Africa

The African Development Bank (2012) examined the effects of Chinese investments on employment creation in Algeria and Egypt where youth unemployment levels at the time of the survey were high (approximately 25%) and a significant portion of university graduates were unable to find jobs. The study was conducted using 2010 data and found that at the time Chinese investment was creating jobs for mostly semi-skilled or unskilled labour, and was thus doing little to alleviate the unemployment problem because this demographic had a lower unemployment rate compared to that of university graduates. The authors thus concluded that Chinese FDI had not led to a significant reduction in unemployment for the two North African countries.

Tang and Gyasi (2012) studied the effects of Chinese FDI on employment in Ghana for the period 2006 to 2010. Making use of descriptive statistics to analyse country data, they found that approximately 85% of the jobs created by Chinese companies were occupied by local workers. From this Tang and Gyasi (2012) concluded Chinese FDI at the time to be contributing significantly to job creation and economic growth in Ghana. However, Coniglo, Prota, and Seric (2015), conducted a study covering 19 SSA countries, using original firm level data regressions for the year 2010 to analyse the impact of foreign ownership on employment. They found that, although Chinese owned MNEs were employing more local workers, they were paying them lower wages in comparison with similar local and other external firms, In addition the type of employment Chinese companies created was found to be usually unskilled when compared to employment generated by local companies. They therefore concluded that the source of FDI has an impact on the type of jobs created and the relevant accompanying wages, and thus host countries need to ensure that their limited human resources are equally matched with the kind of FDI which pays higher wages than was the case at the time regarding Chinese companies.

Miniesy and Adams (2016) assessed the impact of Chinese FDI on employment at the micro level for 80 Chinese projects between 2003 and 2013 in seven African countries. They did this by estimating the net employment additionality from Chinese FDI. The results revealed that the majority of the seven countries under study had significant increases in employment from Chinese FDI with only one country (Nigeria) having less

than 1%. Countries such as South Africa, Zambia, and Algeria had the highest percentage increases of 21%, 12% and 9% respectively. Miniesy and Adams (2016) concluded that it was possible to obtain significant employment from Chinese FDI, in particular through indirect channels from supply network infrastructure, and provided there was a basic level of human capital present.

Khodeir (2016) tested the hypothesis that Chinese FDI has a positive impact on employment in Africa utilising panel data techniques for the period 2007 to 2012. The results showed Chinese FDI to have a positive effect on employment in Southern African countries but no significant effect in Northern African countries.

Thus, in summary, the studies reviewed above show Chinese FDI in Africa to have had varied impacts on employment on the African continent to date. These studies further show the overall impact of Chinese FDI on employment creation to be dependent on a number of factors: the nature of the jobs required, the wages offered, the skills available in a host country, and regional dynamics.

2.11 Conclusion

The literature review conducted in this chapter has examined a range of empirical and theoretical studies pertaining to the interaction of FDI with both economic growth and employment in host countries. The review also explored the particular case of Chinese FDI in Africa.

The chapter began with a review of the two main theories that seek to explain how FDI impacts economic growth: modernisation and dependency theories. These theories reveal conflicting schools of thought, modernisation theory concluding that FDI leads to economic growth through the injection of what are seen as critical development factors: capital, technology, human capital, and positive spillovers. Advocates of dependency theory argue that growth can only be attained from within a country's borders and that FDI leads to the exploitation of host countries by their more powerful international economic counterparts.

Further studies on theoretical concepts revealed that, not only has FDI the potential to lead to increased economic growth, but that economic growth can attract FDI into an economy, and that this relationship can be uni-directional or bi-directional. Theoretical

studies on ways in which FDI has impacted employment in host countries suggest that, while FDI has the capacity to create jobs through both direct and indirect channels, the extent of job creation is impacted by a variety of factors, such as the mode of entry, import substitution, and the ability of local industry to compete effectively with MNEs.

An analysis of empirical studies conducted at various times in a range of countries indicated that FDI has generally contributed towards economic growth in most countries, especially in developing countries. However, varied results exist for individual countries, a phenomenon which can be explained by the differences in enabling factors in the host country. These include human resources, mode of FDI entry, infrastructure, and levels of existing technology.

Studies on the impact of Chinese FDI on employment have also yielded varying results: the majority found no significant relationship between FDI and employment, or only regional effects, depending on the nature of jobs created, and wages and skills available in a host country. Thus, from a review of these past empirical studies, it can be argued that the interaction of Chinese FDI with a country's employment rate did not reveal any significant impact.

The results from studies conducted in Africa tend to show that the impact of Chinese FDI on economic growth has also been varied, with both positive and zero impact being experienced by the host countries; where evidence of a positive impact was found, it was generally of minimal significance. The differentials in the findings could suggest the need for further studies to be conducted. On the employment side, a majority of the studies indicate that Chinese FDI does contribute in varying degrees towards alleviating the widespread unemployment predicament of most African countries. However, the overall impact of Chinese FDI on employment creation has been found to be dependent on the nature of the jobs required and the wages offered by Chinese investment, together with the nature and level of skills available in a host country.

Chapter 3
Methodology

3.1 Introduction

This section provides details of the empirical approach and strategy used to conduct the study in order to answer the research questions (see Chapter 1). The chapter begins with an explanation of the research design and the rationale/philosophy which informs the basis of the research. The empirical methods are explained before the data utilised to conduct the research are explored. The chapter concludes with an explanation of the limitations and assumptions associated with the methodology and the type and mode of collection of the data.

3.2 Research Design

This research uses a deductive quantitative approach for investigating the relationship between Chinese FDI and both employment and economic growth in the SSA. The study is quantitative as it is conducted using the collection of relevant numerical data which can be quantified and subjected to statistical analytical tools (Leacock, Warrican, & Rose, 2015). A quantitative study is appropriate for this study and its scope because the use of statistical analytical methods is more suitable when analysing large volumes of numerical data intended to be collected for purposes of the research, in addition taking into account the time constraints.

This research is deductive in nature as it aims to evaluate and test the existing theory/theories underpinning the impact of FDI, Chinese FDI in particular, on economic growth and employment in a host country. Deductive research focusses on testing existing hypotheses in order to arrive at a conclusion regarding the validity and usefulness of these hypotheses (Bradford, 2017). Quantitative research usually uses deductive reasoning for testing hypotheses rather than inductive research, which normally involves the creation of new theories and starts from a point of minimum bias in order to form new hypotheses (Leacock et al., 2015). Therefore, since there exists a body of theory on the interaction of FDI with economic growth and employment, as

described and evaluated in the literature review, a deductive study is deemed appropriate.

3.3 Data

The study utilises panel data. These are described by Hsiao (2007) as time series observations comprising a number of separate units or individuals. The study is conducted on the panel data series for the top ten SSA recipients of Chinese FDI for the period 2003 to 2017. These countries comprise Angola, DRC, Ethiopia, Ghana, Kenya, Nigeria, South Africa, Sudan, Zambia, and Zimbabwe. The countries have been chosen based on having been the major recipients of Chinese FDI in SSA during the period under study.

Lopcu (2009) highlights the importance of the use of panel data to evaluate time series variables when the quantity of the panel data is particularly large. A panel data approach also makes it possible to analyse longitudinal or cross-sectional data over a given time span and also for multiple units (Hsiao, 2007). The ability of panel data to pool observations from different units over several time periods bestows increased variability and reduces the likelihood of collinearity within the variables. Panel data also expands the number of degrees of freedom, thus making it more efficient than time series analysis. In addition, it enables the scrutiny of dynamic relationships among variables *(ibid).*

The researcher found the utilisation of the panel Autoregressive Distributed Lag (ARDL) technique appropriate for the study as some of the variables were found to be nonstationary at level. Nkoro and Uko (2016) consider the ARDL technique to be ideal when the variables are integrated are of different orders.

3.4 Model Specification

The endogenous growth model forms the basis for this study. The model posits that economic growth is brought about through various internal factors, such as increased capital growth, labour force, and technical knowledge (Li & Liu, 2005; Borensztein et al., 1998; Romer, 1986).

To answer the research questions, the analysis makes use of the following two models :

$$GDP_{i,t} = \beta_0 + \beta_1 CFDI_{i,t} + \beta_2 HCS_{i,t} + \beta_3 GFCF_{i,t} + \beta_4 TO_{i,t} + \beta_5 FS_{i,t} + \beta_6 CPI_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$EMP_{i,t} = \beta_0 + \beta_1 CFDI_{i,t} + \beta_2 HCS_{i,t} + \beta_3 GFCF_{i,t} + \beta_4 TO_{i,t} + \beta_5 FS_{i,t} + \beta_6 CPI_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where i and t represent country and year respectively; *GDP* is gross domestic product, *CFDI* is Chinese FDI, *HCS* is human capital stock, *GFCF* is gross fixed capital formation, *EMP* is employment, *TO* is international trade, *FS* is financial system, *CPI* is Consumer Price Index, and ε_t is the error term.

3.5 Description and Measurement of Variables

This section focusses on the data used in the econometric analyses, and presents a discussion on the dependent factors, factors of interest, and control factors. All the factors are measured in logarithmic form.

3.5.1 Dependent Variables

Economic Growth and Employment

Data for the annual real GDP growth rate (measured as year on year changes) are used as the indication of economic growth. The employment rate is the percentage/ratio of employed people to the total working population. This was obtained from the World Bank's Development indicators. The data for both dependent factors were obtained from the World Bank's World Development Indicators.

3.5.2 Independent Variable

Chinese Bilateral FDI Data

FDI is expected to result in increased economic growth due to the increase in capital stock of the host country, which in turn boosts savings and investments, thereby resulting in economic growth (Borensztein, De Gregorio, & Lee, 1998; Shan, Tian, & Sun, 1997).This is based on the neo-classical growth model developed by Robert Solow (1957) and posits that economic growth is brought about through increased capital growth, labour force, and technical knowledge. Similarly, FDI is also expected to bring about increased employment and lead to reduced unemployment levels in host countries as industries and new companies are set up and this leads to an increased demand for local labour.

Obtaining long-run data for bilateral Chinese FDI is problematic as there are only three reliable sources of bilateral FDI flows, each of which has relatively short timeframes and missing data difficulties. The first is the United Nations Conference on Trade and Development (UNCTAD), which contains the largest repository of world FDI data statistics from 1990 to 2017, grouped by region and individual economies. However, bilateral FDI statistics between countries are only available for the period 2001 to 2012.

Alternatively, the China-Africa Research Initiative (CARI), which is hosted by the St Johns Hopkins University School of Advanced International Studies (SAIS) in Washington DC (SAIS-CARI) was specifically established for the purposes of obtaining reliable evidence-based information pertaining to the relationships between China and Africa. SAIS-CARI collects data on China-Africa trade, loans, aid, and bilateral FDI data. Their bilateral FDI data are derived mainly from the UNCTAD database but are also sourced from the China statistical yearbook produced by the Chinese Ministry of Commerce (MOFCOM), and these data thus cover the longer period of 2003 to 2017.

Finally, Chinese Foreign investments are also recorded by the American Enterprise Institute (AEI), which is an independent Non-Profit Organisation (NPO). The AEI has developed a Chinese Investment Data tracker which records all of China's significant investments in excess of USD100 Million. The AEI database is useful for identifying

specific deals and contracts, especially Chinese SOE (State to state) deals across the African continent. It is also useful for identifying the investment sectors but does not account for the numerous smaller Chinese investments which make up a hugely significant portion of Chinese investments in Africa. In addition, the data only commence in 2005. Hence, due to the longer timeframe, the SAIS-CARI data on bilateral FDI are used to conduct this study.

3.5.3 Control Variables

In addition to the variable of interest, this study includes a set of five control variables, selected in accordance with the applicable literature. All of the data for the control factors were obtained from the World Bank Development Indicators.

3.5.3.1 Human Capital Stock

Human capital is represented by the average number of schooling years of the working population per annum and is compiled by the United Nations Development Programme (UNDP) which utilises data collected by the UNESCO Institute for Statistics. The number of schooling years attained by the working population of a country is an accepted proxy for the quality of the human capital which is believed to have a positive impact on the economic growth of a country. Borensztein et al. (1998), and Wang and Wong (2009), found the contribution of FDI to economic growth to be sustainable only where the host country possesses a certain amount of human capital. It is therefore expected that countries with higher average years of education will attain increased rates of economic growth and employment.

3.5.3.2 Gross Fixed Capital Formation

The growth rate of Gross Fixed Capital Formation (GFCF) as a percentage of GDP is used as a measure of acquisitions of new or existing assets and indicates how much new value was added to the economy. It is an indicator which represents infrastructure development and is thus expected to be associated with higher economic growth (Kodongo & Ojah, 2016).

3.5.3.3 Openness to trade

Trade openness (TO) is measured by the growth rate of exports and imports of goods and services as a percentage of GDP per annum. An increase in exports, especially those that are labour intensive, is expected to lead to higher economic growth levels. Increased International trade is believed to impact economic growth through factors, such as increased competition, exploring comparative advantages, and knowledge transfers. Countries which employ exporting promoting strategies have been found to have higher levels of economic growth (Balasubramanyam et al., 1996, OECD, 2004; Saqib et al., 2013).

3.5.3.4 Domestic credit

Financial sector development is key to economic growth as it facilitates the provision of credit and funding, and in this way contributes towards the amount of capital available in the economy (OECD, 2004). A common proxy for a country's financial development is the ratio of domestic credit to the private sector as a percentage of GDP per annum (Herzer et al., 2008). Azman-Saini, Law, & Ahmad (2010) note that this variable can be utilised to measure the efficiency of the financial system; the authors find that FDI only contributes towards economic growth where there is a basic level of financial system development.

3.5.3.5 Consumer Price Index (CPI)

The consumer price index (CPI) is the indicator for the price changes and indicates the yearly proportionate adjustment in the cost to the general consumer of buying a set basket of goods and services as stipulated at the time. High and unstable inflation rates are inversely linked to economic growth, as they signal an unpredictable economic environment which discourages capital formation. they also present a higher hurdle rate required for businesses to start making a profit on their investments (OECD, 2004). The CPI is thus used as a proxy for policy stability.

3.6 Analytical Framework

The empirical estimation covers the panel unit root and cointegration tests done by Levin, Lin and Chu (2002) and Pedroni (2004) respectively. This is followed by the specification of the panel ARDL model, diagnostic tests to ascertain the performance of the model, and Granger causality tests. These processes are described below;

3.6.1 Tests for stationarity

Unit root tests are performed on the variables for the given panel data in order to determine the stochastic properties of the data. If non-stationary data are used for inference, questionable and inaccurate conclusions are likely to be drawn (Maddala & Wu, 1999). The Levin et al. (2002) (LLC) panel root test is utilised for analyses of the null hypothesis of common unit root process versus an alternative hypothesis of common stationary root. The LLC test subjects homogeneity on the autoregressive coefficient which indicates the presence or absence of unit root. The basis of the test is the Augmented Dickey and Fuller (1979) regression for examining unit roots. The ordinary type of LLC test with intercept term is presented as below:

$$\Delta y_{i,t} = \gamma_{0i} + \rho y_{it-1} + \sum_{i=0}^{\rho_i} \gamma_{1i} \Delta y_{i,t-j} + \mu_{it} \quad (3)$$

Where γ_{0i} represents the constant term that varies throughout cross sectional entities, and ρ is the matching autoregressive coefficient; γ_{1i} indicates the lag order, μ_{it} is the disturbance term which is sovereign across panel variables and depicts an ARMA stationary process as presented below (Asghar et al., 2015).

$$\mu_{it} = \sum_{j=0}^{\infty} \gamma_{1i} \Delta y_{i,t-j} + \varepsilon_{it} \quad (4)$$

Where:

H_0: $\rho_i = \rho = 0$

H_1: $\rho_i = \rho < 0$ for all i

The basis of the LLC model is the *t*-statistics, wherein ρ remains fixed across entities under null and alternative hypothesis examined as follows:

$$t_p = \frac{\hat{\rho}}{SE(\rho)} \quad (5)$$

Assuming the error term is independent and normally distributed, and there is cross-sectional independence, panel regression test statistics t_p move towards standard

normal distribution as N and T approaches ∞ and $\sqrt{\frac{N}{T}} \to 0$. When there is dependence among cross sectional units, serial correlation is present in the error term, and a time trend exists, then there will be no convergence to 0 by the test statistic. The modified version of the LLC becomes:

$$t_p = \frac{t_p - N\tilde{T}\widehat{S_N}\sigma_0^{-2}(\widetilde{p})\,\mu_m^*}{\sigma_m^*} \quad (6)$$

3.6.2 Panel Cointegration tests

The next step is to determine whether there is a cointegrating relationship among the non-stationary data in the panel. Panel cointegration suggests the presence of long run relationships between variables (Basu et al., 2003; Banerjee, 1999). In order to have a robust model, the presence of a long-run relationship between the dependent variable and explanatory variables is mandatory. If this is not the case, the forecasting power of the model is compromised. For this study, Pedroni (1999; 2004) panel cointegration tests are applied. Bildirici and Özaksoy (2018) note that the Pedroni panel cointegration test is the most widely used for analysing cointegration in panel data samples.

Pedroni defines four panel variance ratio statistics. Let $\hat{\Omega}_1$, be a consistent estimate of Ω_t, the long-run variance matrix. Define $\hat{L}_1$ to be lower triangular Cholesky composition of $\hat{\Omega}_1$ such that in the scalar case $\hat{L}_{22t} = \widehat{\sigma_\varepsilon}$ and $\hat{L}_{11t} = \hat{\sigma}_u^2 - {\hat{\sigma}_{u\varepsilon}^2}\big/{\hat{\sigma}_\varepsilon^2}$ is the long-run conditional variance, considering one of these statistics:

$$Z_{t_{PNT}} = \frac{\sum_{i=1}^{N}\sum_{t=2}^{T}\hat{L}_{11i}^{-2}(\hat{e}_{it-1}\Delta\hat{e}_{it} - \hat{\lambda}_i)}{\sqrt{\hat{\sigma}_{NT}^2}\left(\sum_{i=1}^{N}\sum_{t=2}^{T}\hat{L}_{11i}^{-2}\hat{e}_{it-1}^2\right)} \quad (7)$$

Where $\hat{\sigma}_{NT} = \frac{1}{N}\sum_{i=1}^{N}\frac{\hat{\sigma}_i^2}{L_{11t}}$

The null hypothesis, H_0, is thus that there is no cointegration. For panel *v*-statistics, high positive figures represent rejections, and for the panel *ρ* -statistics and panel *t*-

statistics, high negative values suggest rejection of the null hypothesis, leading to the conclusion that cointegration exists.

3.6.3 ARDL Model specification

The study uses the ARDL model to both assess variables that are not stationary, and to reconcile the short run dynamics in the Error Correction Model (ECM) with the long run equilibrium (Nkoro & Uko, 2016; Pesaran, Hashem & Shin, 1998). The model was also utilised by (Asghar et al., 2015).

The Pooled Mean Group (PMG) technique of Pesaran et al. (1998) is employed to estimate nonstationary dynamic panels. The technique utilises a combination of merging and averaging of coefficients *(ibid)*and its broad specification model is depicted as:

$$Y_{it} = \sum_{j=1}^{p} \lambda_{ij}\, y_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\, X_{i,t-j} + \mu_t + \varepsilon_{it} \quad (8)$$

Given cross sections numbered i = 1, 2, … N and time t = 1, 2, 3 …. T. X_{it} is a vector of $K \times 1$ regressors, λ_{ij} is a scalar, μi is specific to a given pool. If the variables are I (1) and cointegrated, then the disturbance term is an I(0) process. The equation can then be depicted into the below error correction model:

$$\Delta Y_{it} = \emptyset_i y_{i,t-j} - \theta_t X_{i,t-j} + \sum_{j=1}^{p} \lambda_{ij}\, \Delta y_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\, \Delta X_{i,t-j} + \mu_t + \varepsilon_{it} \quad (9)$$

The error correction ϕ_l depicts the adjustment rate. If $\phi_l = 0$, then there is no evidence of a long run relationship among the variables. In cases where ϕ_l is both statistically significant and negative, then the variables imply a merging towards long run equilibrium when there is a disturbance. For this study, the equation is then written as follows:

$$\Delta logGDP_{it} = \omega_1 + \emptyset_i y_{i,t-j} - \theta_t X_{i,t-j} + \sum_{j=1}^{p-1} \lambda_i\, \Delta GDP_{i,t-j} + \sum_{j=0}^{q-1} \delta_i\, \Delta CFDI_{i,t-j} + \sum_{j=0}^{q-1} \delta_2\, \Delta HCS_{i,t-j} + \sum_{j=0}^{q-1} \delta_3\, \Delta GFCF_{i,t-j} + \sum_{j=0}^{q-1} \delta_4\, \Delta TR_{i,t-j} + \sum_{j=0}^{q-1} \delta_5\, \Delta FS_{i,t-j} + \sum_{j=0}^{q-1} \delta_6\, \Delta IF_{i,t-j} + \mu_{it} \quad (10)$$

$$\Delta \log EMP_{it} = \omega_1 + \emptyset_i y_{i,t-j} - \theta_t X_{i,t-j} + \sum_{j=1}^{p-1} \lambda_i \Delta EMP_{i,t-j} + \sum_{j=0}^{q-1} \delta_i \Delta CFDI_{i,t-j} + \sum_{j=0}^{q-1} \delta_2 \Delta HCS_{i,t-j} + \sum_{j=0}^{q-1} \delta_3 \Delta GFCF_{i,t-j} + \sum_{j=0}^{q-1} \delta_4 \Delta TR_{i,t-j} + \sum_{j=0}^{q-1} \delta_5 \Delta FS_{i,t-j} + \sum_{j=0}^{q-1} \delta_6 \Delta IF_{i,t-j} + \mu_{it} \quad (11)$$

All estimations and econometric tests are conducted using the *EViews 9* econometric software.

3.6.4 Diagnostic tests

In order to confirm that the model is robust and correctly specified, the following diagnostic tests are conducted.

3.6.4.1 Ramsey RESET test

The Ramsey RESET test is used to detect model misspecification. Incorrect specification of the empirical model may yield misleading results. The RESET test uses the null hypothesis that the model is correctly specified at a 0.05 significance level.

3.6.4.2 Heteroscedasticity Test

Heteroscedasticity occurs where the variance of the error term is not constant over time (Gujarati, 2004). In the current study, the Breusch-Pagan heteroscedasticity test is conducted in a panel dynamic model, as per Halunga, Orme, and Yamagata (2011), in order to establish whether the error terms are time variant or not. The null hypothesis states that the residuals are time variant and is against the alternative hypothesis that the error terms are not time variant.

3.6.4.3 Serial Correlation Test

Serial correlation arises when a variable has a relationship with itself in a manner that the value of such a variable in previous periods has an impact on its future values (Mazenda, 2014). The Breusch Godfrey test is used to test for autocorrelation such that:

$$E(u_i u_j) = 0 \quad i \neq j \quad (12)$$

Where the null hypothesis represents the absence of autocorrelation.

3.6.4.4 Cross- Section dependence

The Breusch-Pagan LM test is employed to investigate the presence of cross-sectional dependence. Pesaran(2004) proposes a standardized version of the LM statistic which is based on regular product-moment correlation coefficients such that there are mean zero values for fixed values of either N or T based on the following equation:

$$CD = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\widehat{\rho_{ij}}\right) \xrightarrow{d} N\,(0,1) \qquad (13)$$

The null hypothesis is then that there is no cross-section dependence.

3.6.5 Granger Causality tests

The investigation also conducts a Granger causality analysis of the relationship between Chinese FDI with both employment and economic growth. Granger causality tests do not necessarily indicate whether one variable causes another variable, but it is useful to determine whether one variable can be used to predict another. The concept is developed from the notion that past events can cause future events to occur, but not vice versa (Gujarati, 2004).

In order to determine whether *x* causes *y*, the test calculates how much of *y* can be explained by past values of *x*; hence *y* is said to be granger caused by *x* if *x* helps in the prediction of *y*. Chinese FDI would be said to "Granger cause" economic growth or employment only if there is substantial evidence that its lagged values contribute towards the two variables. The test uses the following bivariate regressions:

$$\gamma_t = \alpha_0 + \alpha_1\gamma_{t-1} + \cdots + \alpha_l\gamma_{t-1} + \beta_1 x_{t-1} + \cdots \beta_l x_{t-1} \qquad (14)$$
$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \cdots + \alpha_l x_{t-1} + \beta_1\gamma_{t-1} + \cdots \beta_l\gamma_{t-1}$$

For all feasible combinations of (*x,y*) series in the pool. The stated F-statistics are the Wald statistics for the combined hypothesis $\beta_1 = \cdots \beta_\iota = 0$ for each equation. The null hypothesis is that *x* does not Granger cause *y* in the initial regression, and y does not Granger cause *x* in the subsequent regression.

3.7 Limitations and Assumptions

3.7.1 Data Limitations

The inherent limitations pertain to the source of the data, given that the secondary sources of data are not always accurate or openly available. Kaplinsky and Morris (2009) highlight the fact that Chinese FDI figures are not consistent across different data platforms. Zhang et al. (2014) add that the formal data on Chinese FDI are usually understated as many small Chinese firms do not register their investments, and therefore it is difficult to estimate their impact on economic growth and employment. The use of more trusted databases, such as UNCTAD, will however mitigate this risk and provide data which are of acceptable reliability and accuracy and can be vouched for by third parties.

The period over which the time series data for Chinese FDI is available presents a smaller than ideal data sample for use in conducting the current study. This is because the recording of the bilateral Chinese FDI data only started formally in recent years. The data interval is also only available in the form of annual figures and cannot be found in other frequencies, such as quarterly or bi-annually data, tests on a range of different data frequencies might have yielded varying results. However, the pooling of data from various countries for the panel study produces a more reliable and robust model.

3.7.2 Data Assumptions

For purposes of the current study, it is assumed that the data provided by the various authorities or website sources are accurate and final, and therefore not subject to changes in future. Data for all the variables are available in annual intervals, and these are assumed to be adequate for conducting this study.

3.7.3 Methodological Limitations

While neither the ARDL model nor the Granger causality tests indicate whether one variable causes another variable, these instruments are useful for determining whether one variable can be used to predict another.

3.7.4 Methodological Assumptions

The proxies used for human capital stock and for the financial system are widely acceptable by researchers even though there is acknowledgement that there are factors that affect the stock of human capital in a country other than the number of schooling years being an indicator for quality of education.

Likewise, the use of domestic credit as a proxy for measuring the development of the financial system does not take into consideration other pertinent issues which determine a country's financial system development, such as matters of access to financial services.

This study does not specifically consider the effects of macroeconomic shocks such as the 2008 economic crisis. It is assumed that the impact of the crisis will have been reflected in the different variables which make up part of study.

The methodology examines the relationships of various economic variables and it is assumed that it will also take into account cross examination of the relationships among the variables themselves. It is also assumed that the outcomes of the study can be reasonably expected to be reliable and robust for the basis of policy recommendations.

Chapter 4
Discussion of Results

4.1 Introduction

This section presents the findings from the analysis of the data, together with a discussion of the results of the exploration of the relationship between economic growth and Chinese FDI in Sub-Saharan Africa between 2003 and 2017. The chapter starts with the outcomes of the pre and post estimation diagnostic tests before moving on to a discussion of the Autoregressive Distributed Lag Model results and Granger causality tests.

4.2 Descriptive statistics

Table 2 below shows the results of the descriptive statistics for the variables described in Chapter 3. The data variables are annual values composed of the following: Chinese FDI (CFDI), stated in millions of US Dollars. Gross Domestic Product (GDP), Employment (EMP), Financial system (FS), Consumer Price Index (CPI), and Trade Openness (TO), are in percentage terms, and Human Capital Stock (HCS) is stated in number of years.

Table 2 : Descriptive Statistics

	GDP	EMP	CFDI	FS	GFCF	HCS	CPI	TO
Mean	6.3173	61.8649	172.0142	18.6513	21.7564	5.7553	14.2006	61.2834
Median	5.8384	63.7615	72.9000	13.3809	20.9103	6.0500	9.9863	59.4659
Maximum	19.6753	80.0900	4807.8600	78.2941	42.8209	10.1000	95.4087	122.4461
Minimum	0.1472	36.7490	0.03000	0.0000	1.5252	1.7000	0.2521	19.1008
Std. Dev.	3.7930	13.2552	420.3862	18.8605	8.3762	2.0438	14.5906	22.2679
Skewness	0.8956	-0.401	9.1995	1.8530	0.1793	0.0713	3.1681	0.3727
Kurtosis	3.8858	2.0276	100.7919	5.6319	2.9738	2.7060	16.2812	2.8641
Observations	150	150	150	150	150	150	150	142

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System. GFCF=Gross fixed Capital Formation: HCS=Human Capital Stock; CPI=Consumer Price Index; TO=Trade Openness. Source: Researcher Calculations using Eviews 9.1

The mean represents the annual average of each variable. For GDP the mean was 6.3%, representing the average annual increase in GDP across the SSA countries under study, whilst for CFDI it was USD172 million. The standard deviation was 3.8%

and USD 420million for both GDP and CFDI respectively, indicating the degree of the spread of the values from the mean. The measure of skewness indicates that both GDP and CFDI are positively skewed meaning that the right tail is longer relative to the left tail. Furthermore, the control variables highlight that they are positively skewed (that is, FS, GFCF, HCS, IF, and TO), meaning that the data were more centred to the right. Lastly, EMP had a mean value of 61.86, with a standard deviation of 13.26. The maximum and minimum values for EMP were 80.09 and 36.74 respectively, indicating the wide ranges for employment rates.

4.3 Multicollinearity Test

A pair-wise correlation matrix is conducted to test for multicollinearity. The results presented in Table 3 below indicate no significant existence of multicollinearity between the exogenous variables, based on a threshold of 0.8 (Gujarati, 2004).

Table 3: Pearson Correlation Matrix Results

Variable	LOGGDP	LOGCFDI	LOGFS	LOGGCF	LOGCPI	LOGHCS	LOGTO	LOGEMP
LOGY	1.0000							
LOGCFDI	-0.0891	1.0000						
LOGFS	0.3496	-0.1771	1.0000					
LOGGCF	-0.2471	0.2384	-0.3500	1.0000				
LOGCPI	0.0248	-0.1615	-0.0303	-0.0511	1.0000			
LOGHCS	-0.3099	0.1792	-0.2060	0.2959	-0.2626	1.0000		
LOGTO	-0.2110	0.2447	-0.3267	0.7312	-0.0157	0.4874	1.0000	
LOGEMP	0.234	0.388	0.0531	0.091	-0.5070	0.0851	0.6942	1.0000

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System. GFCF=Gross fixed Capital Formation: HCS= Human Capital Stock; CPI=Consumer Price Index; TO=Trade Openness. Source: Researcher Calculations using Eviews 9.1

4.3.1 Unit root test

Table 4 summarises the results of the Levin-Lin-Chu (LLC) unit root tests with automatic lag selection, using the Schwarz Information Criteria and an intercept. The results indicate that gross domestic product (GDP), inflation (INF) and gross fixed capital formation (GCF) are non-stationary, whilst Chinese foreign direct investment

(CFDI), trade openness (TO), human capital stock (HCS), financial system (FS), and employment are stationary at level.

Table 4: Levin-Lin-Chu Test of Stationarity

Variable	Levels	First difference	Order of Integration
LOGGDP	1.881	-9.736***	I (1)
LOGEMP	-1.7364	-7.683***	I (1)
LOGCFDI	-3.968***	-10.670***	I (0)
LOGFS	-7.413***	-6.341***	I (0)
LOGGCF	-1.642	-6.036***	I (1)
LOGCPI	-1.25	-10.706***	I (1)
LOGHCS	-3.400***	-2.364***	I (0)
LOGTO	-4.516***	-6.528***	I (0)

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System. GFCF=Gross fixed Capital Formation: HCS=; CPI=Consumer Price Index; TO=Trade Openness. ***, **, *, denote statistical significance at the 1%, 5%, and 10% levels respectively. Source: Researcher Calculations using Eviews 9.1

4.3.2 Cointegration Tests

Having determined that three of the factors are first-difference (I (1)) stationary, the next step of the analysis is to analyse for cointegration amongst these factors. The Pedroni cointegration test results are summarised in Table 5 and show a long run relationship among the variables.

Table 5 : Pedroni Residual Cointegration Test

	Economic Growth		Employment	
Test	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-1.6043	0.0543	-1.9246	0.0500
Panel rho-Statistic	1.6866	0.0458	2.4861	0.0316
Panel PP-Statistic	4.4657	0.0000	5.674	0.0001

4.4 Diagnostic tests

Having tested the data used to conduct the empirical estimations, the next set of diagnostics tests the robustness of the model. The Ramsey RESET test is used to detect model misspecification, and the results presented in Table 6 show that the model is appropriately specified and robust. The Breusch-Pagan LM test is then employed to investigate the existence of cross-sectional dependence. The results indicate that there is cross-sectional independence, which suggests that that are no country spill-over effects within the panel. The diagnostic tests thus indicate that the model is correctly specified and stable.

Table 6: Model Specification Results

	Economic Growth			Employment		
Test	Statistic	Prob.	Conclusion	Statistic	Prob.	Conclusion
Ramsey RESET	0.320	0.810	Model correctly specified	0.5241	0.1258	Model correctly specified
Breusch-Pagan LM	64.411	0.030**	Cross-sectional independence	72.6213	0.020**	Cross-sectional independence

*Note: ***, **, *, denote statistical significance at the 1%, 5% and 10% levels respectively*

4.5 ARDL Results

This section discusses the results of the investigation of the specific ways in which Chinese FDI relates to economic growth and employment in Sub-Saharan Africa (SSA) region using a one-lag Autoregressive Distributed Lag model (ARDL 1, 1, 1, 1, 1, 1, 1).

4.5.1 Short-run Error Correction Model Results

A cointegration equation provides the means of reconciling the short run behaviour of an economic variable with its long-run behaviour. The presence of cointegration amongst the variables necessitates the calculation of an Error Correction Term (ECT) in order to identify the dynamic behaviour of the equation. The ECT captures the short run dynamics of the system, while its coefficient measures the speed of adjustment to equilibrium in the event of a shock. Table 7 reports the results of the short-run dynamic equation.

The ECM (ECT) results in table 7 is statistically significant at 1% level and has a negative sign as desirable. This is an indication of joint significance of the long-run coefficients. From Table 7, the estimated coefficient of the ECM is 0.840 and 0.459 for economic growth and employment respectively. This reflects a very high speed of adjustment to equilibrium after a shock in the economic growth equation compared to employment equation. In the growth equation this is approximately 84% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year compared to a 45.9% adjustment in the employment equation.

Table 7: ECM Results

	(a) Economic Growth			(b) Employment		
Variable	Coefficient	Std. Error	t-Statistic	Coefficient	Std. Error	t-Statistic
ECT	-0.840***	0.123	-6.827	-0.459**	0.138	-3.320
D(LOGCFDI)	-0.047	0.029	-1.631	0.000	0.000	0.474
D(LOGFS)	-6.144	7.963	-0.772	0.573***	0.159	3.609
D(LOGGCF)	24.698	16.743	1.475	0.084	0.074	1.130
D(LOGCPI)	0.091	0.066	1.386	-0.001	0.001	-1.209
D(LOGHCS)	3.057	4.754	0.643	0.114	0.159	0.722
D(LOGTO)	17.683	24.573	0.720	0.000	0.001	0.154
Constant	8.949***	1.320	6.782	-0.015*	0.009	-1.693

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System ; GFCF=Gross fixed Capital Formation: HCS= Human Capital Stock ; CPI=Consumer Price Index ; TO=Trade Openness.***, **, *, denote statistical significance at the 1%, 5%, and 10% levels respectively. Source: Researcher Calculations using Eviews 9.1

4.5.2 Panel Long-run Dynamics

ECONOMIC GROWTH

The results highlight that Chinese FDI, financial systems, inflation, human capital stock, and inflation play a measurable role in determining economic growth and that the variables were statistically significant at 1% and 5% levels. However, trade openness was not statistically significant in explaining the variations in economic growth. There is a positive relationship between Chinese FDI and Economic growth, as indicated by the coefficient of 0.171 and the statistical significance of Chinese FDI at 1%. Thus, all things being equal, a percentage increase in Chinese FDI increases

GDP growth by approximately 0.17%. The results support the FDI-Led economic growth theory and Robert Solow's neo-classical growth model both of which argue that economic growth is achieved through increased capital growth, increased labour force, and technical knowledge (Solow, 1957). According to these models, FDI is therefore expected to increase the capital stock of the host country, which in turn boosts savings and investments, thereby resulting in economic growth (Borensztein, De Gregorio, & Lee, 1998; Shan, Tian, & Sun, 1997).

For developing countries, such as those in this study, FDI also brings with it technology. This is an important factor for economic growth but is often lacking due to limitation of the resources of a host country (Blomstrom & Kokko 1998). Technology acts as a key catalyst for sustained economic growth without diminishing returns (Romer, 1986). It has significant spillover effects in the host countries, effects which go beyond individual MNE operations as these are transferred to local companies. The findings by Borensztein et al. (1998) support this notion as their study concluded that FDI contributes towards increased economic growth as it involves technology spillovers, and these result in higher productivity.

The same relationship between Chinese FDI and economic growth was discovered by Weisbrod and Whalley (2012), and Doku et al. (2017) in their respective studies on African countries. All these authors saw Chinese FDI as leading to the economic growth of the recipient countries. These findings are, however, contrary to those of Zhang et al. (2014), and Busse, Erdogan, and Muhlen (2016) whose studies of the relationship between Chinese FDI and economic growth in various African countries revealed that Chinese FDI had no notable impact on economic growth.

Human Capital Stock

The differences in the level of impact, if any, of FDI on economic growth has also been seen to have been affected by the quality and/or level of human capital in a host country. A more educated population is generally expected to contribute more to economic growth due to its collective acquired knowledge. In the 18th century Adam Smith saw the ability of a country to grow and thrive as being based on the ability and effectiveness of its labour. Basically, according to his theory, human capital affects growth through two mechanisms. Firstly, its effect on growth as part of the production factor, through its participation in the direct generation of output. Secondly, its effect is

actioned through the improvement in technology. Through these processes the level of human capital affects productivity growth.

The results of this current study reveal a positive relationship between human capital stock and economic growth, as highlighted by a positive coefficient value of 0.30 and a statistical significance at 1%. The results thus suggest a measurable correlation between the human capital stock and the economic growth of a country. Bengoa and Sanchez-Robles (2003) highlight the necessity of adequate human capital for FDI to have a positive significant effect on economic growth. The results derived from their study are similar to those from the study conducted by Wang and Wong (2009) for selected developing countries, where FDI was found to be positively related to economic growth provided that there was a certain level of human capital stock in the host country. This level was important for sustaining the increased levels of economic growth derived from FDI.

Gross Fixed Capital Formation

Gross Fixed Capital Formation (GFCF) is an indicator used for measuring the level of infrastructure development in a country (Kodongo & Ojah, 2016). A well-developed financial infrastructure is positively linked to economic growth because it creates an enabling environment for economic activity. It is also connected to a country's institutional structures, including the legal frameworks, which in turn contribute to economic growth (Claessens & Laeven, 2005). GFCF is found to be statistically significant and as leading to an increase in economic growth. This is in line with the classic Solow (1957) model, which posited that GFCF results in increased economic growth. A percentage change in gross fixed capital formation results in an approximately 0.13% change in economic growth at a 5% level of significance.

Inflation

Inflation can be used as an indicator of the macro-economic stability of a country. High and volatile inflation rates are inversely linked to economic growth as they signal an unpredictable economic environment which discourages capital formation. According to an OECD (2004) analysis, a higher hurdle rate is also required for businesses to start making a profit on their investments. The results of this analysis reveal that inflation has a coefficient of -0.222. Hence, holding other factors constant, a one

percent increase in inflation in the long run will lead to a reduction in GDP by roughly 0.22% at a 5% significance level.

In a study conducted by Zouhaier and Fatma (2014), inflation was found to have a negative impact on economic growth . Khan, Senhadji, and Smith (2006) concluded that inflation was actually not detrimental to economic growth as long as it was controlled and did not exceed a certain benchmark.

Trade Openness

For the current study, trade openness was not statistically significant in explaining the variations in economic growth. In other words, it did not have a notable impact on economic growth. This finding seems to be more aligned to Prebisch's (1962) dependency theory, which argues that developing countries cannot benefit from open trade with more developed countries due the existing structural inequalities between the parties. The theory therefore advocates for import substitution and internal growth as the only way developing countries can attain growth (Hein, 1992). This contrasts with the findings of Balasubramanyam, Salisu, and Sapsford (1996). These authors found FDI to lead to higher economic growth for those countries which pursue export promoting policies as compared with those that prefer import substitution.

Financial System

A well-developed financial system is instrumental to economic growth as it facilitates the provision of credit and funding, and in this way contributes towards the amount of capital available in the economy of a country (OECD, 2004). The ratio of domestic credit to the private sector as a percentage of GDP per annum is utilised to measure of the efficiency of the financial system of a country (Herzer et al., 2008). Azman-Saini, Law, and Ahmad (2010) found that FDI only contributes towards economic growth where there exists a particular level of financial system development. The results from the data collected for the current study show that financial system has a coefficient of 0.463, indicating a strong positive relationship between an efficient financial system and economic growth. This means that a percentage change in financial system will result in a 0.463% change in economic growth.

EMPLOYMENT

For employment, Chinese FDI, gross fixed capital formation, inflation, human capital stock, and trade openness were found to be statistically significant in explaining changes in employment. Theoretically FDI is expected to contribute towards significant job creation in the host country through direct or indirect channels (Abor & Harvey, 2008). In this study, Chinese FDI was found to have a positive effect on employment in Sub-Saharan Africa, as indicated by a coefficient value of 0.205 at 5% level of significance. This means that a 1% increase in Chinese FDI would result in a 0.20% increase in employment. This increase in employment does not, however, take into consideration the nature of the jobs created. Javorcik (2013), and Coniglo, Prota, and Seric (2015), argue that developing countries should focus on attracting the kind of FDI that has the potential to result in the creation of good quality jobs as opposed to focusing simply on the volume of jobs created. These 'good' jobs contribute more to development through higher earnings, leading to a higher potential for reducing poverty, higher knowledge spill-overs, and higher productivity. Studies conducted in SSA by Coniglo et al. (2015), and by Tang and Gyasi (2012), revealed that, although Chinese FDI created a notable number of jobs, the jobs created were mainly unskilled or semi-skilled jobs, with very low wages compared to those paid by local companies.

This current study does not analyse the nature of the jobs created and wages derived from these, and hence cannot fully evaluate all the related aspects of the entire contribution of Chinese FDI to employment. As was noted earlier, in summary, while FDI is believed to possess great potential to create jobs through both direct and indirect channels, the extent of job creation is impacted by various factors, such as the mode of entry, import substitution, and the ability of local industry to effectively compete with MNEs.

Economic growth and employment are linked factors, and, as has been noted, increased economic growth is expected to lead to increased demand for labour due to the increase in domestic output. Hence, the control variables in the employment model have a more indirect than indirect relationship with employment through their interaction with economic growth. Therefore, the variables are expected to have a similar relationship with both economic growth and employment.

On the basis of the above analysis, it can be noted that Chinese FDI, inflation, financial system, and human capital stock all play an important role in determining the degree of economic growth and employment in Sub-Saharan Africa. The impact of Chinese FDI was found to be more significant on employment that on economic growth. The direction of causality among the variables is explained by the Granger causality test in Table 9.

Table 8: Long Run Equation Results

	(a) Economic Growth			(b) ***Employment***		
Variable	Coefficient	Std. Error	t-Statistic	Coefficient	Std. Error	t-Statistic
LOG(CFDI)	0.171***	0.024	7.125	0.205**	0.124	1.653
LOG(FS)	0.463***	0.805	0.575	0.134	0.140	0.957
LOG(GFCF)	0.131**	0.019	6.895	0.300**	0.066	4.545
LOG(CPI)	-0.222**	0.039	-0.627	0.022**	0.007	3.143
LOG(HCS)	0.301***	0.354	0.850	0.479**	0.142	3.373
(LOG(TO)	-0.011	0.046	-0.239	0.057**	0.014	4.071
S.E. of regression	0.176			0.002		
Sum squared resid	1.942			0.000		
Log likelihood	155.840			766.729		
S.D. dependent var	0.310			0.085		
AIC	-0.938			-9.137		
Schwarz criterion	0.796			-7.403		
Hannan-Quinn criter.	-0.233			-8.433		
Obs	139			139		

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System. ; GFCF=Gross fixed Capital Formation: HCS= Human Capital Stock ; CPI=Consumer Price Index ; TO=Trade Openness.***, **, *, denote statistical significance at the 1%, 5%, and 10% levels respectively. Source: Researcher Calculations using Eviews 9.1

4.6 Granger Causality Test Results

The Granger causality, or the block exogeneity Wald test results, are summarised in Table 9 below. The Granger causality test results indicate a bi-directional relationship between Chinese FDI and economic growth at a 5% level of significance, which accords with the long-run dynamics in Table 8 above. This supports the findings by Zhao & Du,(2007) who discovered a 2 way causality between FDI and economic growth. However, as noted by Kolstad and Wiig (2012), Chinese FDI is mainly attracted to countries which possess natural resources and large markets, and not necessarily to those countries which have higher economic growth rates.

On the employment side, the Granger causality tests reveal that Chinese FDI Granger causes employment and the relationship is also uni-directional. An increase in Chinese FDI would therefore result in an increase in employment. Lastly, inflation, human capital stock, gross capital formation, and financial system were found to have a uni-directional relationship with economic growth running from these independent factors (INF, HCS, GCF, and FS) to economic growth. Nevertheless, trade openness was found to have a bi-directional causality with economic growth. According to the Granger causality tests, this means that trade openness results in economic growth, whilst economic growth results in trade openness.

Table 9: Pairwise Granger Causality Tests

Null Hypothesis:	Prob.
LOGCFDI does not Granger Cause LOGGDP	0.011***
LOGGDP does not Granger Cause LOGCFDI	0.027**
LOGEMP does not Granger Cause LOGCFDI	0.297
LOGCFDI does not Granger Cause LOGEMP	0.032**
LOGICPI does not Granger Cause LOGGDP	0.010***
LOGGDP does not Granger Cause LOGCPI	0.601
LOGFS does not Granger Cause LOGGDP	0.053**
LOGGDP does not Granger Cause LOGFS	0.502
LOGHCS does not Granger Cause LOGGDP	0.004***
LOGGDP does not Granger Cause LOGHCS	0.348
LOGTO does not Granger Cause LOGGDP	0.006***
LOGGDP does not Granger Cause LOGTO	0.047**
LOGGCF does not Granger Cause LOGGDP	0.001***
LOGGDP does not Granger Cause LOGGCF	0.976

Note: GDP=Economic growth; EMP= Employment; CFDI=Chinese FDI; FS=Financial System; GFCF=Gross fixed Capital Formation: HCS= Human Capital Stock; CPI=Consumer Price Index; TO=Trade Openness; .***, **, *, denote statistical significance at the 1%, 5%, and 10% levels respectively. Source: Researcher Calculations using Eviews 9.1

Chapter 5
Conclusions and Recommendations

5.1 Introduction

This final chapter provides a summary of the research conducted and, from the results derived, offers possible policy recommendations and avenues for further future research in the area of Chinese FDI, particularly in developing countries in Africa.

5.2 Summary and Conclusions

This study set out to investigate whether Chinese Foreign Direct Investment has had a positive impact on employment and economic growth in SSA during the period under study. Secondary data were employed to perform a panel data study using a representative population of the top ten SSA Chinese FDI recipients in order to draw conclusions on the SSA region for the period 2003-2017. In the introductory chapter, the stage was set, highlighting how China has interacted with Africa, in particular SSA through FDI in recent years and how this relationship has now become an important field of research, particularly in those developing countries in Africa which suffer from ongoing high unemployment and low rates of economic growth.

The literature review provided an in-depth analysis of both the theoretical discussions and empirical studies done on the past, and the potential future impact of FDI on both economic growth and employment. The review also explored the peculiar nature of Chinese FDI and its interactions with developing countries seeking FDI, together with the factors related to this. In chapter 3 the methodology used to conduct the study was described and explained, including the rationale for choosing to conduct a quantitative study. The results of the panel ARDL tests and Granger causality tests were analysed in chapter 4.

The results of the analysis enabled us to answer the research questions as set out in Chapter 1 (1.2):

i. What has been the impact of Chinese FDI on employment in SSA?

From the analysis of the data, Chinese FDI was found to have had a positive effect on employment in Sub-Saharan Africa in the period 2003 to 2017, as indicated by a coefficient value of 0.205 at a 5% level of significance. This means that a 1% increase in Chinese FDI would be expected to result in a 0.20% increase in employment. This increase in employment does not, however, take into account the nature of the jobs created. Javorcik (2013), and Coniglo et al. (2015) argue that developing countries should focus on attracting the kind and source of FDI that results in the creation of good quality jobs rather than focusing only on the volumes or numbers of jobs created.

ii. What has been the impact of Chinese FDI on economic growth in SSA?

The results of the tests conducted in Chapter 4 revealed a positive relationship between Chinese FDI and economic growth as indicated by the coefficient of 0.171, and the statistical significance of Chinese FDI at 1%. Thus, all things being equal, a percentage increase in Chinese FDI would increase GDP growth by approximately 0.17%.

The results of the panel long-tun dynamics support the FDI-Led economic growth theory and Robert Solow's neo-classical growth model, which argued that economic growth is achieved through increased capital growth, labour force, and technical knowledge (Solow,1957). Accordingly, FDI would therefore be expected to increase the capital stock of the host country, which in turn boosts savings and investments, thereby resulting in economic growth (Borensztein, De Gregorio, & Lee, 1998; Shan, Tian, & Sun, 1997).

5.3 Policy Recommendations

The findings of the study support the FDI-led economic growth hypothesis. To attempt to ensure that the benefits of Chinese FDI have a future similar impact across individual Sub Saharan African countries, it is recommended that, in the near future, Africa adopts a combined approach in its engagement with China. This is important in order to assist other African countries which may not have as much bargaining power as those with thriving economies, and which would be in a stronger position to enter into

beneficial and sustainable deals with China. It is recommended that the FDI deals concluded should be evaluated for compliance with terms of the agreement, terms such as number and level of the jobs created, and compliance with labour and environment laws. In many cases, once a project has commenced, there is no formal agreed-upon process in place to monitor compliance in order to ensure that all the terms of agreement are being adhered to and that the promised increased jobs are as agreed upon.

5.4 Avenues for Future Research

This was a quantitative study and was based on secondary data and numerical/statistical analysis. Thus a recommendation for further research in this area would be for the kind of qualitative studies which would investigate the various ways in which Chinese FDI has impacted, and is likely in the future to impact, economic growth and employment in SSA and elsewhere in Africa. This would provide a more comprehensive analysis of the subject matter and would include the social and human impacts. Such research could thus build on the current study to provide a more holistic insight into the ultimate impact of Chinese FDI. Thus, we would recommend that the impact of Chinese FDI on various other areas should continue to be studied, and include the kind of qualitative research which is predicted to have a bearing on Africa's overall development, including the environment, labour, and social conditions, all of which affect the health, well-being, and prosperity of Africa's people.

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