



Does foreign direct investment into Africa from multinationals help people in the country?

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Abstract

For decades Africa has been the forgotten continent. Over the last decade however with economic turmoil, Africa with its rising political stability and education levels has quickly become a place for investors to consider.

This study wishes to look into the role of foreign direct investment in developing the people of the continent. Does foreign direct investment help develop people and the continent's literacy rates? Do governments implement the correct policy to oversee this process? Do the multinational corporations in these countries try to develop these nations or are they only there to maximise profit as much as they can. These important topics, which are vital to Africa's future growth, are analysed in this paper.

Keywords FDI, AFRICA, LITERACY, CORRELATION, REGRESSION



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Declaration

I declare that this research project is my own work. It is submitted in partial fulfillment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Aryan Mike Binazir

Date



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1. Introduction to Research Problem

1.1 Research Title

Foreign direct investment increasing literacy rates in sub-Saharan Africa.

1.2 Research background

After decades and centuries of being the forgotten continent, Africa is rising. Once regarded a place of hopelessness, Africa has been looked down upon by larger, more materially developed countries for a long time. Over the last decade or so, however, Africa has been seen as a place of increasing political stability, and the resource rich continent is receiving more and more foreign direct investment. As other countries around the world show no or very little growth, sub-Saharan Africa has grown at an average of 3.1% - 6.5% over the last decade, which in time of economic turmoil, is an amazing feat, albeit on a small base (AfDB).

These facts bode well for African governance and how far it has come, but how can the continent not become complacent? How can the governments of this land ensure that investment into the continent is not just exploiting Africa's resource wealth? How can countries be sure that their people are being developed and that future foreign direct investment will be attracted through increasing the human development index, through increased infrastructure and better political stability. The human development index is an interesting indicator, a portion of which, namely a country's literacy rate, will be examined in detail during this paper.

Basu and Guariglia (2007) conducted research on a very relevant topic, whether foreign direct investment into Africa has caused the human development index to further deteriorate, or has caused the level of the African human development index



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to improve in comparison to Western developed economies. They concluded that it helped create further skill inequality on the continent. Other research has argued that foreign direct investment helps develop human capital, and the contradiction between these two conclusions leaves the reader hungry for further research on the topic, possibly at a more granular level, such as by using a element of the human development index, which in this case will be literacy rates (Harvey, Myers, & Novicevic, 2002).

Foreign direct investment is an important factor in helping economies grow, and ensuring that a country is attractive to foreign investors, as it shows confidence in the country (Borensztein & De Gregorio, 1998). Many other factors also affect attractiveness to external investment, these include ensuring that a country has a strong level of human capital accumulation, amongst other factors (Borensztein & De Gregorio, 1998).

Although this was not always the case over the last century, foreign direct investment has quickly become somewhat of an obvious path to economic growth. Countries such as Singapore have relied on foreign direct investment to assist them on the road to becoming a country with one of the highest per capita GDPs in the world (Anwar, 2008). Other countries have seen this and realised that foreign direct investment is an extremely important fact in uplifting their countries, but the big question that has come about is how do they become unique enough to attract this foreign direct investment themselves, rather than having it invested to other developing nations?

Governments of nations will, through the creation and improvement of policies on important factors such as training and education, hope to attract greater amounts of foreign direct investment. This foreign direct investment will then hopefully have spill over effects, developing the people of the nation and increasing their wealth. An example of one such spill over would be to help improve the literacy rates (a factor in

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the human development index), which can be defined as people's ability to read and write at a coherent level as well as to think critically. Does this foreign direct investment help African countries further increase literacy rates? Or does it have little or even a negative effect? This is a question which has not been heavily researched as of yet, although the inverse question has been researched, higher literacy rates do help attract foreign direct investment (Suliman & Mollick, 2009).

Literacy rates are one of the aspects of foreign direct investment, and a very important one as well. Without basic literacy, it is close to impossible to move your country up the value chain, from primary industries to secondary industries, and finally moving toward an innovation based economy in time. If countries want to embark on this progressive path of development, they need to increase their human development index, of which literacy rates are an important factor.

This is the reason behind the question raised. This paper hopes to study this question, although it is understood that data availability and quality may be an issue moving forward.

1.3 Research Aim

Foreign direct investment is flowing into the African continent more than it has in the last 50 years (see Appendix 1). The governments of Africa need to ensure that this foreign direct investment is not only assisting the multinationals, but is uplifting their people out of poverty, creating a burgeoning middle class, and assisting the increase in human capital development that will attract even more foreign direct investment in a virtuous cycle (Te Velde & Xenofiani, 2007). To measure this it is important to understand what has been done so far, and whether the foreign direct investment has



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had this effect on the country receiving the investment. Therefore, the aim of this research is to discover whether the flow of foreign direct investments into the continent have meant greater literacy rates or worse literacy rates, and to what extent. It is also important to understand to what extent these literacy rates have been affected and what can be done to help increase these levels for government.

Due to the lack of data available, the study will be done using a limited number of countries and observations. These limitations do not allow for the optimal results, but that does not mean that such important research, which could benefit so many people on the African continent, should not go ahead. Measures will be taken to gather the best results possible with the limitation placed on the research.

The scope will be 16 countries, which can be measured against themselves over time. The measurement of literacy rates over years throughout the continent will be done, as well as a region-by-region approach. These last two approaches will attempt to get results which have more observations than the country-by-country approach which may not have many occurrences.



2. Literature Review

2.1 Introduction

The following paper will look at the relationship between foreign direct investment and human capital development. Foreign direct investment can be defined as “an investment made by a company or entity based in one country, into a company or entity based in another country. Foreign direct investments differ substantially from indirect investments such as portfolio flows, wherein overseas institutions invest in equities listed on a nation's stock exchange. Entities making direct investments typically have a significant degree of influence and control over the company into which the investment is made. Open economies with skilled workforces and good growth prospects tend to attract larger amounts of foreign direct investment than closed, highly regulated economies” (Investopedia, 2012). From this definition it is apparent that foreign direct investment is the medium to long-term flow of capital into a country, as opposed to short-term, volatile capital flows into that country, as these are of more benefit to the nation, and that in fact short term flows could be harmful to a country (Sheng, 2012).

A common form of long-term foreign direct investment is that of multinational corporations investing into developing nations, which offer high-risk yet high return value. Common destinations for foreign direct investment are focused in South East Asia, sub-Saharan Africa and South America (United Nations Conference On Trade And Development, 2012). The human development index is a measure widely used around the world to understand the standard of human development. It encompasses other factors such as life expectancy, literacy, education and standards of living (NSCB,



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2011). The literacy rate definition used in this paper, and the data gathered, comes from the World Bank.

While much of the available research has tended to show that a high human development index in a nation has helped attract foreign direct investment, however the literature on how foreign direct investment into a country affects the human development index is more limited, and is not quite as specific to certain parts of the world or as thorough as the converse research. In the review, it will be seen that this research has been carried out to some extent for some regions in the world, however Africa however, has not been focused on quite as much as other regions, such as South East Asia and Latin America. This may be due partially because of Africa's recent emergence into a growing part of the developing world, and partially due to a lack of strong data available to analyse such figures accurately. The following is an attempt to delve into the research, which has been conducted around these topics, and an argument as to why the research question is valid moving forward.

The basic reason human capital development is of such importance, and will be studied, is because a higher human development index means reduced poverty. Higher human development also means a better quality of life in general for those people in the country (Anyanwu, 2006).

2.2 The effect of foreign direct investment on growth

The first theme explored in this literature review will be how foreign direct investment affects the growth in developing economies around the world. This concept has been studied over a long period of time and so there is a great deal of research available on this topic to support the general sentiment in the Western world



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of its positive effect on economic growth. Even allowing for this, many developing nations did not start to allow foreign direct investment till the latter part of the 20th century (Carkovic & Levine, 2002).

Foreign direct investment has long been argued to have positive implications on stable, long-term economic growth in developing countries around the world, although many developing countries were afraid of this concept in the middle of the 20th century and it took time for it to become widely accepted as a good way to stimulate economic growth. Borensztein and De Gregorio (1998) developed a widely cited and well-written journal article, which looked at the effect of foreign direct investment on economic growth, specifically the flow of foreign direct investment from industrialised countries to newly developing nations. This paper found that there is a high-level of support for the fact that in countries where a high level of human capital development has been achieved (defined by educational level in this case), foreign direct investment is correlated with strong economic growth. This could be for a multitude of reasons, including the ability of multinational corporations to have a smoother transition into these economies due to a higher general skill level, which makes finding capable employees an easier process.

In 2001, Nair-Reichert and Weinhold wrote a report to support this finding, and found a positive correlation between foreign direct investment in a developing country and its economic growth. In addition to this, they state that growth is especially higher when the level of human capital development was higher. This points to the fact that, not only does a higher level of human capital development attract more foreign direct investment, but also it makes the foreign direct investment more effective in creating economic growth within that nation.



In addition to this, Chowdhury and Mavrotas (2003) similarly explored this topic expanding on the research of Borensztein and De Gregorio (1998). Chowdhury and Mavrotas (2003) looked at the causality on economic growth by foreign direct investment using econometric methodology. The study found that, in two out of three cases, foreign direct investment and economic growth had a bi-directional causality, although they admitted that more country specific examples needed to be looked at, and that their research is relatively limited. However this study supported the previous well-regarded article and the report. Having bi-directional causality also implied that once economic growth was achieved, more foreign direct investment would be attracted which would continue to affect the economy positively in a circular kind of virtuous cycle.

It would appear from the above section that foreign direct investment helps to grow a developing economy. In 2011 an academic paper was by Choong, Liew, Chan and Ch'ng. This paper studied the economies of five ASEAN countries (Association of South East Asian Nations). This study looked at the effect of foreign direct investment's volatility and its effect on the long-term growth on these five ASEAN countries. The study agreed that foreign direct investment did have positive outcomes on economic growth, but contrasted the other studies by mentioning that there was strong negative correlation between foreign direct investment volatility and positive long-term economic growth. This is an important factor, and so countries need to create a stable economic, political, social and legal environment where foreign direct investment is able to be attracted consistently to the country (Choong et al., 2011).

With the research carried out on foreign direct investment's effect in developing nations, it becomes apparent that in today's world of developing countries trying to

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grow faster and faster, as well as the need to grow the wealth of a country to benefit the people and helping the country to create a burgeoning middle class, there is a need for these countries to attract foreign direct investment from industrialised and advanced developing countries in order to help them grow (Borensztein & De Gregorio, 1998). While looking at foreign direct investment, there are many factors, which help attract this type of capital, one of those being the level of human capital within a country. As has also been stated, it is important for the country to not only attract foreign direct investment, but that it is attracted consistently to help ensure long-term economic growth. Further in this paper, this fact will be looked at more closely; keeping in mind that literacy is one of the elements of the human development index.

2.3 Human capital development in attracting foreign direct investment

If consistent foreign direct investment needs to be attracted to help stimulate long-term economic growth, then countries need to create an environment to help attract this kind of foreign capital. There are many factors which can assist in the attraction of foreign direct investment from developed and developing countries, and one of them is a high level of human capital development (Anyanwu, 2006).

Noorbaksh, Paloni, and Youssef (2001) performed an empirical study testing the claim that a higher level of human capital development within a nation was an important factor in terms of attracting foreign direct investment. The findings of the study were that not only is the importance of a high level of human capital statistically significant in the attraction of foreign direct investment, but that it is one of the most important determinants in attracting foreign direct investment from industrialised countries (Noorbaksh et al., 2001). Noorbaksh et al. (2001) went on to say that, as time passes,

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strong human capital in a country is becoming more and more important, especially with technological advances around the world, and the move to a higher number of innovative economics being developed.

Anwar (2008) builds on this idea, using Singapore as an example. This paper argues convincingly that not only is human capital development important in attracting foreign direct investment in order to stimulate growth, but also that having a high level of human capital development helps the development of sectors such as manufacturing. This is due to the increased skill levels allowing many different types of manufacturing, as well as a high level manufacturing to happen within the country, for example secondary level manufacturing instead of primary level manufacturing, implying a higher value add to products being created (Anwar, 2008).

Another journal article agrees with the fact that human capital development increases the level of foreign direct investment attracted. Mastromarco and Ghosh (2009) explore how a country's openness to technology is vital in attracting foreign direct investment, but, through research, have found this to be true only when a country has a high level of human capital accumulation (Mastromarco & Ghosh, 2009). The article goes on to state that not only is this important, but that "the positive effect of FDI, imported capital goods, and imported R&D depends crucially on the level of accumulated human capital" (Mastromarco & Ghosh, 2009, p. 489). These articles seem to agree on a fundamental belief, that a high level of human capital development in general tends to increase the amount of foreign direct investment and the effectiveness of economic growth within a country.

Ozyigit and Eminer (2011) carried out a study in Turkey since the 1970s, and found that foreign direct investment is not as effective in causing economic growth. Ozyigit and Eminer (2011) found that foreign direct investment affects economic growth the

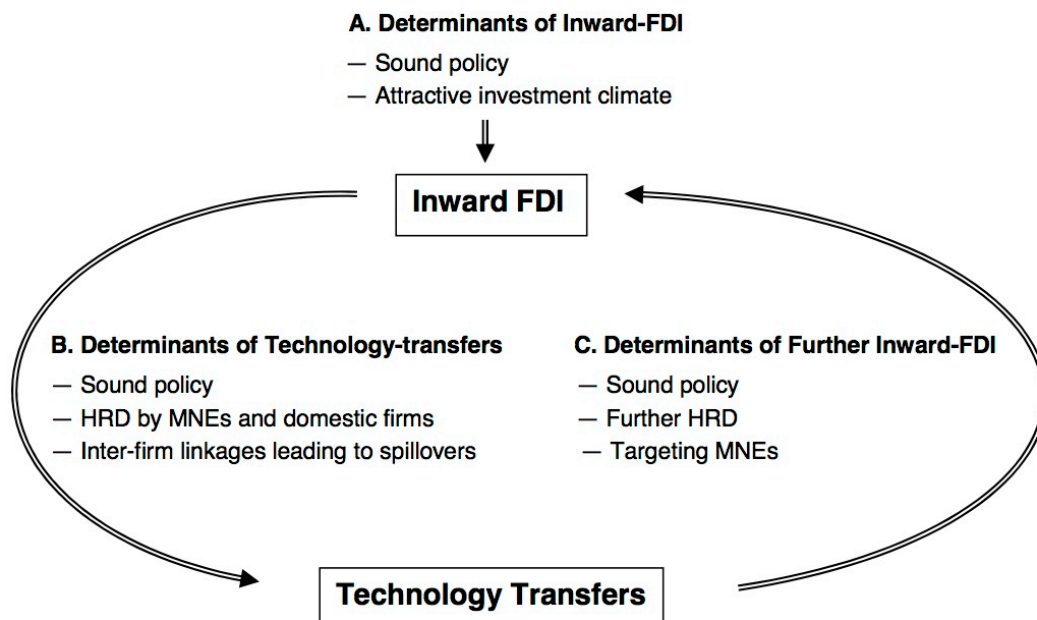


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most when it is coupled with a high level of human capital development in a country. This finding echoes what Mastromarco and Ghosh (2009) found in their study, although Ozyigit and Eminer (2011) found no causality of foreign direct investment towards economic growth, whereas Mastromarco and Ghosh (2009) simply state that a higher level of human capital development made the foreign direct investment more effective in causing economic growth.

Figure 1. The Virtuous Circle of Inward-FDI and Technology-Transfer/Spillovers



The above figure was created by a study done by Miyamoto (2003). This study showed that, as portrayed in the figure above, foreign direct investment increased the level of human resource development, which in turn increase the level of foreign


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direct investment attracted into the country. This was described as a “virtuous cycle”, which would perpetually improve the economic state of the country as long as it could be kept up (Miyamoto, 2003).

Tatoglu (2011) confirmed this by looking at a general study on the correlation between human capital development and economic growth. The data collected between 1975 and 2005 confirmed that countries which had a higher level of human capital development (this time focussing the emphasis heavily on health achievements in this space) had a higher level of economic growth. This speaks heavily to the ability of a healthy, educated population having the ability to find ways to grow their economy as opposed to countries with a low level of human development.

With a lot of research having been carried out around the world, a general trend had been established in the space of human capital development attracting foreign direct investment. This however is this needed to be completed in Africa to ensure that it held true as well in that region. Suliman and Mollick (2009) did this, and expanded on this concept looking directly at sub-Saharan Africa, and exploring whether the level of human capital development (which they defined as literacy rates or economic freedom) affected the foreign direct investment into these developing nations. Literacy rates are the percentage of the country that can read and write coherently and think critically (Princeton, 2012). After applying this test in 29 sub-Saharan nations, they came to the conclusion that human capital development (and, specifically, a higher level of literacy) does help to attract foreign direct investment inflows into the African continent (Suliman & Mollick, 2009).

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Having explored foreign direct investment and its positive effect on economic growth, it has been further explored that human capital development not only helps to attract this level of foreign direct investment from industrialised countries, but it also affects other factors in the country which helps to increase the rate of growth and prosperity for developing nations. This fact holds true for both the world at large, and specifically to the African context.

2.4 Does foreign direct investment help create human capital development or skill inequality?

Building on the research above, it is important to further study whether foreign direct investment into a developing country causes an increase in human capital development (measured by an increase in the human development index), or further causes a rift between the level of human capital accumulation in developed and developing nations. This is important because we have already seen that higher levels of human capital accumulation help increase foreign direct investment, and so the increase in these levels will help to ensure that future foreign direct investment is easier to attract for these sovereign nations. Now the arguments about whether foreign direct investment creates skill inequality or not, will be looked at.

It is important to note that many articles talk about two kinds of human capital development from foreign direct investment, one is at a micro level, where multinational corporations transfer skills to their individual employees who then work at domestic firms, and the other is for multinational corporations to help adjust educational policy (either directly or indirectly) set by the government in the host country they are operating in.

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Narula and Marin (2003) Critically analysed whether the spillover from large multinational corporations helped further exacerbate skill inequality or to help develop human capital and have the transfer of knowledge necessary to uplift these individuals. It is argued from an example in Argentina, that although the subsidiary of the multinational corporation did have higher wages and tended to hire more skilled workers, it was hard to prove any real spill-over effects at all, including the development of human capital (Narula & Marin, 2003). The multinationals tended to use their superior knowledge to understand and exploit the Argentinian market, but did not in any way help the local companies to develop further. In this way a company coming into the country is gaining from the resources of the country, and is paying out wages to the workers, but is not spending money on improving the lives of those in the organisation.

The paper named “Foreign Direct Investment, inequality, and growth” supported this argument. Basu and Guariglia (2007) took 119 developing countries and looked at how foreign direct investment affected the level of human capital in these countries as opposed to developing countries. The authors actually found that while studying these 119 case studies from 1970 to 1999, the inward flow of foreign direct investment actually caused further skill inequality between rich and poor countries, even though it promotes economic growth. This supported the idea that economic growth and foreign direct investment is not the only important factor for developing countries. People, their skills, health and other aspects of their and their family’s quality of life needed to be developed and improved.

This argument was bolstered when Te Velde and Xenofiani (2007) wrote the paper on “Foreign Direct Investment and International Skill Inequality”. Their paper looked directly at the effect of foreign direct investment on skill inequality throughout the

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world. They looked at the premise that “when countries liberalise their trade and investment regime in an environment of imperfect technology transfers, they will specialise in activities depending on the initial conditions such as skill endowments. Countries with few skills tend to specialise in low-skill intensive production, while countries with a high innovation rate and skill endowment tend to specialise in the production of high-skill intensive goods” (Te Velde & Xenofiani, 2007, p. 83). They then argued that this would in turn cause countries with a relatively higher level of skills to perpetually increase these skills in a virtuous cycle, and low skilled countries to in fact be stuck in a cycle of low skilled jobs, attracting low skill type investment. This in turn would actually increase the skill inequality in many developing nations. This is not to say that it couldn’t be avoided, but that special attention would need to be given in order to ensure that this did not happen.

Looking at the theme of the effect of foreign direct investment on the human development index, it is clear that these peer-reviewed articles argue toward the fact that an inflow of foreign direct investment into newly developing nations from industrialised nations causes an increase in skill inequality. This in turn does not help the country to grow its human capital base, and makes them susceptible to a perpetual cycle where they continue to only attract low skill requirement jobs and therefore never develop the skills necessary to attract different kinds of businesses which would help transfer higher level skills to their domestic market. This is not the way a country would like to go, but instead preferably a move from a primary to a secondary and then finally to an innovation-based economy over time would be of far more benefit in a country, moving up the value-chain and increasing the wealth of the masses living in the country they govern.

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Harvey, Myers, and Novicevic (2002) state that the past economic imbalances between the Western world and African economies have resulted in a retardation of human capital over time. This has caused the African countries to fall far behind in developing the human capital on the continent. These inflows into developed Western economies have given rise to an increase in education and infrastructure, which has generated qualified workers, which foreign companies can rely on when moving to that country. They argue that because Africa has not had enough human capital accumulation, it has not received the relative level of foreign direct investment that the Western nations have, therefore further increasing the skills gap. Harvey et al (2002) argue that an increase in foreign direct investment will further increase the level of human capital development on the continent, therefore beginning to reverse the cycle and bringing Africa closer to its Western counterparts (Harvey et al., 2002). This is contrary to what the previous papers have stated, which feel the opposite would happen. This contrasted what Te Velde and Xenofiani (2007) believed, that human capital development could further exacerbate the skills inequality in developing countries around the world.

Slaughter (2002) found that the foreign direct investment into developing countries could be positive in terms of human capital development, but that this relied heavily on the condition of the quality of policies being brought forward. They looked at large multinational corporations and saw that there was high potential for the skills that employees being hired by these multinationals were learning could be transferred to domestic firms. This transfer was happening to an extent in the case studies they had researched, but they argued that if the multinational corporations had better policies, for example training policies, that they could further maximise this process of transferring skills, which would therefore help that country's human capital development at a micro-level to accelerate (Slaughter, 2002).



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Te Velde (2002) agreed with this. He felt that skill transfer is definitely possible, but that the policies of government and the multinational corporations were vital in terms of ensuring that the skills transfer could happen. These policies also included ones such as training, and how the money earned could be spent on further training.

Michie (2002) mirrored this sentiment, stating that multinational enterprises could help transfer skills to locals working in the developing country, however this transfer relied heavily on government policies for “increasing employment quantity, improving employment quality and strengthening human resource capabilities” (Michie, 2002, p. 369). Michie also states that the effect of foreign direct investment on human capital development also depends on the reason for the investment, and the industries in which the multinational decides to invest (Michie, 2002).

Checchi, Simone and Faini (2007) hoped to further expand on the empirical research on how foreign companies in the domestic host country impact domestic school enrolment. They found that the existence of foreign firms in the domestic market both helped enrolment into schools locally, as well as this human capital development helping to increase the level of foreign direct investment attracted into the country (Checchi et al., 2007).

Fosu (2002) expanded on this, but looked at a certain aspect of this topic. Fosu decided to look at political instability and its effect on turning economic development in sub-Saharan Africa into human development. Fosu came up with the conclusion that this held true, that a high level of human capital development increased the amount of foreign direct investment into the country. He also stated that one of the

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main factors assisting economic growth turning into human development is the level of political stability in the country (Fosu, 2002).

Blomstrom & Kokko (2003) created a study in which they looked at different regions in the world, such as Latin America and South East Asia. Their finding was that in different parts of the world, the effect of foreign direct investment had polar effects on skills transfer and skill inequality. In this way it is important that a study is done to research Saharan Africa and see what the effect is in this context. This further builds on the argument that foreign direct investment helps to increase the level of human capital development within a country.

2.5 Conclusion to the literature review and argument for research

The themes above have looked at the question of foreign direct investment and the human development index from quite a few different angles. These different sources of knowledge and understanding have come from different perspectives hoping to add to the discussion around these topics.

The way that this paper hopes to add to the discussion is similar to the research carried out by Suliman and Mollick (2009). Suliman and Mollick (2009) looked at the effect of having higher literacy rates in developing countries and confirmed that this helped to attract higher levels of foreign direct investment, which was generally echoed by other examinations done (albeit with certain conditions put in place). Looking into the topic further will expand this; once a country attracts foreign direct investment in Africa, does this help to increase literacy rates further? Or does having



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foreign direct investment continue to increase the skills inequality between African countries and their developed counterparts. It is important to note that although Sulliman and Mollick (2009) have written a similar paper, it is actually the converse of what this paper wants to measure, theirs being the causality of human development on foreign direct investment, where this paper wishes to measure the causality of foreign direct investment on human development (literacy rates).

Fosu (2002) poses interesting questions on political instability and its effect on the whole concept of turning economic growth (caused by foreign direct investment into an emerging economy) into human development. This however will be outside the scope of this paper and may be useful for future research. In addition Baharumshah and Almasaied (2009) place other conditions such as Financial deepening in this process, this will also be an interesting factor to look at in future research but will not be explored in the scope of this paper.

This is the question that will be explored: “Does foreign direct investment into Africa from multinationals help people in the country”?



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3. Research Questions/Propositions/Hypothesis

3.1 Introduction

With the literature above having been explored, it is interesting to see that this research has been looked at from many different angles. That being said, there is a need for further research in the field, especially in the African context, where much of the world's economic growth is taking place and much of the world's foreign direct investment has more recently been focused. In addition to this, it is vital for this to be explored a part of the world with an extremely low level of human capital development at this point in history. For this reason the same topic will be explored, but instead of human capital as a whole, it is preferable to use an element of human capital development, namely literacy rate.

3.2 Research questions

Research Question 1

Is there evidence of a causal nature of foreign direct investment into a country affecting Literacy Rate for certain selected years in Africa? (Saunders & Lewis, 2012)

Research Question 2

Is there evidence of a causal nature of foreign direct investment into a country affecting Literacy Rate for each country measured in Africa? (Saunders & Lewis, 2012)



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Research Question 3

Is there evidence of a causal nature of foreign direct investment into a country affecting Literacy Rate for each region measured in Africa? (Saunders & Lewis, 2012)



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4. Research Methodology

4.1 Research Design

The methodology used in this case was a quantitative one. This is because the question being measured was one that has secondary data available and could easily be measured using numbers (Terre Blanche, Durrheim, & Painter, 2006). The research being carried out was done so in a causal manner, this means that what was being tested was the ability of one variable to affect the result of testing another variable over a certain period of time.

The research philosophy being adopted for this paper was one of positivism. Positivism is defined as the “overall term that relates to the development of knowledge and the nature of that knowledge in relation to research” (Saunders & Lewis, 2012, p. 104). This was the basis for the research, as the research was based on a cause and effect type of assumption. An example of research that is based on this is Pavlov’s Dog from 1927 certain variables caused certain reactions. The research is also used to test a hypothesis and is experimental in nature, confirming positivism as the approach being used (Terre Blanche, Durrheim, & Painter, 2006).

The research performed was an explanatory and quantitative study. An Explanatory study refers to research that “focuses on studying a situation or a problem in order to explain the relationship between variables” (Saunders & Lewis, 2012, p. 113). This is the case because the two variables, the independent variable, which is foreign direct investment, and the dependent variable, which is literacy rates, were observed in a longitudinal manner to gauge the relationship between the two elements. This was

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tested in one direction, the effect of foreign direct investment on literacy rates within the host country. This methodology was chosen because the data is both continuous and secondary, and so it was the most practical methodology to use in order to test the questions, which have been posed. There was also a basic correlation using each type of data (country-by-country, regions & years) to test whether there is a basic relationship between these variables in each instance.

4.2 Unit of Analysis

In this research, the unit of analysis used is the countries that were studied for the purpose of identifying literacy rates over a 50-year period, as well as foreign direct investment into these nations over the same period. The literacy rate is defined as “the percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life (World Bank).” Generally, “literacy” also encompasses “numeracy”, the ability to make simple arithmetic calculations. This indicator is calculated by the World Bank by dividing the number of literates aged 15 years and over by the corresponding age group population and multiplying the result by 100”. As data from the African continent is poor, data ranges greatly.

4.3 Sources of data

The sources of data were secondary in nature, and included data from large organisations and governmental statistics. The reason these sources of data were chosen is because firstly, they were available already, and secondly, it would have been difficult for the researcher to obtain this information in an individual capacity.



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This method presented some difficulties because there was no guarantee as to reliability of information, but it is hoped that by relying on data from larger organisations, the data was as accurate as possible to date (Saunders & Lewis, 2012). Some of the sources that have been used to gather this data are the CIA Factbook website, the website of the International Monetary Fund, the website of the World Bank, as well as the statistical website of the United Nations. All of these sources are relatively reliable.

4.4 Population & Sampling Size

The universe at hand in this study was all the countries on the African continent. This study will use a population, which includes all African countries, which are developing nations looking to, for the most part, increase foreign direct investment and human capital development concurrently, but also had data available on these variables (Suliman & Mollick, 2009). Therefore the population included 16 countries, and included the following (Terre Blanche, Durrheim, & Painter, 2006):

Figure 2 - Countries in Africa that were studied (due to availability of data)

Country	Region
Benin	West Africa
Burkina Faso	West Africa
Burundi	East Africa
Central African Republic	Central Africa
Egypt	North Africa
Ivory Coast	West Africa



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Liberia	West Africa
Libya	North Africa
Mali	West Africa
Morocco	North Africa
Mozambique	Southern Africa
Rwanda	East Africa
Senegal	West Africa
Seychelles	-
Tunisia	North Africa
Zambia	Southern Africa

Africa currently has a total of 54 countries. However not all of these countries have well-documented data on growth and foreign direct investment or literacy rates. The sample was a chosen subsection of the population, which was used for the analysis in this study. For this reason the sample had 16 African countries included in it, in this way the researcher was allowed to sift through whatever information was available, and choose at least 16 countries which had enough well-structured information to be used in the statistical analysis to measure whether there is a difference in means over the time period.

Foreign direct investment and literacy rates were the data captured from the sample. These pieces of data were statistically analysed to infer certain conclusions to be presented and discussed in Chapters 5 and 6.



4.5 Data collection & Analysis

Data Analysis will be done in a quantitative, continuous manner. This is because literacy rates are numerical and are not whole numbers, but are continuous and can have decimal points (Saunders & Lewis, 2012). This would not allow the data to be continuous or accurate, and so years were ignored for the most part (except when testing the research questions pertaining to years). Statistical methods were used to firstly measure the relationship between the two variables using years, regions and countries as the basis, and then regressions were run in the same manner to test the causality of foreign direct investment on literacy rates in the African continent as accurately as possible (Cohen, Cohen, West, & Aiken, 2003). These were done on a country-by-country basis as well as for the regions of Africa and for three years with available data (2003, 2007 and 2010). This is because certain regions of Africa may pose different results. Data was available in a secondary manner, and therefore was collected from third party organisations as previously mentioned.

4.6 Assumptions

Some basic assumptions were made about the African continent. The main assumption was that regions were similar enough to use in a comparison. This assumption will of course be tested in Chapter 5 when the results are presented.

4.7 Limitations

The research performed had many limitations. Firstly Africa is a continent with a lack of readily available data. When data is readily available, many countries may not produce the most reliable data (Suliman & Mollick, 2009). Therefore the first limitation is the dependability of data as the researcher was not able to collect the



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data reliably. In addition to this, it is acknowledged that a sample size of only 16 countries with 4-6 observations is relatively small, and it is hoped that this will not hold the research back. Additionally, the regularity of this data being released is not very high. Hopefully in future, with more samples, as well as with more reliable data, the research can be repeated (Saunders & Lewis, 2012). In addition to the number of countries being small, each country had a limited number of observations available, which is why using regions as a whole may be of more value.

Another limitation is that the study only looked at literacy rates. Literacy rate is a hugely important factor in the human development index, however it is not the only important factor and so this could be expanded to include other parts of the human development index in future research (NSCB, 2011).

In addition to this, another short-coming is that the years in which each country had measured literacy rates is not consistent, either with itself (in terms of equal gaps in between) or with other countries (in terms of measuring in the same years).



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5. Results

As was stated in Chapter 3, the research questions were as follows:

Question 1

Does the evidence show the causality of FDI on the Literacy Rate for certain selected years? (Saunders & Lewis, 2012)

Question 2

Does the evidence show the causality of FDI on the Literacy Rate for each country measured in Africa? (Saunders & Lewis, 2012)

Question 3

Does the evidence show the causality of FDI on the Literacy Rate for each region measured in Africa? (Saunders & Lewis, 2012)

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5.1 Sample Data & Descriptive Statistics

This chapter will review the results of the statistical analysis. Firstly it will explore the country-by-country view through 2003, 2007 and 2010 to see whether a relationship exists. Then the data will be tested to see if there is any statistical significance looking at each country through several measurements of each (country-by-country). The number of observations was low (ranging from 4-6) due to the availability of reliable data. Optimally we would want at least 10 observations per country, because this would increase the accuracy of the result (Cohen et al. 2003). The Chapter will then, due to the limited number of observations of literacy rate in each country, compare the variables region by region. These regions are defined as Southern Africa, Northern Africa, Western Africa and Central Africa. Eastern Africa was left out due to a limited number of observations. The country-by-country and regional data is not year-by-year as the countries did not measure this information consistently and so the information would not be continuous, therefore pairs of FDI and literacy rate are used.

Data was gathered relatively far back, such as Benin having literacy rates of 16.5%, 27.2%, 34.6% and 41.7% over the past 50 years. This method allowed more countries to be studied with more observations and with more accuracy. Once the representations of the correlation and regression of results has been completed and shown, then the results can be discussed.

5.2 Relationship between FDI and Literacy Rates in sub-Saharan Africa

The first step was to determine whether there was even a relationship between the two variables in sub-Saharan Africa before running a regression to test the hypothesis. The measures were done at three different levels, by years (2003, 2005 & 2007), by country (16 different countries), and by region (4 different regions) of the African continent.



A correlation is done by looking at the two variables, foreign direct investment per capita and literacy rates, and analysing whether the two have a close relationship.

This relationship can either be positive or negative (Cohen et al. 2003).

This test is important because it allows the experimenter to gauge whether there is an existing relationship between the two variables before performing a regression.

The following measures were used to rate the strength of the relationships (Cohen et al. 2003):

If $r = +.70$ or Higher very strong positive relationship

+ .40 to + .69 Strong positive relationship

+ .30 to + .39 Moderate positive relationship

+ .20 to + .29 Weak positive relationship

+ .01 to + .19 No or negligible relationship

- .01 to - .19 No or negligible relationship

- .20 to - .29 Weak negative relationship

- .30 to - .39 Moderate negative relationship

- .40 to - .69 Strong negative relationship

- .70 or higher Very strong negative relationship (quinnipiac)



Figure 3 - Correlations between Literacy Rate and FDI in 2003, 2007, 2010

Correlations between The Literacy Rate and FDI in 2003, 2007, 2010	
Year	Correlation
2003	0,35306
2007	0,61269
2010	0,17743

As can be seen above, the correlation is strong for the year 2007. However the correlation was weaker for 2003 and 2010. This weak relationship in general may also be due to the little amount of information that was actually available. Although a regression may be run on this in the next section, the signs point towards the fact that either the relationship does not exist, or that the data available for this specific test may not be ample enough.

The following table looks at a literacy rate and FDI country by country. It explores the relationship between the two and tries to see whether there is a strong relationship in either direction between the two.



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Figure 4 - Correlations between Literacy Rate and FDI By Countries

Correlations between The Literacy Rate and FDI By Countries	
Country	Correlation
Benin	0,69266
Burkina Faso	0,73485
Burundi	0,20851
Central Africa Republic	0,79646
Egypt	0,77718
Ivory Coast	0,50481
Liberia	0,76991
Libya	0,6922
Mali	0,80487
Morocco	0,84364
Mozambique	0,8898
Rwanda	0,61741
Senegal	0,92531
Seychelles	0,71227
Tunisia	0,74342
Zambia	0,76664

Other than Burundi, which can be considered an outlier, most countries have a strong positive relationship or a very strong positive relationship. Most countries actually have a very strong relationship area, which shows that there is definitely a strong relationship between the two variables in general (Saunders & Lewis, 2012). This means that it will be interesting to further measure the causality of FDI on literacy rates on a country-by-country basis using a linear regression for each country listed above.



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Figure 5 - Correlations between The Literacy Rate and FDI By Regions

Correlations between The Literacy Rate and FDI By Regions	
Region	Correlation
Central Africa	0,47975
Northern Africa	0,59588
Southern Africa	0,62514
Western Africa	0,70359

The relationship between the foreign direct investment and literacy in each of the regions varies, and can be described as a strong positive relationship since the r values are all above 0.6, and Western Africa is above 0.7 (Saunders & Lewis, 2012). There is also a good relationship here, and causality between FDI and literacy rates in each region of the African continent (4 in total) can be measured using a linear regression as well.

5.3 Testing the causality of FDI on literacy rates using linear regressions

The next step is to do a regression, and measure the actual cause of foreign direct investment on literacy rates. A similar approach will be taken as with the correlations.

A regression is used to test the causality between two variables, one dependent and one independent. In a regression, to show something is significant at a 95% level of accuracy, it was necessary to measure the probability value by calculating the t value. Once the probability value is measured, the value needs to be tested to ensure it is > 0.05. If it is > 0.05 then it can be said that the measurement is statistically significant at the chosen level of accuracy, in the case of this study, that the chosen alpha = 0.05. Alpha is the intercept, which measures Y when the X value is 0, alpha 0.05 was chosen in this case because it gave the study a low chance of falsely rejecting the null



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hypothesis, increasing the accuracy of the study. This is especially pertinent due to the lower number of observations as the study wishes to have as little chance as possible of a false positive (Cohen et al. 2003).

A regression is important to use, because it actually measures the effect of a change in one variable on another variable. This is exactly what we want to measure, where the effect of a change in foreign direct investment per capita is being measured against the change in literacy rates in Africa.

The first research question was:

Question1

Does the evidence show the causality of FDI on the Literacy Rate for certain selected years? (Saunders & Lewis, 2012)

This is tested below using a linear regression:

Figure 6 - Parameter Estimates African Countries in 2003, 2007 & 2010

2003 – Paired values of FDI per capita and literacy rates for different countries in Africa in 2003

Variable	DF	Parameter Estimate	t Value	Pr > t
Intercept	1	58,10495	16,14	<.0001
Foreign Direct Investment Per Capita	1	0,04418	1,96	0,058

While looking at the year 2003 and using all the chosen African countries, that were a level of alpha = 0.05, it is clear that the result is not statistically significant. However, if it is done at a level of alpha = 0.10, the probability value will then be statistically



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significant. This however will not be looked at because this study wishes to research at a 95% level of significance to ensure a higher level of accuracy due to a lower number of observations.

Paired values of FDI per capita and literacy rates for different countries in Africa in 2007

Variable	DF	Parameter Estimate	t Value	Pr > t
Intercept	1	51,95269	8,85	<.0001
Foreign Direct Investment Per Capita	1	0,06242	2,69	0,0198

Looking at the year 2007, at a level of alpha = 0.05, the Pr = 0,0198 is statistically significant.

Paired values of FDI per capita and literacy rates for different countries in Africa in 2010

Variable	DF	Parameter Estimate	t Value	Pr > t
Intercept	1	66,4191	19,33	<.0001
FDI_Per_CapitaForeign Direct Investment Per Capita	1	0,00845	1,07	0,2934

For 2010, at a level of alpha = 0.05 the probability value of 0.2934 is not statistically significant.

Using the linear regressions measured above, it is safe to say that two out of the three years did not produce significant results. This may well be due to the small number of observations available, however, with what is available, no positive conclusion can be made. Thus, the answering of the first research question reveals that there is no proof that literacy is affected by foreign direct investment for the selected years. Other



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factors may also have affected the result, such as the examiner not using a decent lag, as foreign direct investment may take time to affect literacy in a country, as opposed to having an immediate effect in that year.

The next research question was:

Question 2

Does the evidence show the causality of FDI on the Literacy Rate for each country measured in Africa? (Saunders & Lewis, 2012)

A linear regression was performed. The results of this linear regression are represented for each country in the tables below:

Figure 7 – Country by country regression

Country=Benin				
R-Square	0,479777			
Parameter	Estimate	t Value	Pr > t	
Intercept	23,0058714	3,28	0,0817	
Foreign Direct Investment Per Capita	0,98851181	1,36	0,3073	

Country=Burkina_Faso				
R-Square	0,539998			
Parameter	Estimate	t Value	Pr > t	
Intercept	15,29515416	5,62	0,0049	
Foreign Direct Investment Per Capita	0,63109727	2,17	0,0961	



Country=Burundi			
R-Square	0,043475		
Parameter	Estimate	t Value	Pr > t
Intercept	52,19221694	3,26	0,1895
Foreign Direct Investment Per Capita	4,22012688	0,21	0,8663

Country=Central_African_Rep			
R-Square	0,634344		
Parameter	Estimate	t Value	Pr > t
Intercept	41,26190015	6,38	0,0989
Foreign Direct Investment Per Capita	1,56584393	1,32	0,4134

Country=Egypt			
R-Square	0,604002		
Parameter	Estimate	t Value	Pr > t
Intercept	46,19219808	7,43	0,005
Foreign Direct Investment Per Capita	0,20821213	2,14	0,122

Country=Ivory_Coast			
R-Square	0,254838		
Parameter	Estimate	t Value	Pr > t
Intercept	35,0876962	3,02	0,0943
Foreign Direct Investment Per Capita	0,70298754	0,83	0,4952



Country=Liberia				
R-Square	0,592765			
Parameter	Estimate	t Value	Pr > t	
Intercept	38,34875605	5,52	0,0313	
Foreign Direct Investment Per Capita	0,35220588	1,71	0,2301	

Country=Libya				
R-Square	0,479148			
Parameter	Estimate	t Value	Pr > t	
Intercept	72,61514354	10,35	0,0092	
Foreign Direct Investment Per Capita	0,08782054	1,36	0,3078	

Country=Mali				
R-Square	0,647812			
Parameter		t Value	Pr > t	
Intercept	14,17213573	2,29	0,1063	
Foreign Direct Investment Per Capita	1,91410811	2,35	0,1004	

Country=Morocco				
R-Square	0,71173			
Parameter	Estimate	t Value	Pr > t	
Intercept	36,23798277	7,22	0,0055	
Foreign Direct Investment Per Capita	0,2952693	2,72	0,0725	



Country=Mozambique			
R-Square	0,791749		
Parameter	Estimate	t Value	Pr > t
Intercept	33,62057429	7,29	0,0183
Foreign Direct Investment Per Capita	0,55644381	2,76	0,1102

Country=Rwanda			
R-Square	0,381198		
Parameter	Estimate	t Value	Pr > t
Intercept	52,64352537	6,34	0,024
Foreign Direct Investment Per Capita	1,58891969	1,11	0,3826

Country=Senegal			
R-Square	0,85619		
Parameter	Estimate	t Value	Pr > t
Intercept	29,50157828	8,14	0,0147
Foreign Direct Investment Per Capita	0,79282641	3,45	0,0747

Country=Seychelles			
R-Square	0,507333		
Parameter	Estimate	t Value	Pr > t
Intercept	85,95111211	33	0,0009
Foreign Direct Investment Per Capita	0,00445311	1,44	0,2877



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Country=Tunisia			
R-Square	0,552666		
Parameter	Estimate	t Value	Pr > t
Intercept	56,45797535	7,31	0,0182
Foreign Direct Investment Per Capita	0,09238076	1,57	0,2566

Country=Zambia			
R-Square	0,587743		
Parameter	Estimate	t Value	Pr > t
Intercept	65,61507492	35,61	0,0008
Foreign Direct Investment Per Capita	0,10319432	1,69	0,2334

On a country-by-country basis, it is interesting to note that that none of the countries show a probability value for foreign direct investment per capital value lower or equal to 0.05. This implies that at an alpha of 0.05 (95%), none of the results are statistically significant. The R^2 values are also relatively low, meaning that foreign direct investment may not cause literacy rates to change as much as first thought.

A major reason for this may be that there were extremely few country observations, with a range of 4 - 6 observations per country, which is an absolute minimum for the analysis because any less does not really allow different points to be measured in any meaningful way. There needs to be a measurement of a line through the graph, and that graph needs to have enough points to make the exercise worthwhile. Even though 4 - 6 observations are enough, it may not produce the most accurate results possible (Terre Blance et al. 2006). Although this may affect the results negatively, the research questions seem to be have been answered, that FDI does not cause literacy to change using a country-by-country basis.



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R^2 is a number between 0 and 1, which if higher, shows the percentage which the one variable effects the other variable. So a value of .95 shows that it affects the change in the other variable 95% (Terre Blance et al. 2006).

The next step is to consider the region-by-region effect. West, North, Southern and East Africa:

Figure 8 – Region-By-Region regression

Central Africa

R-Square	0,230161		
Parameter	Estimate	t Value	Pr > t
Intercept	49,80209032	11,15	<.0001
FDI_Per_Capita	1,45619155	1,55	0,1606

The Central African countries have a low R^2 value, as well as a probability value above 0.05 at alpha = 0.05 level. This means that FDI per capita affects literacy rate at only 23% and that it is not statistically significant.

North Africa

R-Square	0,355069		
Parameter	Estimate	t Value	Pr > t
Intercept	52,52499399	12,68	<.0001
FDI_Per_Capita	0,13599276	2,97	0,0091

The North African countries have a low R^2 value. They have a probability value below 0.05 at alpha = 0.05 level. This means that FDI per capita affects literacy rate at only 35% but that it is still statistically significant.



Southern Africa

R-Square	0,390796		
Parameter	Estimate	t Value	Pr > t
Intercept	59,4419605	10,43	<.0001
FDI_Per_Capita	0,02975563	2,53	0,0297

The Southern African countries have a low R^2 value. It has a probability value below 0.05 at $\alpha = 0.05$ level. This means that FDI per capita affects literacy rate at only 39% but that it is still statistically significant.

West Africa

R-Square	0,495042		
Parameter	Estimate	t Value	Pr > t
Intercept	24,29564925	9,34	<.0001
FDI_Per_Capita	0,77473186	4,95	<.0001

The West African countries have a low R^2 value. It has a probability value below 0.05 at $\alpha = 0.05$ level. This means that FDI per capita affects literacy rate at 49% and that it is still statistically significant.

Outliers are values, which may inflate standard deviation from mean values (Albright, Winston, & Zappe, 2009). 3 out of 4 regions were statistically significant (with the exception of Central Africa which had the least observations). Central African Republic can be considered an outlier in this case. It would be correct to answer the research question as affirmative; in that there is a causal effect of foreign direct investment on literacy rates in Africa when considering this question at a regional level.



5.4 Summary

The results showed that, in general, there seemed to be a relationship between the two elements. When regressions were run to test the significance of the causality of foreign direct investment on literacy rates in Africa, country-by-country comparisons, as well as year-by-year comparisons, were inconclusive. This result may come down to the fact that observations were low for country-by-country, and that a year-by-year method without a lag element, may not be the best way to perform the study.

When the regression was performed using regions of Africa however, in 3 out of 4 regions the result was statistically significant. In the case of Central Africa, which came out as not statistically significant, it had the least number of observations, and in general will be considered an outlier. Therefore this question was answered in the affirmative, that there is a causal effect of foreign direct investment on literacy rates in Africa when tested at the regional level.

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6. Discussion of Results

6.1 Introduction

The study promised to look at the relationship between foreign direct investment and literacy rates, and confirm whether there is a causal relationship between the two. Looking at the relationship would also allow the experimenter to gauge whether this relationship is positive or negative.

In the literature review, many different avenues were researched, beginning with the effect of foreign direct investment on things such as economic growth, and it was concluded that foreign direct investment was important to the growth of the countries around the world, including those on the African continent (Borensztein & De Gregorio, 1998).

Leading from this point, it was concluded that literacy rates are actually an important factor in attracting foreign direct investment. This would of course entice countries to ensure that literacy rates remain high to ensure that foreign direct investment can continue to flow into their country (Noorbaksh et al. 2001).

Looking at peer-reviewed journal articles from around the world, it was interesting to note different findings from different research papers. Elements such as policy and political stability may also affect this and may be useful for future expansion of this article (Basu & Guariglia, 2007). Of course this leads to the need for an African experiment on this topic, as the converse had been tested before, but the causality of foreign direct investment on literacy rates in the African context needed further research.



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6.2 Discussion of research questions

The 3 research questions formulated for study were as follows:

Question 1

Does the evidence show the causality of FDI on the Literacy Rate for certain selected years? (Saunders & Lewis, 2012)

Question 2

Does the evidence show the causality of FDI on the Literacy Rate for each country measured in Africa? (Saunders & Lewis, 2012)

Question 3

Does the evidence show the causality of FDI on the Literacy Rate for each region measured in Africa? (Saunders & Lewis, 2012)

Looking at these questions, it is important to note that these questions are not altogether very different, rather they are different versions of one question trying to answer the same thing. The reason that 3 questions were created was to strategically create a way to work around the limitations of data constraints, and still find a way to get the most accurate data possible.

For this reason, these questions will be analysed together. In this process data will be shown and discussed, after which a conclusion will be made and a model for future use will be presented.



6.2.1 Results discussion

Looking at the appendix (9.1 FDI data 2001 – 2010), it is interesting to see that data has been increasing into Africa over the period 2001 – 2010 as the world looks for new places to invest and get returns. This was the basis for the research and will be explored in detail. In times of economic turmoil it is interesting to note that Africa is seen as a place of high-risk but high-reward to invest in. This is due to the lack of economic growth in countries such as Europe, USA and Japan, and the increased stability of the African continent in general (especially sub-Saharan Africa in general).

Foreign direct investment has many different effects on the skill levels of the people in the country according to different authors. Looking at previous experiments discussed in Chapter 2, the literature review, it is interesting to note that authors such as Harvey et al (2002) felt that foreign direct investment would help Africa. They felt that foreign direct investment would help reverse the skill inequality which has been created from the world's recent colonial history. Te Velde and Xenofiani (2007) however, disagreed and felt the opposite, that it increased skill inequality.

Looking at the results presented in Chapter 5, there is a varying theme throughout. Looking at *Figure 3 - Correlations between Literacy Rate and FDI in 2003, 2007, 2010*, it is interesting to note that there was not a consistent relationship, with correlations of 0.35 for 2003, 0.61 for 2007 and 0.177 for 2010. This does not quite align with any of articles in the literature review. This may well be because of the fact that a year-by-year analysis may not be a good way to measure this, as no lag was used. A lag would have made sense because foreign direct investment would take time to affect literacy rates. Just because investment comes in today, does not mean that the literacy rates would increase immediately, it takes time for that money to be converted into taxes, and then be spent on education. These children then have to be in school for a few


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years for a real effect in literacy rates countrywide to be seen. For this reason an immediate measurement was not wise.

Looking at the results of *Figure 4 - Correlations between Literacy Rate and FDI By Countries*, it is interesting that the majority of countries fall within the very strong positive relationship (10 countries), some within the top end of the strong positive relationship category (3 countries) and one country, namely Burundi, falling within the weak positive relationship. For the purposes of this study, Burundi will be considered an outlier because of its result being extremely different to all the other results, which were presented (Cohen et al. 2003). This country may be an outlier for many reasons, ranging from badly recorded information, too few observations, or other factors, such as stability, affecting the country.

Similarly when looking at *Figure 5 - Correlations between Literacy Rate and FDI By Regions* the results range from a strong positive relationship for Central, North and Southern Africa, to a very strong positive relationship for West Africa. This is in strong agreement with many articles, which echo this sentiment of a strong positive correlation such as Noorbaksh et al (2001), Mastromarco and Ghosh (2009), Miyamoto (2003) and Suliman & Mollick (2009). It is interesting to note that Suliman & Mollick (2009) actually agreed with this and their study was conducted in sub-Saharan Africa, a similar universe to that of this study, which included Africa as a whole.

The results also contradicted some of the literature, such as Basu and Guariglia (2007) as well as Te Velde and Xenofiani (2007). They felt that although there was a strong relationship, there was a negative relationship between the two variables rather than a positive one. The results seem strong and support many of the above articles. They also conducted it in an African context. This section was tested to alleviate some of the limitations with the number of observations available, as this could be increased


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greatly by using the regions and all observations of a region. This also assumed a certain level of homogeneity within the regions compared with other regions.

The next group of results pertained to linear regressions testing the causality of foreign direct investment on literacy rates in Africa. The correlation exercise was useful, but did not imply any directional analysis, which is necessary to answer the research questions in Chapter 3.

In Chapter 5 Figure 6, paired values of FDI per capita and literacy rates for different countries in Africa in 2003, 2007 & 2010, were depicted. These results were studied for the first research question, to discern whether foreign direct investment causes literacy rates to increase in the given years. Since previous results, as explained, showed that the correlation was not very high, there was not much anticipation for significant results. This may be due to low numbers of observations or to the lack of a lag. When the results came through, we noted that in 2 of the 3 years (2003, 2010), the probability value gave a value that was not statistically significant. In future it may be of value to research this again with more observations and a 3-5 year lag where possible. Perhaps this would be of even more value if years could be analysed with a lag and at a regional level.

The next results were showed in Figure 7 – country-by-country regression, which attempted to answer research Question 2. In these results, we noted the low R^2 values, the percentage by which foreign direct investment affected literacy rates directly, as well as the fact that none of the countries had a significant probability value. This would point to there being no causality between foreign direct investment and literacy rates. This would contradict many articles such as Basu & Guariglia (2007), who believed that it had a negative causal effect.


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While these results may have been used, they do not prove that there is not a causal effect, but simply that we could not prove there is one. Many factors could have affected these results, but the main factor would be the fact that there were not more than 4-6 observations per country. While 4-6 observations make the research testable, there are often not enough data points to give a highly accurate result. When the researcher found this to be the case, they decided to look at ways to gather better results.

For this reason, it was decided that regions would be useful, as the countries tend to be similar to each other, and a few countries with 4-6 pairs of data together would allow a high number of observations per region, and allow a more accurate result.

In Figure 8, depicting region-by-region regression, slightly different results were encountered, likely due to a high number of observations as follows:

Central Africa

$R^2 = 0.23$

Pr = 0.16

North Africa

$R^2 = 0.36$

Pr = 0.0091

Southern Africa

$R^2 = 0.39$

Pr = 0.0297

West Africa

$R^2 = 0.495$

Pr = < 0.0001

As the results above portray, the causality is quite strong. Central Africa is an outlier as it stands out and is deemed not to be statistically significant at $\alpha = 0.05$ (Cohen,



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et al. Central Africa could be an outlier due to having fewer observations, or other possible factors affecting results, such as regional stability, among others.

When looking at North Africa, the result is statistically significant at $\alpha = 0.05$, and has an R^2 of 0.36. Southern Africa has a statistically significant result and an R^2 of 0.39. West Africa gave a statistically significant result and an R^2 of 0.495.

From the results it can be seen that, in 3 out of 4 regions, not only does foreign direct investment affect literacy rates in a positive manner, but it showed a relatively high level of R^2 , which shows the direct effect of one variable on another.

It is therefore concluded that although the research questions had limited scope to be researched, and could not be proven, the research questions had enough observations and could be proven.

The literature contradicts articles by Te Velde and Xenofiani (2007), as well as by Basu and Guariglia (2007). These articles imply that around the world in developing countries an influx of foreign direct investment actually further worsens skill inequality, which includes literacy rates. It is interesting to note that neither of these articles dealt with Africa directly, which could be partially to blame for the contradicting results.

The results above agree with and build on other literature. Slaughter (2002) looked at developing countries in general and asked this question. The research concluded that foreign direct investment does increase the level of human capital development of which literacy rate is a factor.

In addition to this, Blomstrom and Kokko (2003), as well as Harvey, Myers, and Novicevic (2002) looked at human capital development in sub-Saharan Africa. They both concluded that an influx of foreign direct investment into sub-Saharan Africa


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increases the level of human capital development.

This research is not the same as the above two pieces of research, as it does not look at human capital development directly, but rather an element of human capital development which is literacy rates. In this way the the findings of this research build satisfactorily on that, and create a new element to the literature available.

Using the results to build on two other articles, namely Fosu (2002) and Te Velde (2002), which imply the importance of policy, as well as political stability, as being important factors in ensuring that foreign direct investment into the country, a model can be created. This model can be used to assess the effects of foreign direct investment into the African economy.

So what does this mean for the African continent? Firstly it would seem that the amount of data available is limited on the continent. It would be useful for African governments to collect this data more consistently and frequently. This would be useful for measuring the effectiveness of policy. The main reason there may not be enough of this data is due to a few factors, firstly, the political instability on the continent has not allowed governments to create systems and procedures over time, with regular overhauls of the political system and landscape. Secondly, governments are not as likely to measure all information first. It is important to focus on the problem at hand, and with people living in poverty, as they need to be uplifted as soon as possible and it is important for governments to focus on this by growing their economy.

In terms of foreign direct investment, there is definitely a positive effect on literacy through the increase of foreign direct investment. Much of that is dependent on government spending and policy, and the pressure to educate their countries in the hope of increasing material wealth as well as human development within the country.



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The perception is still that most multinational companies do not have the same attitude about the countries they operate in. They go into nations because of different factors, inter alia, economic growth in that nation or a high-level of resources, amongst other advantages, both of which can help their companies succeed. When they enter these countries, however, one feels there is no focus on developing people or infrastructure of the country, and they simply focus on fulfilling their own internal aspirations. This tendency by multinationals is something that governments around the continent should observe carefully. In time, multinationals will need developing countries to grow and impress their shareholders. Governments need to find ways of balancing receiving foreign direct investment, and ensuring that the foreign direct investment helps to both develop the infrastructure, people and institutions of the country. In this way, countries will be able to maximise foreign direct investment into the country. The first and foremost step in this process would be to ensure that foreign direct investment flowing into the country increases literacy rates, the basis for further increased education levels in the country.



6.3 Model

Due to the results, in addition to combining the articles by Fosu (2002) and Te Velde (2002), it is possible to create a model, which applies to the African Continent.

The proposed model is shown below:

Figure 9 - The effect of foreign direct investment on literacy rates in Africa





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This model shows that an increase in foreign direct investment does help increase literacy rates, however it is important for policy and political stability to be strong or else this may have the opposite effect on a country.



7. Conclusion

7.1 Introduction and results

The study was performed to answer a simple but important question: does foreign direct investment, from large countries and their multinationals or individuals in the country affect literacy rates in that country in Africa. This basic question is important for both governments in these countries, which set policy, as well as multinationals, which operate in these environments. Governments should be attracting foreign direct investment, and also ensure that the foreign direct investment benefits their people as much as possible. Companies operating in those environments need to create a good relationship, and so skills transfer could be a good way to assist in this process.

The results of this study were that, at a regional level, foreign direct investment did cause an increase in literacy rates throughout Africa, with the exception of Central Africa, which was considered an outlier. The results at the country-by-country level and year-by-year were not consistently statistically significant. Even with this fact the experiment was deemed to not have enough observations for a Country-By-Country analysis (with 4 – 6 observations per country) to be accurate. The year-by-year analysis was considered to be fundamentally flawed as well because it did not allow a lag for foreign direct investment to affect the literacy rates on the continent.

This is a good sign for the continent as a whole, as it points to the fact that the foreign direct investment is having other positive effects other than job creation and increased wealth. Governments should not however become complacent, as they should understand this is a key factor in the future growth and attraction of future foreign direct investment into their nations (Suliman & Mollick, 2009). Literacy and skill levels can be a huge comparative advantage, in addition to mineral resources,



when attracting foreign direct investment away from other dynamic, emerging markets.

The research came up with a simple model to show the effect of foreign direct investment on literacy rates in an African context. Figure 9, The effect of foreign direct investment on literacy rates in Africa (in Chapter 6), shows this. This model shows that an increase in foreign direct investment helps to increase literacy rates, however it is important for policy and political stability to be strong or else this may have the opposite effect on a country.

7.2 Recommendations

To the governments of countries on the African continent:

- 1) The R^2 value (direct effect of foreign direct investment on literacy rates) is decent, ranging for 30%-49%. This is not high enough. It is recommended that governments find ways of increasing the strength and implementation of policy of ensuring that education is the main benefactor of foreign direct investment in the country.
- 2) Although literacy rates are on the increase, it seems that they are relatively low against the rest of the world. One way to help those who have already gone through school is to ensure that multinational enterprises transfer skills appropriately to workers they hire, it is important to implement strategies which help promote this kind of behaviour, and not have the kind of lack of spill-over effects such as experienced in Argentina (Narula & Marin, 2003).



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- 3) From the attempt to gather country-by-country data, it is obvious that literacy rates are not easily available. It would be helpful for countries to gather literacy rates among other performance factors more often and with consistent intervals. This would help governments to measure the success of their own policies better.

Recommendations to academics for future research:

- 1) One of the major limitations was the lack of data available in a Country-By-Country manner. 4 – 6 observations were available per country and this is not enough for strong research. As the African countries grow and develop, more observations will become available. Studying 5-6 countries with more observations at a granular level may be of great value for future research.
- 2) As mentioned in the limitations, literacy rates are an important factor for countries in Africa. Similarly literacy rate are one of the main factors in the human development index. Literacy rates, though a cornerstone for development, is not the only important element for development of a nation. Therefore it would be quite useful for a future researcher to research the other elements of the human development index and how foreign direct investment affects these on the African continent, in a similar manner to this research.



7.3 Concluding statement

Looking at the study in general, it is important for African governments to do the best for their countries. The 2000s are synonymous for the rising of African countries economically after centuries of obscurity. It is important however for the governments of these countries not to sit around idly and enjoy the success of past decisions, but rather to work hard to make sure the growth of the country is sustainable and structural in a way that will allow their people to move from primary industries, to secondary industries and finally to innovation based industries. One of these factors is the literacy rate of the people in the country as it is the basis for higher education, which is necessary if the country wishes to move towards an innovative economy, similar to the transition taken by Singapore (Anwar, 2008). Whether Africa can do this consistently, only time can tell, however the future is promising for the once forgotten continent.

8. Reference List

AfDB. Table 2 - Real GDP Growth Rates. Retrieved 11 03, 2012 from African Economic Outlook: <http://www.africaneconomicoutlook.org/en/data-statistics/table-2-real-gdp-growth-rates-2003-2013/>

Albright, S. C., Winston, W. L., & Zappe, C. J. (2009). *Data Analysis and Decision Making*. Mason, Ohio, USA: South-Western Cengage Learning.

Anwar, S. (2008). Foreign investment, human capital and manufacturing sector growth in Singapore. *Journal of Policy Modelling*, 30, 447-453.

Anyanwu, J. C. (2006). *Towards the Promotion of Investment in Africa*. The author journal compilation - African Development Bank.

Baharumshah, A. Z., & Almasaied, S. W. (2009). Foreign Direct Investment and Economic Growth in Malaysia: Interactions with Human Capital and Financial Deepening. *merging Markets Finance & Trade*, 45 (1), 90-102.

Basu, P., & Guariglia, A. (2007). Foreign Direct Investment, inequality, and growth. *Journal of Macroeconomics*. 29, 824-839.

Blomstrom, M., & Kokko, A. (2003). *HUMAN CAPITAL AND INWARD FDI*, Working Paper 167.

Borensztein, E., & De Gregorio, J. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*. 45, 115-135.

Carkovic, M., & Levine, R. (2002). *Does Foreign Direct Investment Accelerate Economic Growth?* University of Minnesota. The World Bank.

Cecchi, D., Simone, G. D., & Faini, R. (2007). *Skilled Migration, FDI and Human Capital Investment*. IZA Discussion Paper No. 2795.

Choong, C., Liew, V. K., Chan, S., & Ch'ng, H. (2011). FOREIGN DIRECT INVESTMENT VOLATILITY AND ECONOMIC GROWTH IN ASEAN-FIVE COUNTRIES. *INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH*, 3 (4).



- Chowdhury, A., & Mavrotas, G. (2003). FDI & Growth: What Causes What? Paper presented at the WIDER Conference on "Sharing Global Prosperity". Helsinki.
- Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). Applied multiple regression/correlation analysis for the behavioral sciences (3rd ed.). Hillsdale, New Jersey, USA: Lawrence Erlbaum Associates.
- Fosu, A. K. (2002). Transforming Economic Growth to Human Development in Sub-Saharan Africa: The Role of Elite Political Instability. *Oxford Development Studies* , 30 (1).
- Harvey, M., Myers, M., & Novicevic, M. (2002). The role of MNCs in balancing the human capital 'books' between African and developed countries. *Int. J. of Human Resource Management* , 13 (7), 1060-1076.
- Mastromarco, C., & Ghosh, S. (2009). Foreign Capital, Human Capital, and Efficiency: A Stochastic Frontier Analysis for Developing Countries. *World Development* , 37 (2), 489-502.
- Michie, J. (2002). Foreign direct investment and 'human capital enhancement' in developing countries. *Competition & Change* , 6 (4), 363-372.
- Miyamoto, K. (2003, July). HUMAN CAPITAL FORMATION AND FOREIGN DIRECT INVESTMENT IN DEVELOPING COUNTRIES . Research programme on: Empowering People to Meet the Challenges of Globalisation (211).
- Nair-Reichert, U., & Weinhold, D. (2001). Causality tests for cross-country panels: a new look at FDI and economic growth in developing countries. *63 (2)*, 153-171.
- Narula, T., & Marin, A. (2003). FDI spillovers, absorptive capacities and human capital development: evidence from Argentina MERIT - Infonomics Research Memorandum series. Netherlands: International Institute of Informatics .
- Noorbaksh, F., Paloni, A., & Youssef, A. (2001). Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence. *World Development* , 29 (9), 1593-1610.
- NSCB. (2011). NSCB - Glossary of Terms - Population. Retrieved 4 24, 2012



Ozyigit, A., & Eminer, F. (2011). Bounds test approach to the relationship between human capital and foreign direct investment as regressors of economic growth in Turkey . *Applied Economics Letters* , 18, 561–565 .

Princeton. (2012). Wordnetweb. Retrieved 10 04, 2012 from Princeton.edu:
wordnetweb.princeton.edu/perl/webwn

quinnipiac. quinnipiac.edu. Retrieved 11 2, 2012 from quinnipiac.edu:
http://faculty.quinnipiac.edu/libarts/polsci/Statistics.html?&lang=en_us&output=json&session-id=451e052eb3f1c9d450e47aca128381f8

Slaughter, M. J. (2002). SKILL UPGRADING IN DEVELOPING COUNTRIES: HAS INWARD FOREIGN DIRECT INVESTMENT PLAYED A ROLE? (Vol. Working Paper No. 192). OECD Development Centre.

Saunders, M., & Lewis, L. (2012). *Doing Research In Business & Management - An essential guide to planning your project*. London, England: Prentice Hall.

Sheng, L. (2012). Dealing with financial risks of international capital flows: a theoretical framework. *Cambridge Review of International Affairs* , 25 (3), 463-474.

Suliman, A. H., & Mollick, A. V. (2009). Human Capital Development, War and Foreign Direct Investment in Sub-Saharan Africa. 37 (1), 47-61.

Tatoglu, F. Y. (2011). The Relationships between Human Capital Investment and Economic Growth: A Panel Error Correction Model. *Journal of Economic and Social Research* , 13 (1), 75-88.

Te Velde, D. W. (2002). GOVERNMENT POLICIES FOR INWARD FOREIGN DIRECT INVESTMENT IN DEVELOPING COUNTIES: IMPLICATIONS FOR HUMAN CAPITAL FORMATION AND INCOME INEQUALITY (Vol. Working Paper No. 193). OECD Development Centre.

Te Velde, D. W., & Xenofiani, T. (2007). Foreign Direct Investment and International Skill Inequality. *Oxford Development Studies* , 35 (1).

Terre Blanche, M., Durkheim, K., & Painter, D. (2006). *Research In Practice*.



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United Nations Conference On Trade And Development. (2012). Retrieved 10 5, 2012 from United Nations Conference On Trade And Development:
<http://unctad.org/en/Pages/Statistics.aspx/>

World Bank. (n.d.). Literacy rate, adult total (% of people ages 15 and above). Retrieved 2012 from WorldBank.com:
<http://data.worldbank.org/indicator/SE.ADT.LITR.ZS>

(2012). Retrieved 10 5, 2012 from Investopedia:
<http://www.investopedia.com/terms/f/fdi.asp#axzz28Pav4T9M>



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9. Appendices

9.1 FDI data 2001 – 2010 (World Bank Data)

1	A	B	C	D	E	F	G	H	I	J	K	L
2	FDI since 2001											
3	Country	FDI	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
4			14984066554	11478889655	14344579759	11633632100	19471127050	16665168018	30096260115	38492017095	34492722298	26092930973
5	Algeria		1107900000	1065000000	633700000	881900000	1081000000	1796000000	1662000000	2594000000	2761000000	2264000000
6	Angola		2145470000	1672093000	3504701780	1449231820	-130386930	-37714860	-893342152	1678971010	2205298180	264954426,9
7	Botswana		69760471,38	731805998,3	770536365,6	748096578,5	492380720,8	750779756,7	647259027,3	902413515,2	824081581,7	37127520,92
8	Burkina Faso		9164593,586	16063399,56	30831022,58	3829373,785	31967807,4	74224008,61	370123710,7	152465830,1	105204240,3	780825,7578
9	Burundi		9634,452803	10,744	4618,425671	44509,03806	584331,8623	32079,83631	500060,2279	3833208,348	348729,6905	-551206,6745
10	Cameroon		73285099,6	601746052,3	336267884,5	86122105,35	234006549,4	16389399,65	191016785,1	-24198018,82	668329441,5	111703556,8
11	Cape Verde		9112802,245	14806643,96	39255246,24	67591566,44	80440643,36	131815477,7	191868198	211318796,2	119784111,2	72035752,62
12	Central African Republic		5183898,81	5600229,753	22195457,67	28583056,49	32419028,26	34615311,06	5673588,65	11719138,4	42250530,79	78136688,6
13	Chad		459866391,8	924119210,1	712663454,9	466793492,1	-99342519,36	-279217426,2	-69481103,44	233583814,4	461808153,1	2993900000
14	Congo, Dem. Rep.		80300000	141100000	391300000	490000000		256100000	1808000000	1726800000	663800000	2815957839
15	Congo, Rep.		77206039,59	331150511,3	323124395,4	-851832,494	513585519,2	1487693084	2638405260	2483232725	2083496165	417933000
16	Ivory Coast		272680081,7	212629136,7	165347467,5	282979933,1	311921178	318864759,2	426777010,3	446147780,7	380872960	36501032,52
17	Djibouti		3392958,626	3432346,206	14224542,96	38543559,85	2220341,19	108287709,4	195351140,3	227654582,2	96859684,56	6385600000
18	Egypt		509900000	646900000	237400000	1253300000	5375600000	10042800000	11578100000	9494600000	6711600000	695026126,6
19	Equatorial Guinea		940741215,7	323391507,5	689779766	340914468,5	769146185,2	469506014,6	1242731087	-79387232,8	1636219625	55600000
20	Eritrea		121000000	200000000	220000000	-78700000	-10400000	4500000	-1100000	-233333,3333	35555,5556	288271568,3
21	Ethiopia		3494000000	2550000000	4650000000	5451000000	265111675,5	545257102,2	222000573	108537544	221495981,4	170389956,4
22	Gabon		-89090817,7	38966226,2	157986838,3	319505685,2	242335014,4	267805315,6	269324270,3	209019550,9	32826047,36	37366207,68
23	Gambia, The				18272720,34	55526254,83	53650280,02	82208102,59	78098971,13	78614989,73	39447691,35	2527350000
24	Ghana		89320000	58930000	136751000	139270000	144970000	636010000	1383177930	2714916344	1423906871	8848735,707
25	Guinea-Bissau		395613,5963	3561035,879	4005503,687	1726341,519	8692468,09	17724565,51	18768252,52	5142860,588	17452857,4	185793189,9
26	Kenya		5302622,939	27618447,06	81738242,64	46063931,45	21211685,4	50674725,18	729044146	95585680,23	116257609	117047679,1
27	Lesotho		29653665,4	28349958,85	43889006,03	55603320,3	69142821,33	58509705,36	104503742,7	110003057,9	100939061,3	452342327,6
28	Liberia		8300000	2800000	372220000	75351731,65	82802111,44	107856671,5	131637661,6	394536077,4	217803415,7	1784000000
29	Libya		-133000000	145000000	143000000	357000000	1038000000	2064000000	4689000000	4111300000	1371000000	860385317,6
30	Madagascar		93059224	14661798,07	12874087	52910748	85444105	294512763,6	773295915,2	1169359714	1066058460	140000000
31	Malawi		19299991,09	5899999,359	83151292,6	129706673	3814364,09	9255712,36	52685017,97	175774754,4	75817641,41	147643147,5
32	Mali		121731667,8	243804700,2	132260768,2	101002336,4	188138376,4	47623773,22	53761288,99	13167775,7	718457961,7	13630000
33	Mauritania		76700000	67400000	101893331	391600000	814100000	105500000	138300000	338400000	-38300000	431046226,2
34	Mauritius		-27675565,71	32073116,08	62630665,28	13894736,4	41776995,78	106758059,1	340763853,7	377724738,1	256680711,8	1240626688
35	Morocco		143838237,3	79160963,95	2312682907	787053819	1619752454	2366000096	2806642141	2466288357	1970323920	795856616,1
36	Namibia		36137622,27	51232316,67	33258076,2	88203578,82	166116175,9	-30888306,43	169928495,1	490001279,6	490211042,2	946872630,7
37	Niger		22895113,75	2404631,802	14912242,46	26326708,16	43976115,55	50544080,9	129038778,1	340427000,6	815339215,8	604560295
38	Nigeria		1190632024	1874042130	2005390033	1874033035	4982533937	4854416888	6034971269	8196606691	8554840780	42332000
39	Rwanda		4634317,685	2610000	4655622,785	7660000	8030000	11233066,6	67142879,26	1033500000	118671744,8	24464600
40	Sao Tome and Principe		3000000	3600000	3400000	3501000	15664000	38015839,46	36028527,82	79143388,76	15500000	237194664,8
41	Senegal		31942387,44	78052970,94	52494809,92	77028525,68	44588474,81	220319715,1	297427247,6	397632671,3	331079074,2	167307290,6
42	Sierra Leone		64740256,51	47717748,07	58425540,73	38014852,1	85879602,73	145815248,3	126403293,1	129454504,5	118480863,6	86590238,69
43	South Africa		9835742,022	10413409,46	8615049,668	61153314,19	83182315,03	58768035,15	96577832,34	57623740,47	74293786,44	1224280433
44	South Africa		7270344986	1479804589	783136092,3	701422007,6	6522098178	-183628426,1	5736933181	9644834927	5353688723	
45	South Sudan											2063730998
46	Sudan		574000000	713180000	1349190000	1511070000	2304640000	3534080000	2425590000	2600500000	1816178403	135660413,7
47	Swaziland		29330084,35	92050689,64	60903856,8	69582011,84	-45850344,68	121031132,7	37493846,24	105729374,7	65705859,52	433441913
48	Tanzania		388800000	396244758,8	364258864,6	226732347,3	93525091,7	40038991,4	581511807	400047237,3	414544624,8	41057614,71
49	Togo		63584654,22	5363887,38	33733636,29	59358133,05	76992327,5	77335561,06	49162597,65	23883149,8	48531927,8	1595452778
50	Tunisia		752179569,8	451862342,2	790795273,4	540878957,4	593673054,3	723042930,9	3270261640	1531889987	2638495303	841570802,7
51	Uganda		160700000	151496150,7	184648059,2	202192593,6	295416479,8	379808340,7	644262499,9	792305780,9	72886900,7	1729300000
52	Zambia		145000000	298390000	347000000	389040000	356940000	615790000	1323900000	938600000	694800000	105400000
53	Zimbabwe		3800000	25900000	3800000	8700000	10280000	40000000	68900000	51600000	105000000	