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MSc Programme in Urban Management and Development

Rotterdam, The Netherlands

September 2017

Thesis Title: The impact of credit rating on FDI attraction into Africa

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UMD13
Specialization: Urban Competitiveness and Resilience

MASTER'S PROGRAMME IN URBAN MANAGEMENT AND DEVELOPMENT

(October 2016 – September 2017)

The Impact of Credit Rating on FDI Attraction into Africa

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UMD 13 Report number: 1022
Rotterdam, September 2017

Summary

As one of the tools that have been used to measure a country's investment environment to inform potential investors, credit rating given by a third party is very important to cross-border investors. It serves as a base for shaping the perceptions of investors about countries and has a substantial impact on inward investment flows. Foreign investors consider credit rating critically when planning to invest in a different country particularly countries in Africa where investments are perceived as risky. Understanding whether credit ratings has various explanatory powers on foreign direct investment attraction in Africa is worthy of attention, hence, the main purpose of this study. Accordingly, the study used a 10-year (2007-2016) data and conducted a panel regression model to answer the research question "To what extent does credit rating change affect the flow of inward FDI into Africa?" A total of 136 countries (Asia 35, Europe 41, Africa 26, Latin America and the Caribbean 26, North America 3 and Oceania/Australia 5) are taken as samples for this study. From the results of the study, it was found out that credit rating has a positive significant effect on the attraction of FDI at the global level and continentally in Asia and Europe however not in Latin America & the Caribbean. In the case of Africa however, credit rating does not have a significant impact on FDI but natural resource availability came out as significant for inward investment into the continent. Indeed, many theoretical and empirical literature has shown that the main motivation of multinational companies (MNCs) driving to Africa is that to get a secure access to those natural resources.

Keywords:

Sovereign credit rating, Foreign direct investment, Global financial integration, Moody's, Standard & Poor's and Fitch

Acknowledgements

First, all praise goes to the almighty GOD, he gives me all the successes and strength throughout my life.

Next, I would like to express my heartfelt thanks to my supervisor Prof. Dr. Ronald Wall, my co-supervisor Mahlet G. Yilema (Msc.) and my second reader Prof. Jannie Rossouw for their constructive comments, guidance, support, and advice throughout the process of the thesis. My gratitude also goes to Dr. Addisu Lashitew for his kind technical assistance to my study.

I would like to extend special thanks to my family, especially my mom (Mrs. Almaz Alemu) for the overall support and encouragement throughout my study in Netherlands. Great appreciation also goes to Metsihet lulu, Samrawit Hagos, and all my supportive friends.

The last but not the least appreciation goes to all IHS staffs for their assistance throughout the academic period.

Abbreviations

CEEC	Central and East European Countries
FDI	Foreign Direct Investment
FEM	Fixed Effect Model
FRM	Fixed and Random Model
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GMM	Gaussian Mixture Model
ICT	Information and Communication Technology
IDA	International Development Aid
HIS	Institute of Housing and Urban Development
IMF	International Monetary Fund
MNC	Multi-National Corporations
OECD	The Organization for Economic Co-operation and Development
REM	Random Effect Model
S & P	Standard and Poor's
STATA	Statistical Package Software
SEECs	South East European countries
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
U. S	United States
VAR	Vector Auto Regression

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Chapter 1: Introduction

1.1 Background

Sovereign credit rating is defined as an assessment of default risk probability of a firm or a country. These are mainly general evaluations provided by rating agencies about the default credit risk of the rated firm or country. The main motive of credit assessment is to examine the ability of a firm, organization or a country to pay back its interest and principal within the maturity date of the debt or to default, prevent investors from any uninformed possible loss and to guarantee and secure companies creditworthiness from both investors and lenders perspective (Lee and Yoo, 2016).

The three-main dominant credit risk rating private agencies, Moody's, Standard & Poor's and Fitch evaluate credit risk and assign a credit rating to issues, issuer or both. They use several qualitative and quantitative variables such as social, economic and political criteria to set a credit rating to the bond issuer (Montes et al., 2016).

Credit rating agencies assess companies and issue rating, which can be classified generally into investment or speculative grades. The variation between these categories can highly affect the ability of firms to borrow, maintain or expand their operation. For instance, an AAA graded bond is an investment bond which has the best quality and a BBB grade bond is lower quality investment type bond whereas a B or CCC bond is considered as risky (speculative) grade, which means that the bond contains substantial financial risk and if possible, the bond should be avoided (Lee and Yoo, 2016).

Table 1: Scales of credit rating agencies'

Fitch	S & P	Moody's	Rating grade description (Moody's)	
AAA	AAA	Aaa	Investment grade	Minimal credit risk
AA+ AA AA-	AA+ AA AA-	Aa1 Aa2 Aa3		Very low credit risk
A+ A A-	A+ A A-	A1 A2 A3		Low credit risk
BBB+ BBB BBB-	BBB+ BBB BBB-	Baa1 Baa2 Baa3		Moderate credit risk
BB+ BB BB-	BB+ BB BB-	Ba1 Ba2 Ba3	Speculative grade	Substantial credit risk
B+ B B-	B+ B B-	B1 B2 B3		High credit risk
CCC+ CCC CCC-	CCC+ CCC CCC-	Caa1 Caa2 Caa3		Very high credit risk
CC C	CC C	Ca		In or near default. With possibility of recovery
DDD DD D	SD D	C		In default. With little chance of recovery

Source: (Doneva and Ström, 2013), p. 12.

The above-mentioned credit rating agencies use macro economic indicators, political risks, and institutional effectiveness as critical factors in their rating processes of countries which are also determinants for foreign direct investment flows (Bayar and Kilic, 2014).

Credit rating can be particularly informative for foreign investors that are considering to invest abroad. Foreign direct investment is a cross-border investment in which investors have significant control or influence over company management in a foreign recipient country. FDI is advantageous to the recipient countries to establish a direct and long lasting stable investment linkage with foreign economies (Cai et al., 2016). Besides, foreign investors contribute to the growth of a country's economy by supplying a financial capital package, facilitating technology transfer, risk sharing for large projects, creating job opportunities, sharing of information, provides opportunities to the recipient countries to promote their products in the global market and make them more competitive (Personal et al., 2014).

Several reasons have been adduced for the lower foreign direct investment performance level of Africa. The main reason holding investors back from investing in Africa, despite the various potential opportunities, is the presence of higher risk and unreliability in the continent, which make organizations vulnerable to serious risks. The uncertainty of the continent could be described in three main components. First is political instability, which entails the presence of high incidence of war, ethnic and religious conflicts and frequent military intervention in politics. Secondly, there is high macro economic instability in the form of double-digit inflation, excessive budget deficit and high incidence of currency crashes. Finally, there is lack of policy transparency due to high frequency of policy and government changes, unfavorable investment climate and lack of transparency in macroeconomic policy. These factors have limited the ability of the region to attract foreign direct investments (Trade et al., 2005).

Foreign investors have limited information to assess these risks in Africa, which creates information asymmetry between foreign and domestic investors. Information asymmetry increases the difficulty of analyzing and predicting a country's investment environment (Barron and Ni, 2008; Hatchondo, 2005; Van Nieuwerburgh and Veldkamp, 2009). In the absence of detailed information to evaluate the multiple dimensions of risk, foreign investors back away from investing in Africa, even though the continent has various potential opportunities. Furthermore, the interdependence of Africa's economy makes it difficult for investors to measure the risk of individual countries. As such, investors associate risk occurrence in one country with the possibility of the same risk in another country or a region within the continent. This implies that the presence of political instability in one African country will reduce the possibility of flows of FDI into other neighboring countries of the continent (Trade et al., 2005). Africa's attractiveness survey from 2010 shows a huge perception gap between investors who have already invested and have been conducting business in Africa and those who have not. The former is well aware of the opportunities and the real risk of the country where they invest, hence, they remain positive about prospects and potentials on the contrast, the latter have remained with their negative perception (EY Africa, 2016).

Sovereign credit rating by independent agencies is one of the most important criteria used by potential investors for evaluating a country's investment environment. Credit ratings serves as a basis for shaping the perceptions of investors and can have a substantial impact on inward investment flows. The rating incorporates all of the risk factors that are perceived to be relevant by rating agencies. This makes credit rating information an important driver for potential FDI investors to decide on their investment (Cai et al., 2016). It is hence highly important to understanding the extent to which credit ratings affects FDI inflows towards Africa. Evaluating the explanatory power of credit rating on FDI inflows to Africa is hence the main purpose of this study.

1.2 Problem Statement

Sovereign credit rating is the evaluation of the creditworthiness of a country including governments' willingness and ability to make payment of their debt (the principal and the interest) on a timely basis. Ratings are estimations of the occurrence of a default (default potential) which allows estimating the default probability of a government. Since this rating is a comparative measure of credit worthiness, countries are rated versus the credit worthiness of other countries. Moreover, credit rating agencies also set a grade to the issuer in accordance with the degree of their relative credit worthiness (Mellios and Paget-Blanc, 2006). Sovereign rating of a country given by a rating agency influences entity accesses to the global capital markets. Besides giving chance to raising a firm's or countries debt in different capital markets, ratings are also important for commercial banks to formulate capital-adequacy norms. Potential investors fundamentally use the credit rating to have a look on the overall risk of investing in another country (Canuto et al., 2011).

In the case of developing countries, credit rating serves as a reference to compare the potential size of debt issuance and the cost of issuance. Large aid allocations from bilateral donors (for instance the U.S Millennium Challenge account) and multilateral agencies (like IDA aid allocation) are also affected by the criteria of creditworthiness. Having a rating is much better than having no rating, which has worse consequence. Creditors usually perceive unrated countries as much riskier than what they actually are, even more than those being perceived as a higher default probability country (Canuto et al., 2011).

Shadow rating of a country can indicate the status of a country in terms of credit rating scale if it was rated. In such cases, the model-based shadow rating can serve as a benchmark to evaluate unrated countries and also rated countries who have not been rated recently but in the meantime, could have improved and deserve a promotion (or demotion in some cases). Furthermore, the sovereign ceiling serves as a binding restraint for developing countries with a rating below the investment grade. This usually constraints market access as well as results in high borrowing cost for sub sovereign bodies situated in developing countries. (Ratha et al., 2011).

Sovereign rating of countries serves as a base for shaping the perceptions of investors about countries and has a substantial impact on inward investment flows. The downgrade of the credit rating of countries usually leads to increase in the rate of interest for future borrowing and it also defers potential investors from investing in that country (Baranenko, 2011). Credit ratings play a significant role to attract FDI into developing countries by providing detailed information to potential investors about the default risk probability of bonds issued (Montes et al., 2016).

Foreign investors consider credit rating critically when deciding to invest in a different country especially in countries in Africa where investments are perceived as risky. Credit rating downgrades increase a countries risk and uncertainty which results in a reduction in private investment growth. On the other hand, when the rating upgrades, investors are motivated to enhance their devoted investment projects due to the implied lesser risk probability in the country. It will also reduce the investor's uncertainty about the risk probability of the investment (Chen et al., 2013).

A number of research projects have been done on the various factors affecting FDI attractiveness globally and credit rating has also been a good research area by many scholars (Teker, Pala and Kent, 2013; Cantor and Packer, 1996; Afonso et al, 2007; Mellios and

Paget-Blanc, 2006; Cai et al. 2016, Pretorius and Botha, 2014; Mulder and Perrelli, 2001; Mellios and Paget-Blanc, 2006; Chakrabarti, 2001 and Ozturk, 2012). However, most of the research has been done in developed countries, largely excluding Africa (Pretorius and Botha, 2014). To date, much of the research in African countries tended to focus on factors affecting FDI in general. Far less is known about to what extent credit rating of countries is affecting FDI. Hence, there is a need to explore how credit rating affects FDI into African countries since it is one of the most determinant factors for FDI inflow. It is in this context that this research aims to fill the identified gap by analyzing to what extent credit rating affects inward FDI flow in Africa.

1.3 Research Objective

The main objective of this research is to explain to what extent credit rating changes influence the FDI inflows into Africa. In doing so, this research will address the following specific objectives;

I. To explain the effect of credit rating changes on FDI inflows into:
   - Global countries
   - Continents of the globe
   - Regions of Africa

II. To examine the determinants of credit rating for African and non-African countries (other continents)

1.4 Provisional Research Question(s)

This paper will address the question:

> **To what extent does credit rating change affect the flow of inward FDI into Africa?**

Sub-questions:

1) To what extent does credit rating influence the total amount of FDI inflows:
   a. Globally?
   b. Continentally?
   c. For Africa, Regionally?
2) What determines credit rating in African and non-Africa countries (other continents)

1.5 Significance of the study

Understanding how credit rating influences FDI inflows to Africa is indispensable to the continent since FDI is considered as an important vehicle for economic growth. Given the fact that the impact of credit rating changes on FDI into African countries has not been studied to date. This study will add to the existing literature by investigating the extent to which credit rating affects FDI inflows to Africa after controlling for other explanatory factors of FDI. This study will also provide insights into the continental and regional (in Africa) differences in FDI attraction due to the influence of credit rating. The results of this research will be used as inputs for further studies and investigation in this research area. Hence, the findings of this research are expected to serve as stepping-stone for future researchers who are interested to explore more and in-depth.

Furthermore, this study will provide insights to policy makers by putting forward policy recommendation with regards to credit rating and FDI attraction. The findings of this study

can be used by policy makers to evaluate the role of credit rating while developing policies regarding FDI attraction.

1.6 Scope and Limitations of the Study

The scope of this study is limited by countries and study period. The geographic scope of the study is limited to the continent of Africa as compared to the rest of the world and particularly countries which are already rated by one of the three rating agencies. Regarding the study period, the study will cover 10 years (2007-2016) panel data. Thus, the study will only cover countries, both in Africa and the rest of the world, which have been rated within the ten years period by at least one of the three rating agencies.

The major limitation of this study is lack of sufficient observations on credit rating and the determinants of credit rating, for the continents of North America, and Australia/Oceania. Therefore, the analysis result for the two continents could not be generated. Even though regional analysis is done for Africa, the amount of observation is not sufficient to draw a general conclusion. On the second analysis, i.e. the analysis of the significant determinants of credit rating, the result was only obtained for the global and continental levels. Due to insufficient number of observation, regional analysis for Africa could not be generated.

Chapter 2: Literature Review / Theory

2.1. Globalization

According to Alassane D. Ouattara (1997), globalization in the world economy is defined as the interconnection of international economies via trade, financial transactions, the transfer of various technologies and information and the movement of people. As stated by Schneider (2003) globalization is a term mostly used to express the recent processes of commodities, capital and information flow that are functioning to formulate globally integrated economy (Schneider, 2003). Globalization has involved an integration of markets on an international basis, greater openness in the world economy and progress towards a borderless world. All of these things lead to increases in international flows (Tomohara and Takii, 2011).

A ‘’globalized ‘’ economy might be defined as an economy in which neither national border nor distance hinder economic transaction (Wolf, 2001). The degree of movement of integration reflected in the increasing importance of global capital flows and trade in the global economy. Nowadays an increasing portion of the world GDP is created from functions which are directly or indirectly connected to global trade. Besides, there has been a remarkable development of worldwide financial flows, specifically in the form of portfolio and private equity investment as compared to the former. Attracting new foreign investments and outstanding technology, success in open markets shows that the economic structure is changing more quickly than it has been before. Because of structural change, there might be a few segments of society that are not benefited in the short run, even if the economy as a whole and other segments of the society are benefiting from the changes. But this doesn’t mean countries should plan to isolate themselves from globalization: - Instead, governments should fully embrace and become aware themselves about its potential risks and investigate adequate mechanisms to protect the vulnerable portion of society throughout the process of change (Alassane D. Ouattara, 1997).

Globalization reinforces interdependencies between regions and countries. Moreover, it strengthens the connection between the developed countries and the rest of the globe. The partnership supports mutual benefits. The developed countries could further open markets for their products and services where the developing countries will have a comparative advantage. Moreover, African countries reform efforts need to be supported by enough financing on concessional terms (Alassane D. Ouattara, 1997).

According to Intriligator (2004), globalization increases competition, the efficiency of markets, distribute wealth fairly around the world and reduce military conflicts. Due to these benefits, most economists agree on the advantages of globalization in bringing a lot of advantages to different types of economies around the globe. Nevertheless, the public leads to assume that the problems that come from globalization are much higher than the benefits gained especially in the short run (Intriligator, 2004).

Benefits countries can gain from globalization includes:

Because of globalization, the growth rate of FDI becomes much higher than the growth of world trade, this is helping to increase the transfer of technology, the growth of international companies and firms restructuring. The rising competition in the world due to globalization helps to foster innovative technology development, and by this helps to enhance the economic output level by making processes more efficient (i.e. technological innovation).

Moreover, Globalization allows large firms to understand economies of scale which reduce their production costs and prices (i.e. economies of scale).

The risks associated with globalization include:

1. Interdependence: Globalization creates interdependence among regions and nations which could results in instabilities at the global level or amongst regions. If there are fluctuations in the local economy, it will end up affecting many countries relying on them.
2. National Sovereignty: this might lead to the creation of some nationalistic (i.e. xenophobic) leaders.
3. Equity Distribution: benefits from globalization could be unevenly allocated towards rich people, which creates greater inequalities and lead to potential conflicts, both nationally and internationally (Intriligator, 2004).

Nowadays, the challenges developing countries, specifically African countries, are facing is related to formulating their public/ foreign policies in a way that can enhance their potential benefits from globalization. The concern of African countries should be to sustain the stability of their economy and to support the application of structural policies that will encourage diversification, makes their economy more flexible, and minimize vulnerability to shocks. The reforms should also incorporate labor markets, activities of public enterprise and trade regime. Besides, governments need to assure that services given to the public like that of water, electricity, health services, transportation networks, education, and telecommunication are provided in a sustainable and cost-effective ways (Alassane D. Ouattara, 1997).

2.2. Global financial integration and foreign direct investment

2.2.1. Global financial integration

The global economy is integrated by financial flows, trade of goods and services and mobility of people (World Bank Group, 2016). Financial globalization can help to enhance developing countries grow through a number of direct and indirect channels.

Direct channels

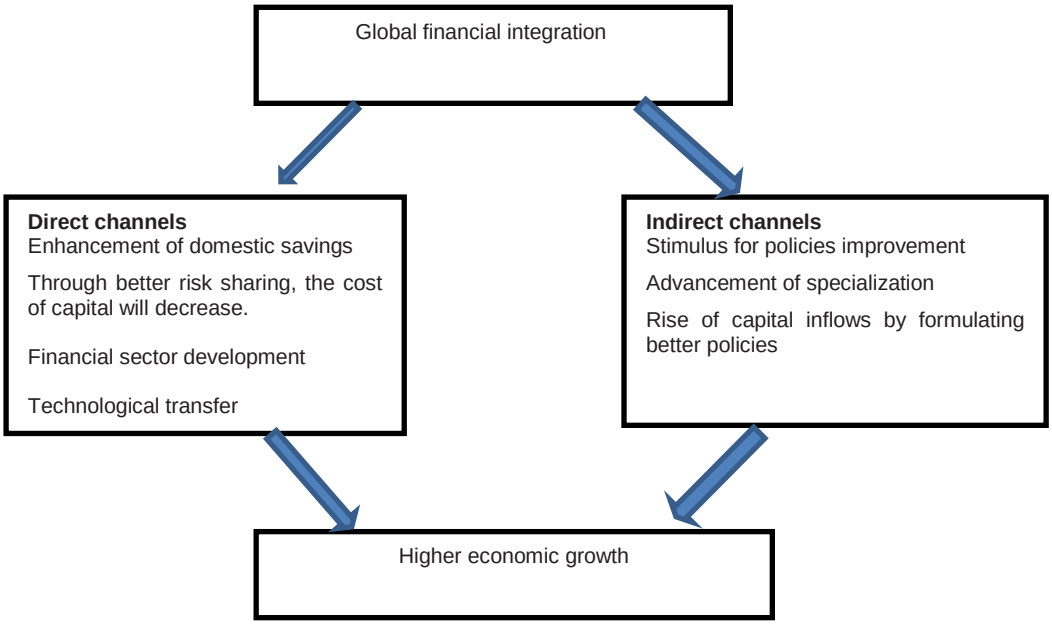
In poor countries, global financial integration allows increasing capital investment by supporting domestic savings. Through a better international allocation of risk, helps to reduce the cost of capital. This risk sharing opportunities across foreign investors and local firms might help to diversify risks and which encourages firms to take more investments, thus enhances growth. Besides, as the flow of capital increases, domestic stock markets will become more liquid, and this might further decrease risk premium of equities which, can lower the cost of acquiring capital for investments. Furthermore, technology and managerial know-how transfer is another part of the direct channel. Financially integrated economies have a tendency to attract a large amount of FDI, which has a high potential for passing on better management skills and to generate technology spillovers. the spillovers can enhance total productivity and, this, in turn, raises economic growth (Prasad et al., 2003).

Indirect channels

Through its indirect channel globalization could play a significant role in encouraging countries to participate in global risk-sharing activities and thereby decrease consumption

variability. Global financial integration could also enhance the level of productivity of the economy by making an influence on government's ability to really engage in a future development of policies. More specifically, following to the changes in macroeconomic policies, the role of global financial integration could change investment flows in the domestic economy to the level which leads to redistributing of financial resources to more productive economic activities. Moreover, the readiness of a country to commit financial integration could also be understood as a sign which shows it is going to exercise more favorable policies toward FDI in the future (Prasad et al., 2003).

Figure 1: Channels of financial integration and economic growth



Source: Prasad et al. (2003, p.208).

2.2.2. Theories of foreign direct investment

OECD (2008) defined FDI as a long-term cross-border investment made by a resident investor in an enterprise which is located outside of the economy of the investor. The objective is to acquire a long-lasting relationship between the investor and the enterprise. The investor's motive is to have a significant degree of influence on the enterprise management. Mobilizing financial resources are a concern of all countries, developed or developing ones, of the existing market or emerging ones to cover their investment needs. Foreign direct investments are one means of mobilizing financial resources. There is even competition between countries to attract FDI (Donciu, n.d.). Almost all developed countries of the globe at their initial development stage used foreign capital to cover deficiency of domestic saving (Economic et al., 1991).

FDI has become one of the most important ways of economic flows in the international economy. It is the most important means of acquiring capital for developing countries and substantial basis of investment for developed countries (Milner, 2014). The analysis done by Das (2006) shows that FDI liability attraction as a share of total global liabilities is higher in developing countries than that of developed countries. The reason behind lower level of FDI liabilities to GDP in developing countries is that the presence of higher risk and regulatory barriers in developing countries (Das, 2006).

2.2.2.1. Types of foreign direct investment

From investors and multinational company perspective, there are two main types of foreign direct investments: vertical and horizontal investments. Horizontal FDI occurs when a company wants to extend the same business in the host country to produce the same or comparable product as it produces in the home country. The main motives of a company to engage in horizontal FDI are: first, it is more profitable for the company to be located in the host country. Second, it allows saving costs by using low-cost inputs from the host country such as labor. Moreover, this type of FDI is undertaken to make use of exclusively control or dominating power advantages, if there is a lesser restriction in the recipient country. Whereas vertical FDI occurs when a company wants to use raw materials or wants to be closer to its customers by opening distribution outlets in the host country. Here the idea is to be cost effective in the production process by relocating some stage of production at the host country (Unisa and Candidate, 2013).

2.2.2.2. The importance of foreign direct investment

In the past decades, FDI has gained very significant importance as an instrument for promoting growth and technical innovation and development in transition economies. It is mostly accepted that the benefits derived from FDI to the standard of living and growth nations' economy largely out weight its disadvantage (Janicki and Wunnava, 2004). Most of developing countries prefer foreign direct investment as opposed to the private foreign capital for the reason that it plays a key role in enhancing economic growth and development along with technological transfer, the creation of job, enhancing productivity. Moreover, FDI is less volatile and less sensitive to fluctuation of an economy as compared to portfolio investments (Unisa and Candidate, 2013). FDI is one of a key element in today's rapidly emerging global economic network. These are the means of creating long term economic links between countries. Within the right policy situation, it is a means for local firm's development and helps to improve the competitive position of both the recipient and the investing economy. In addition, foreign direct investment creates an opportunity to the recipient country to advertise its products more extensively in the global market. Moreover, FDI serves as the main source of capital for both the recipient and investing economy (OECD, 2008).

Investment undertaken by individuals or organizations in one country from another country is an important aspect of international finance. Unlike portfolio investment, in which the investments are being done in bonds, golds, stocks, and objects, and investment made by an investor who is not involved in the management of the enterprise, FDI allows investors to have a certain control over the management of the enterprise. In FDI the intention is not to control or own but to earn more financial return for the investment. FDI is the result of the mutual interest of global firms and the host country. The investor proposes to the host country to have a voice in the management of the enterprise. The essence of FDI is the transmission of a package of capital, technical knowledge and managerial skills to the host country (Economic et al., 1991).

Under-developed and developing countries desire huge capital investment as their domestic capital is not adequate for the development of basic economic infrastructures. In this case, FDI plays a vital role in the development of such infrastructures like transport, electric generation, and distribution, communication system etc. FDI has a positive influence on export competitiveness of the recipient country by enhancing product standards and the level of efficiency. It helps to improve the host country export performance and better access to foreign markets (Economic et al., 1991).

FDI inflow at the global and Africa level

Table 2: Global investment trends by regions, 2015-2016 (Billons of us dollar).

FDI INFLOWS			
Region	**2015**	**2016***	**Growth rate**
World	**1750**	**1525**	**-13**
Developed economies	**963**	**872**	**-9**
European Union	475	399	-18
North America	391	414	6
Developing economies	**749**	**600**	**-20**
Africa	**54**	**51**	**-5**
Latina America and the Caribbean	166	135	-19
Developing Asia	527	413	-22
Transition economies	38	52	38

Source: UNCTAD, (2017).

According to UNCTAD (2017.p 2), "Global FDI flows fell 13% in 2016, reaching an estimated US$1.52 trillion. This decline was not equally shared across regions, reflecting the heterogeneous impact of the current economic environment on countries worldwide". As the data shows us Africa FDI inflows fell by 5% in 2016 and accounted only 3.3 % of the total world FDI inflow.

2.3. Concepts of credit rating

Credit ratings are a projection of potential credit losses due to delay in payment, partial payments or failures of making payments (Poornima, 2015). Credit risk occurs when the borrower fails to meet (fulfill) its obligations. It is a vital consideration because even well-managed companies should have at least some debt finance in their capital structure. Besides, risk indicates the extent of impact the chosen action has. It might be a loss or some unwanted result. In finance, various categories of risks can be categorized into two groups: systematic and unsystematic risks. From the investor's point of view, the most important risk to be considered is the systematic risk because it is not diversified away by having more securities (Hyleen, 2009).

Systematic risk occurs from the influence of uncontrollable external factors to firms. These are macro in nature and affects a large group of firms doing their business within the same domain (stream). Such types of risks categorized into three parts: market risk, interest rate risk and inflationary/purchasing power risk. Market risk arises when there is a continuous fluctuation in the selling price of shares or securities. On the other hand, interest rate risk arises when there is frequent up and down in interest rate. This type of risk particularly affects securities which usually contains the fixed rate of interest. Interest rate risk can be viewed from two perspectives price and reinvestment risk. Price risk arises if there is the possibility of fall or decline in the price of investment, commodity or shares in the future. Whereas reinvestment risk arises when the return from investment could not be reinvested at the same rate of return. Thirdly, an inflationary risk which arises because of continuous rise in the price of goods and services resulted from the increase in the production cost which increases the price of goods and services delivered to customers (Hyleen, 2009).

Unsystematic risk rises due to internal factors within an organization. Such type of risk is micro in nature and affects a particular firm. The risk can be planned and controlled by the organization by taking the necessary actions to mitigate such type of risks. Financial or credit risk is one of the highest risk probability type of risk for every business. Financial risk results

from a change in the capital structure. The capital structure usually used by firms categorized into three parts according to their source of funds owned fund, borrowed fund and from retained earnings (Eshna, 2012). Such kind of risk can be seen from 4 perspectives as shown below.

1. Market risk occurs when there is movement in prices of financial instruments.

2. Credit risk is a risk which arises when one party fails to satisfy its contractual agreements to their counter parties. Such risk categorized into settlement risk and sovereign risk. Settlement risk occurs when one party makes the necessary payments and the other party does not meet the expected obligations, whereas Sovereign risk arises from difficult foreign exchange policies.

3. Liquidity risk originates from the sale or purchase of security affected by the business cycle, change in technology etc. These include asset and funding liquidity risk. Risk of asset liquidity arises from unable to pledge or sell the asset owned by their book value (sale of the asset lesser than the book value) on the other hand, funding liquidity risk is from not having sufficient funding access to make a necessary payment on the agreed time like commitments to customers not fulfil as promised on sale contract.

4. Operational risk comes from operational failures such as mismanagement or technical failure.

Therefore, credit rating agencies use a mixture of the two types of risk category components to rate countries or firms.

In the world, the top three well-known sovereign credit rating agencies are Moody's, Fitch and Standard and Poor's ratings. The three rating agencies each have their own system of rating to grade corporate and sovereign borrowers. The system used by each agency is different in form but similar in content (Thesis et al., 2012). Credit rating given by the agencies indicates the ranking order of the probability of default on payments of principal and interest on a loan. Credit ratings influence borrowing conditions through two ways: the availability of credit and the cost of credit. For example, a downgrade rated bond would increase the level of risk premium required by the market. Therefore, it increases the cost of borrowing. The downgrade might also result in a decrease in demand for the downgraded bond in the market, as some investors might be unwilling to hold debt below a certain rating level (Kausch, 2008). Furthermore, as stated by Afonso (2003), the downgrade in rating reflects a high probability of default in future period's debt. Thus, if two bonds subject to equal short-term default risk, the bond with greater downgrade risk would probably have more long-term default risk.

Table 3: The three well-known credit rating agencies rating scales

Colour code	Number	Definition	Moody's	S & P	Fitch
		Investment-Grade			
	100	Prime, maximum safety	Aaa	AAA	AAA
	95	Very high grade/quality	Aa1	AA+	AA+
	90	"	Aa2	AA	AA
	85	"	Aa1	AA-	AA-
	80	Upper medium quality	A1	A+	A+
	75	"	A2	A	A
	70	"	A3	A-	A-
	65	Lower medium grade	Baa1	BBB+	BBB+
	60	"	Baa2	BBB	BBB
	55	"	Baa3	BBB-	BBB-
		Speculative-grade			
	50	Speculative	Ba1	BB+	BB+
	45	"	Ba2	BB	BB
	40	"	Ba3	BB-	BB-
	35	Highly speculative	B1	B+	B+
	30	"	B2	B	B
	25	"	B3	B-	B-
	20	Substantial risk	Caa1	CCC+	CCC+
	15	In poor standing	Caa2	CCC	CCC
	10	"	Caa3	CCC-	CCC-
	5	Extremely speculative	Ca	CC	CC
	0	Maybe in or extremely close to default	C	C+,C, C-	C+,C,C -
	0	Default		D	D

Source: - Multiple-Market, (2013).

As stated by Fonseca et al., (2004), sovereign credit rating is an analysis of the creditworthiness of a country, willingness, and ability of governments to pay the principal and interest of its debt on a timely basis. This rating is an estimate of the potential occurrence of default and enables to estimate the future default probability of a government. Sovereign ratings are a relative measurement of the creditworthiness of countries. For example, the highest AAA rating shows very strong ability of debt issuer to repay the principal and interest, while the lower rating CCC, shows there is a strong vulnerability on the repayment of principal including the interest rate (Kausch, 2008).

The grading systems of agencies range from AAA, Standard & Poors and Fitch respectively, Aaa Moody's the highest rate to Caa and D the lowest rating. Besides, Rating from Aaa Moody's and AAAA Fitch and S & P to Baa3 and BBB- respectively indicate "investment grade" while rating from Baa1 Moody's and BB+ Fitch and S & P to D is treated as "speculative grade or higher default probability grade. Even if the three credit rating agencies

use different symbols to denote their ratings they have much correspondence with their rating system. The correspondence allows changing the rating scores (symbols) into numerical values (Fonseca et al., 2004).

2.3.1. The role of credit rating

Credit ratings have significant advantages, as they have an influence on the organization's cost of debt, the structure of financing and smooth functioning of its trading (Gray, Mirkovic, et al., 2006). The major advantage of having a rating is to increase access to capital markets, to decrease debt interest rate and debt issuance cost. Credit rating agencies as their information gatherer and disseminator role can reduce the cost of capital by verifying its value in the capital market, hence they play a vital role in solving or decreasing information asymmetry problems between issuers and purchasers. Besides, the indirect benefits of having credit rating are it promote foreign direct investment and increase public sector financial transparency (Archer et al., 2007). Moreover, when an organization borrows from the public debt market, it could be very difficult for a potential investor (bondholders) individually to assess the default probability of the borrower, because the cost of making adequate credit analysis is very high. In this case, credit rating agencies play a vital role by gathering information about an organization and sharing the information with investors (Afonso, 2003).

2.3.2. Credit rating as a determinant for inward FDI

A research was done by Cai et al., (2016) concluded that the sovereign ratings of OECD donor countries have a negative effect on the flow of FDI from them and have a positive effect on the inflow of FDI to OECD and non-OECD recipient countries. In addition, there finding shows that more FDI flows to countries whose regional rating is high. When the rating of other regions in that country is higher, FDI flows to the high rated region (FDI crowding effect). Besides, the financial and economic development level and openness of the recipient countries also tend to stimulate the inflow of FDI (Cai et al. 2016).

As stated by Mellios and Paget-Blanc (2006) sovereign credit ratings have a negative relationship with default probability. From the potential explanatory variables of credit rating, the key economic variables considered in most literature are GDP growth, per capita income, economic development, inflation rate, external balance, real exchange rate, and default history.

Table 4: List of credit rating potential explanatory variables identified by researchers

Variable	**Economic Rationale**	**Theoretical predictions**
Per capita income	An increase in the per capita income implies a larger potential tax base and a greater ability for a country to repay debt.	-
Gross Domestic Product (GDP) growth	An increasing rate of economic growth tends to decrease the relative debt burden. Moreover, it may help in avoiding insolvency problems.	-
Inflation rate	A low inflation rate reveals sustainable monetary and exchange rate policies. It can also be seen as a proxy for the quality of economic management.	-
Economic development	Developed countries are integrated into the world economy and are less inclined to default on their foreign debt in order to avoid sanctions from the lenders.	-
Current account balance	A large current account deficit implies the dependence of a country on foreign creditors. A persistent deficit affects the country's sustainability.	+

Foreign debt/GDP	This ratio is negatively related to default risk.	+
Real exchange rate	This ratio is negatively related to default risk.	+
Default history	A country's default history affects its reputation.	+
Government debt (Ratio of government debt to GDP)	The higher this ratio is, the greater the occurrence of a liquidity crisis.	+
Foreign reserves (reserves/imports Ratio)	The higher this ratio is, the more reserves are available to service foreign debt	-
investment/GDP Ratio	This ratio captures the future growth ability of a country and it is a decreasing function of default.	-
Corruption Index	This index is a measure of political risk and can reduce a country's willingness to pay.	+
Regulatory quality, accountability, rule of law and political stability	These indicators provide a means of evaluating the governance of a country and affect a country's willingness to pay.	-

Source: The European Journal of Finance, (Mellios and Paget-Blanc 2006), p. 4.

Table 4 displays the most important variables usually listed in the literature that are influencing the sovereign rating of countries and thus sovereign default. The table also gives a brief explanation of the relationship between the variables listed and the ability and willingness of a country to repay its debt on time. In the theoretical predictions column - (+) indicates that the theoretical prediction of the relationship between the sovereign rating and default probability of a country. For instance, an increase in per capita income has a negative effect on the risk of default which means, as per capita income increase, the default risk probability will decrease. Which in turn has a positive impact on the credit rating of countries.

Cantor and Packer (1996), in their seminar paper identified the following determinants of credit rating that are most regularly used by Moody's and Standard & Poor's rating agencies as a determinant for sovereign rating of countries GDP growth, per capita income, inflation, fiscal balance, external balance, external debt, economic development, and default history of countries.

As we can see from the table below, the Fitch rating agency uses four sovereign rating analytical pillars (i.e. Structural features, Macroeconomic performance, policies & prospects, Public finances and External finances) to rate countries. Each pillar contains their own different variables. For instance, structural features include: Governance indicators, GDP per capita, Share in world GDP, Years since default, and Broad money supply (% of GDP). Macroeconomic performance, policies & prospects pillar contains variables like Real GDP growth volatility, consumer price inflation, Real GDP growth and Public finances pillar includes gross general govt debt as a percentage of GDP, General govt interest, General government fiscal balance as a percentage of GDP and foreign currency government debt as a percentage of gross government debt and finally the external finance pillar includes Reserve currency flexibility, Sovereign net foreign assets (% of GDP), Commodity dependence, Foreign exchange reserves, External interest service and Current account balance + foreign direct investment

Table 5: Sovereign Rating model weights of the four sovereign analytical pillars given by Fitch agency

Analytical pillar	Structural features	Macroeconomic performance, policies & prospects	Public finances	External finances
SRM weights (%)	55	10.4	17.3	17.3

Source: www.fitchratings.com, Stringer et al., (2017).

Regarding to empirical researches done on the topic, to answer the question what determines the sovereign credit ratings of countries, Afonso,, et al., (2007) conducted a detailed review of credit rating determinants and concluded that credit rating difference among countries can be explained by four categories of explanatory variables: per capita income, real GDP growth, inflation rate, and unemployment rate are considered as macro economic performance variables, government debt, fiscal balance and government effectiveness are considered as government performance variables, external debt, foreign reserves and current account balance are considered as external balance variables and default history, economic unions and regional dummies are considered as other explanatory variables.

A research was done by Cantor and Packer, (1996) to measure the level of significance of eight credit rating variables for developing countries, that are most regularly used by Moody's and Standard & Poor's rating agencies as a determinant for sovereign rating of countries. The variables are: Per capita income, GDP growth, Inflation rate, Fiscal balance, External balance, External debt, Foreign reserves, Economic development, Default probability. After they did a regression analysis on the above mentioned eight variables, six factors: per capita income, inflation rate, GDP growth rate, the level of economic growth, economic development and countries default history appeared as an important variable for rating countries. There is no any asymmetric relationship between either current or fiscal deficit with a credit rating of countries.

Per capita income:

This variable measures the tax potential of the borrowing country. The greater tax potential base shows there is a higher ability of the government to repay its loan. Per capita income has a positive impact on ratings of countries. When a country per capita income increase, it will have a positive influence on the improvement of credit rating.

GDP growth:

Countries with a comparatively high level of economic growth rate indicate that they have a higher probability of paying existing debt burden. As stated in various kinds of literature, a country with a high GDP growth rate indicates the country's ability to service its debt burden. Even though some countries In the Africa continent experience a higher GDP growth rate, the rate might not be at the level which can cover the debt burden of a country. The minus sign of the GDP growth rate might be because of dynamic forces like unequal distribution of income, political instability and high level of poverty, which affects a country's credit rating despite high economic growth (Pretorius and Botha, 2014). As Cantor and Packer (1996) state, the credit rating of a country might have an unclear relationship with GDP growth since the growth rate of many developing economies becomes faster than the developed ones.

Inflation rate:

Higher inflation rate indicates there is a problem with the financial structure of the government. When governments unable or not willing to cover its current expenses from taxes collected or debt issuance, they must turn to inflationary finance which in turn creates public dissatisfaction with the inflation and these might be the reason for political instability. The availability of political instability in a country will have a negative impact on countries credit rating given by rating agencies since political stability is used by the agencies as one factor for rating countries.

Fiscal balance:

The general government fiscal balance reflects the net balance of revenues accrued and expenditures incurred on an annual basis. Typically, sustained high fiscal deficits (as a percentage of GDP) will tend to be indicative of loose fiscal policy management and, other things being equal, are likely to lead to rising indebtedness. When governments have a large scarcity of federal budget, they start to absorb domestic savings. This asserts that the government's inability or lacks the willingness to collect tax from its citizens and cover the current budgetary expenses or to repay the existing debt burden. As stated by Afonso, et al., (2011) countries with a higher current account balance deficit counted as higher credit rating since this deficit could indicate growth potentials (opportunities) of the countries and investors are willing to cover the deficit by means of investment or loans.

External balance:

A larger recurrent budget scarcity shows that the private and public sectors of a country highly depends on the external source of funds. These results in an increase in foreign indebtedness, through time it might become unsustainable. According to Cantor and Packer (1996), the external balance of a country is insignificant variable for rating countries. However, Pretorius and Botha (2014) in their working paper states that the external balance of a country has a positive sign and it is a significant variable for rating countries.

External debt:

The more external debt burdens a country has a higher probability of default. When the countries debt currency highly rises relative to their earnings from foreign currency (export), the weight of this burden even increases at a higher rate. As the finding of Drakes et al., (2010) indicates sovereign ratings of countries and external debt have a bi-directional/causal relationship. According to Afonso, et al., (2011), sovereign rating and a country's overall external indebtedness have a negative relationship. This is because a higher debt level means a sign of additional burdens on the government and it may place pressure on the ability of governments to meet its debt.

Foreign reserves:

The level of international foreign-exchange reserves accumulated by the country's central bank represents an important buffer or measure of resilience to shocks. This variable highlights the extent to which the economy can continue to finance its imports in the absence of access to external funding. It is also instructive with respect to assessing a country's ability to meet its external debt service in foreign currency.

Economic development:

Even if a country economic development level determined by per capita income, rating agencies use this variable to see the relationship between risk and economic development. I.e. if one country reaches a secure income and higher economic development level, the country default probability becomes lesser. This, in turn, will have a positive impact on the credit rating of a country.

Default probability:

Ceteris paribus, if a country has a wide default history in the recent past years, investors perceive the country as a high credit default country. There is a negative relationship between the default probability of a country and credit rating. As the default probability of a country increase, investors do not want to invest there because of the available credit risk Cantor and Packer (1996). Cantor and Packer (1996), after they did a regression analysis on the above mentioned eight variables, six factors: per capita income, inflation rate, GDP growth rate, the level of economic growth, economic development and countries default history appeared as an important variable for rating countries. There is no any asymmetric relationship between either current or fiscal deficit with a credit rating of countries.

The result of Mulder and Perrelli (2001) shows that unemployment level (ratio of investment to GDP), the ratio of debt to export (external debt), default history (rescheduling history) are the most significant variables for rating change across countries. According to Afonso (2003), per capita income, inflation rate, real growth rate, economic development level, external debt and default history of countries identified as the most important determinants for sovereign rating.

The finding of Mellios and Paget-Blanc (2006) indicates that developed and more competitive countries, in general, have higher sovereign rating than developing countries. A negative impact on sovereign rating comes from inflation rate, dependency on trade and external debt. This negative effect shows the fact that countries with a lower inflation rate and external debt have less probability of default, and have a better rating. In addition, gross domestic saving, government revenue, real exchange rate and corruption index have a positive significant influence on countries rating. A research done by Jaworska (2015) shows that in the European country case unemployment causes debt insolvency risk but the influence is weaker for those countries who are not the member of the European Union. Eurozone credit standing is not significantly dependent on the level of unemployment and inflation rate. However, the negative correlation between unemployment and inflation rate and credit rating is observed for OECD countries.

2.3.3. Other agglomeration factors affecting foreign direct investment

According to Janicki and Wunnava (2004), the key determinant factors for the attraction of FDI into central and east European countries (CEEC) are: international trade, investment climate (country risk) which is measured by risk rating, host countries transportation system, trade openness, size of the recipient economy and labor costs. Countries that have received lower FDI can make themselves more attractive to potential investors by paying attention to the identified determinant factors mentioned above (Janicki and Wunnava, 2004). Besides, Vlahinić-Dizdarević and Blažić, find that the most important determinants of FDI in the case of South East European countries/SEECs/ are market size, the degree of development of host country, the prospect for market growth, institutional development and location (proximity) Vlahinić-Dizdarević and Blažić, (2006).

Furthermore, the study done by Kocia (2009), shows that the most commonly mentioned determinant factors explaining foreign direct investment in Poland includes market growth rate, market size, cost of labor, openness to trade, foreign currency valuation, the level of risk, membership in the European Union, and subsidies and tax incentives (Kocia, 2009). Ozturk (2012), also stated that enhancing the capacity of foreign trade increases the attraction of FDI.

Regarding to the flow of FDI into Africa, a research done by Onyeiwu and Shrestha (2004) states that openness of the economy, inflation rate, GDP growth rate, external debt, international reserve, tax rate, political liberty/ freedom and natural resource availability are major determinants for the flow of inward investment into Africa. Whereas, political right, infrastructures and interest rate are not significant factors for FDI inflow to Africa but the variable political right and infrastructures have been identified as an important factor for other developing countries case. The analysis result of Mijiyawa (2010) for what drives FDI into Africa shows that lagged FDI inflow, openness to trade, the size of the economy, return on investment and political instability are significant variables and positively related to FDI inflow.

A research conducted by Hlongwana (2015) indicates that GDP, government size, inflation, trade, foreign exchange rate, return on credit were long-term determinants of FDI inflow to South Africa. As the result revealed GDP, government size, country openness to trade and return on credit tends to have a positive influence on FDI, whereas exchange rate and inflation have a negative influence on the flow of FDI. According to Mijiyawa (2010), the availability of poor infrastructure and unskilled labor force hinder the return on investment in Africa. This leads to decrease investment level in the continent. African countries should improve the quality and the quantity of physical infrastructure and the labor force skill in order to improve return on investment.

Explanation of other variables of FDI selected for the analysis purpose

Availability of skilled labor

According to Anyanwu (2012), The presence of skilled labor force usually considered as a pull factor of investment for foreign multinational companies. The level of skilled human capital is measured by gross secondary and tertiary level school attainment of the host (recipient) country and the variable is positively related to the amount of inward FDI flow.

Infrastructure development

The well establishment of overall infrastructure of a country is an important determinant for attracting inward FDI flow. The availability of quality infrastructure can be measured by considering water, electricity, telecommunication and transportation system. Wheeler and Mody, (1992); Asiedu (2002), also stated that good infrastructure increases the productivity level of investments, therefore, it stimulates the inflow of FDI.

Natural resource availability

Countries that are endowed with abundant resource will attract more foreign direct investment. Therefore we expect a positive relationship between inward FDI and natural resource availability (Asiedu, 2015).

Openness of the economy (international trade)

This variable is regarded as a pull factor for the FDI recipient country. The larger the degree of trade openness the lower restrictions imposed by the host country on international trade. The variable is measured as the ratio of total export plus import to GDP (Ramasamy and Yeung, 2010). A positive relationship is expected between the two variables. Hlongwana,

2015; Chakrabarti 2001, and Morisset 2000, in their research finding, states that trade openness of a country has a positive relationship with the flow of FDI.

Government size

This variable related to the level of consumption of governments in relation to GDP. A positive relationship will be expected between government consumption ratio and FDI. This is because government expenditures related to infrastructure and other social investments, like education, this, in turn, serves to promote production. However, some studies argue that, in the event that government expenditure is wasteful, the increase in government expenditure has a negative effect on the flow of foreign direct investment (Hlongwana, 2015).

Real exchange rate

The variable shows the price of a country currency in relation to another country currency. This variable has an impact on the import export driven FDI. The variable will be measured by one country currency against its dollar exchange amount. If a country exchange rate is weak, the import will become expensive and exports will be cheap, which encourages FDI. Therefore, the relation between FDI and exchange rate can be positive or negative depending on the exchange rate performance (Hlongwana, 2015).

Return on capital assets

The rate of interest earned from capital asset investment has an impact on the investment decision of multinational companies. Unfortunately, investors are always interested in high return and low risk. A positive relationship will be expected between return on credit and FDI (Hlongwana, 2015).

The effectiveness of governments:

This variable indicates the perception of the quality of services provided by the government for the public, the degree of independence of services from any political pressures and their service quality, the quality of the process of policy formation and implementation and governments' commitment to such policies. Government effectiveness has a positive influence for inward FDI inflow, whereas control for corruption shows the extent to which public power is exercised for private interest or gain. It also includes both grand and petty form of corruptions as well as holding the position of the state by private interests and elites. As the control for corruption increase, more FDI will be attracted into countries (Mellios et al., 2017).

2.4. The relationship between credit rating and FDI

Table 6 shows the four sovereign analytical pillars of Fitch's credit rating agency (i.e. Structural features, Macroeconomic performance, policies & prospects, Public finances and External finances) that are used to analyse sovereign rating through sovereign rating model (SRM). The total analytical result of SRM analysis informs the creditworthiness of the sovereign. As we can see from the table, most of the variables included in Fitch sovereign credit rating system are also determinant factors of FDI. The variables included in each pillar and the weights given to the pillars are indicated below.

Table 6: Sovereign Rating model weights of the four sovereign analytical pillars given by Fitch agency

I. Structural Features		
SRM Rationale		
SRM variables	**Impact**	**Weight (%)**
Governance indicators	Positive	18.1
GDP per capita	Positive	15.3
Share in world GDP	Positive correlation with size	12.5
Years since default	Negative	7
Broad money supply (% of GDP)	Positive	2.1
Overall weight of structural features pillar in SRM		**55**
II. Macroeconomic Performance, Policies and Prospects		
Real GDP growth volatility	Negative	4.8
Consumer price inflation	Negative	3.3
Real GDP growth	Positive	2.2
Overall weight of macroeconomic performance, policies and prospects pillar in SRM		**10.4**
III. Public Finances		
Gross general govt debt/GDP	Negative	7.3
General govt interest (% of revs)	Negative	4.6
General govt fiscal bal./GDP	Directional	3.7
FC govt debt/gross govt debt (%)	Negative	1.7
Overall weight of public finance pillar in SRM		**17.3**
IV. External Finances		
Reserve currency flexibility	Positive	7.8
Sovereign net foreign assets (% of GDP)	Positive	4.6
Commodity dependence	Negative	1.9
Foreign exchange reserves (months of CXP)	Positive	1
External interest service (% of CXR)	Negative	1.3
Current account balance + foreign direct investment	Directional	0.6
Overall weight of external finances pillar in SRM		**17.3**
Total weight of the four analytical pillars		**100**

Source: www.fitchratings.com, Stringer et al., (2017).

The attraction of FDI is determined by many factors including credit rating. Foreign investors consider this rating critically when planning to invest in different countries especially Africa countries where investments are perceived as risky (Lee and Yoo, 2016). The highest AAA rating shows very strong ability of debt issuer to repay the principal and interest, while the lower rating CCC, shows there is a strong vulnerability on the repayment of principal including the interest rate (Kausch, 2008). The downgrade of the credit rating of a country usually leads to an increase in the rate of interest for future borrowing. It also defers potential investors from investing in that country (Baranenko, 2011).

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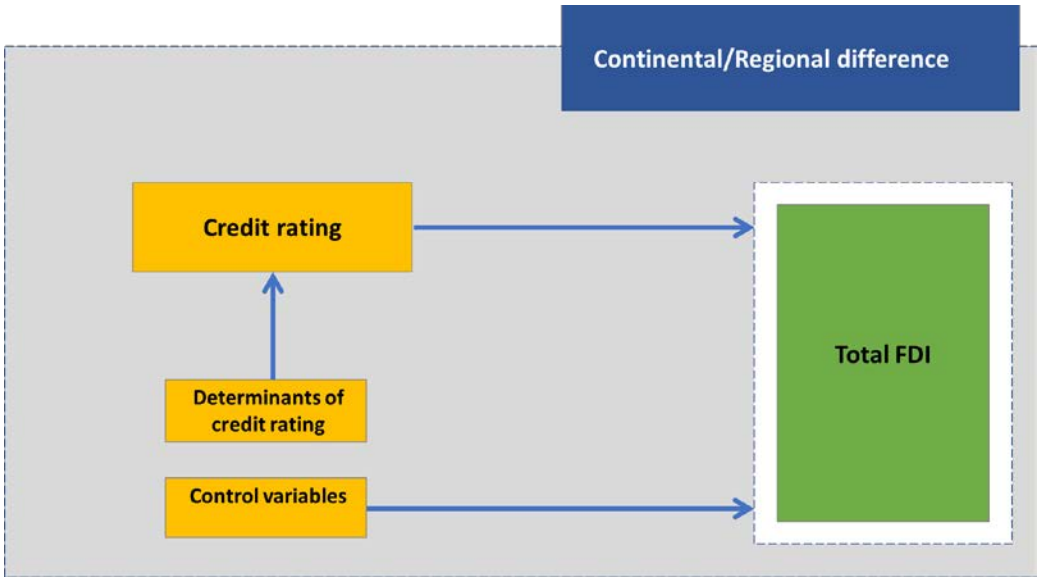
usually leads to an increase in the rate of interest for future borrowing. It also defers potential investors from investing in that country (Baranenko, 2011).

According to (Demirhan and Masca, 2008), GDP growth rate, infrastructure development (telephone main lines per 1,000 people) and trade openness have a positive sign and are statistically significant. Inflation rate and corporate tax rate are statistically significant and have a negative sign. However, labor cost has a positive coefficient sign and country risk has a negative sign but both of the variables are insignificant to attract inward investment. In the literature of Chakrabarti (2001) market size, countries growth prospects, trade openness, trade barriers, labor cost, foreign exchange rate, trade balance, inflation rate, institutional quality, taxes variables, and infrastructures have been identified as the possible determinants to attract FDI. Most of these determinants of FDI are also used by credit rating agencies (Moody's, Fitch and S&P) in their sovereign rating process. Since investors possibly make use of sovereign credit ratings in their investment decision, the sovereign ratings may have a potential to influence their investment decisions. Ozturk (2012) also investigated the relationship between FDI inflow and external private finance by taking 61 developing countries of them 30 countries have an investment grade and his result shows that having investment grade resulted in a decrease in the level of foreign direct investment flow.

2.5. Conceptual framework

Based on the literature reviewed, important concepts are identified for further analysis purpose to be able to answer the research questions. These concepts are credit rating which is the independent variable and inward foreign direct investment flow, the dependent variable. Reviewed literatures indicated that credit rating serves as a guild for investors to decide on their investment as well as provide an independent and objective assessment of the creditworthiness of corporations and countries which helps investors to decide on the risk level of investing in a certain corporation or country. Credit rating can foster the flow of foreign direct investment into a country, however, could also affect it. This is done through credit rating agencies who take into account different economic, political, governance and other indicators to measure and rate credit worthiness of a country or a firm.

The conceptual framework shows how the relationship between theories and concepts of credit rating, foreign direct investment, and economic integration relate to each other and factors which have an impact on the attraction of inward FDI.



Source: Author, 2017.

As shown in the conceptual framework, the attraction of inward FDI into a country is determined by the credit rating of a country and many other agglomeration factors of FDI. In addition, the credit rating of a country which is given by the rating agencies also affected by determinant factors of credit rating used by rating agencies in their rating process. As stated in the research question, the study tries to answer the impact of credit rating change on the total flow of inward investment into Africa continent in comparison to other continents of the globe. Moreover, the research also analyses the regional impact of the credit rating on investment attraction level in the continent of Africa. The study will control for other factors of FDI in order to get (see) the net impact of the credit rating on inward FDI. Understanding the extent of impact sovereign rating has on the attraction of FDI and identifying the most significant components of credit rating at the global and Africa level is very important for countries.

Chapter 3: Research Design and Methods

3.1. Introduction

The main emphasis of this chapter is to formulate measurable indicators for variables and create a connection between the research questions and indicators identified based on the literature reviewed. This enables collecting and analyzing appropriate data that will help to make realistic and relevant results. To attain the objective of the research, the study uses a combination of different research techniques and data collection methods. Revised Research Question, Operationalization, Research Strategy, Data Collection Methods, Data Analysis Techniques, Validity, and Reliability will be the main parts of this chapter and are explained in brief.

3.2 Revised research question(s)

This research aims to measure the significant levels of credit ratings, factors of credit ratings and other agglomeration factors which facilitate the inward FDI attraction into the global and African countries. Countries FDI attraction level is determined by the countries credit ratings, which is one factor for investors to decide on where to locate their investment. To have a better focus on this research the research question revised as follow:

This paper will address the question:

> **To what extent does credit rating change affect the flow of inward FDI into Africa?**

Sub-questions:

1) To what extent does credit rating influence the total amount of FDI inflows:
    a. Globally?
    b. Continentally?
    c. For Africa, Regionally?
2) What determines credit rating in African and non-Africa countries (other continents)

3.3 Operationalization

The research has two sub-questions. The first sub-question aims to see the effect of credit rating influence on the total amount of FDI inflows, the dependent variable is total FDI and the independent variable is credit rating. The other independent variables are controls to explain FDI attraction taken from different studies i.e. (international trade, infrastructure development, skilled labor, availability of natural resource, and population size).

Operationalization table 1

Concept	Variables	Explanation of indicators	Unit of measurement	Data source
Foreign direct investment (dependent variable)	Credit rating	Average rating score of countries rated by one of the three rating agencies (Moody's, S & P, and Fitch)	Rating score ranging from 0 to 100	Trading economics.com database
	International trade	The share of imports plus exports as % of GDP	Percentage	Euromonitor International Passport Database
	Infrastructure development	Quality of overall infrastructure	[1 = extremely underdeveloped; 7 = extensive and efficient by international standards	GCI Global Competitiveness Index
	Skilled labor	Population by educational attainment (higher education) from the total population	Percentage	Euromonitor International Passport Database
	Availability of natural resource	fuel exports as a percentage of total exports	Percentage	World Development Indicators
	Population size	Total population	In millions	Euromonitor International Passport Database

Source: Author, 2017 (Based on a literature review of chapter 2).

To answer the second sub-research question: what determines credit rating in African and non-African countries (other continents), based on an earlier study on the determinants of sovereign ratings, the following variables most commonly used by the three credit rating agencies to rate countries selected as the independent variables are used. In addition, population size and country size (size effect control) are included as control variables.

Operationalization table 2

Concept	Variables	Indicators	Explanation of indicators	Unit of measurement	Data source
	Macroeconomic	per capita income	GDP per capita	Dollars	World Development Indicators
		Real GDP growth	Average annual real GDP growth rate	Percentage	Euromonitor International Passport Database
		Inflation	Consumer price annual inflation/Average annual consumer price rate,	Percentage	Euromonitor International Passport Database

Concept	Variables	Indicators	Explanation of indicators	Unit of measurement	Data source
Credit rating (dependent variable)	Governmental	Government debt or external balance	Government debt to GDP	Percentage	Global competitiveness index database
		Fiscal balance	Average annual gov. budget surplus relative to GDP	Percentage	International Monitory Fund
		Government effectiveness	Government effectiveness captures perceptions of the quality of public services (range: 1 to 200)	index	Euromonitor International Passport Database
		Corruption performance	Corruption perception index	1-10 scale index	Euromonitor International Passport Database
	External variables	External debt	External debt relative to export	Percentage	World Development Indicators
		Foreign reserves	Foreign reserve to import	Percentage	International Monitory Fund
		Current account Balance	Current account balance relative to GDP	Percentage	Euromonitor International Passport Database
	Control variables	Population size	Total population	In millions	Euromonitor International Passport Database
		Size effect controls	Land area /surface area	Square Kilometres	World Development Indicators

Source: Author, 2017 (Based on a literature review of chapter 2).

3.4 Research strategy

Desk research strategy is selected as an appropriate strategy since the study includes broad geographical scope and required a large volume of secondary raw data which are related to inward FDI inflow, the credit rating of countries, and indicators for credit rating and other factors of FDI. As stated by Van Thiel, (20014) the strategy allows using the existing databases or data already collected by someone other than the researcher which makes the strategy the most efficient and cost-effective. Moreover, the strategy allows analyzing a large volume of secondary data within a short period of time. The strategy also ensures a high external validity, this allows to the generalization of results. To combine and analyze the collected data, (STATA) statistical package software is used.

3.5 Data collection methods

As stated above, the main aim of this research is to analyze the significance of credit rating for inward investment while controlling other factors which can facilitate FDI attraction and to determine the most significant factors of credit rating determinants at the global,

continental and regional level. Therefore, in order to do the analysis, the research has used secondary data from globally recognized reliable sources.

FDI markets database

FDI markets, a service from Financial Times, is the most comprehensive online database which covers detailed information on all worldwide investment projects and cross border investments of all countries and sectors. The database serves as a central bank of information for multinational companies, consultants, educational institutions (academic centers) by providing worldwide FDI data in an integrated and authorized and accurate way (Financial Times Ltd., 2017).

As described at the beginning of chapter three, the main objective of this research is to measure the extent of impact credit rating has on the attraction of inward investment. In this analysis, the main variable (dependent variable) is FDI. The database of FDI Markets (financial times) has been used to gather data for FDI.

Regarding the data sources of the independent variable, credit rating, data is collected from Trading economics databases and for other controlling variables of FDI, international trade, Skilled labor and total population size, data is collected from Euromonitor International Passport Database. Data on availability of natural resource is obtained from World Development Indicators and Infrastructure development data is collected from GCI (Global Competitiveness Index) database.

To analyze the determinants of credit rating, data of the independent variables have been taken from four databases (i.e. World Development Indicators, Euro Monitor International Passport, Global Competitiveness Index and International Monitory Fund databases). Data on per capita income, external debt, and country size are gained from World Development Indicators database. Data on real GDP growth, inflation, government effectiveness, corruption performance, current account balance, and population size is collected from Euro Monitor International Passport Database. Data on government debt (external balance) is obtained from GCI (Global Competitiveness Index) and data on fiscal balance and foreign reserves are gathered from IMF (International Monitory Fund) database.

3.6 Sample size and selection

African and non-African countries that have been rated by at least one of the three rating agencies are considered for the study. The selection of the countries is determined by the availability of credit rating data for the period 2007 to 2016. Hence, in total, 136 countries (Asia 35, Europe 41, Africa 26, Latin America and the Caribbean 26, North America 3 and Oceania/Australia 5) are taken as samples for this study.

3.7 Data analysis and techniques

The research has been done by including both descriptive and explanatory analysis techniques. In the descriptive analysis of the research, tables, charts, and figures are used to describe the trend of FDI inflow and credit rating.

The explanatory analysis is used to analyze and identify the extent of credit rating impact on the attraction of inward investment and factors of credit ratings which are significant to

attract FDI inflow at global (continental) and Africa (regional) level. To conduct the empirical study, panel regression models is used. The analysis aims to find out the relationship between the identified indicators, the independent variable (credit rating) and the dependent variable (inward FDI flow) and the relationship between factors of credit rating with credit rating throughout the selected time period. To conduct the analysis, panel data analysis model (fixed and random effect models) is applied and estimation equations for both types of models are formulated to find the effect of the identified independent variable on the value of the dependent variable.

Panel data with Fixed/random effect

Panel data analysis method allows doing multilevel analysis such as for groups like continental analysis (Global, Asia, Europe, Africa etc.), economic status (developing and developed) by introducing dummy variables for such categories. The choice of a fixed or random effect depends on Hausman test (Hausman et al. 1981). The FRM assumes that the true effect is the same for all the categories and common mean is calculated for all the categories. In this model because of the within-study reason the size of the effect varies across groups. Weights are assigned in accordance to within study difference. Heavy weight is given to the large group and small weight for the small group. The null hypothesis: the common effect is zero. If all the groups are functionally the same and the aim of the study is to find out common effect only for the sample selected, the fixed effect model is the best option (Borenstein et al. 2010). In REM, variation in the effect allocated to the difference in between the group and within the group. Unlike the FEM which assumes the true effect is the same for all the categories and calculates a common mean for the categories, the REM calculates mean of the distribution of effect. The weight is assigned as per within study variance and in between study is constant, in REM the size of the group is relatively less important. The null hypothesis: mean effect size is zero. If the study groups are similar but functionally not the same and aim of the study is to generalize the study results (Borenstein et al. 2010).

Fixed effect model formula

Equation 1: $Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it+} \beta_6 X_{6it} + \ldots\ldots\ldots\ldots + u_{it}$

Where: -

i stands for country = 1 . . .N and t stands for time(year)= 1 . . .T

Y is the dependent variable: stock FDI

αi: the unknown intercept for each country (i=1-------n)

$\beta 1$: the slope coefficient of the independent variable (rating)

X1it: independent variable (credit rating)

X2, x3, x4, x5, x6……. Other determinant (control) variable

$\beta 2$, $\beta 3$, $\beta 4$, $\beta 5$, $\beta 6$……. are the slope coefficients of the respective Other determinant (control) variable

uit : error term (between entity error)

I = entity (no of sections) 1……N and t = period of time 1…….T (2001-2016) (Raghothama, 2012)

Random effect model formula

Equation 2: $Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it+} \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \varepsilon_i + u_{it}$

Where: -

Where i stands for country = 1 . . .N and t stands for time(year)= 1 . . .T

Y is the dependent variable: stock FDI

αi: the unknown intercept for each country (i=1-------n)

β1: the slope coefficient of the independent variable (rating)

X1it: independent variable (credit rating)

X2, x3, x4, x5, x6……. Other determinant (control) variable

β2, β3, β4, β5, β6……. are the slope coefficients of the respective control Other determinant (control) variable

uit : error term (between entity error)

εit : Within-entity error term

i: entity 1……N and t: 1……..T (Raghothama, 2012)

The main difference between the equations of fixed and random effect models are: in the fixed effect model the intercept value for each country is fixed or the same where as in random effect model α represents the mean value of intercepts for all countries and the deviation of the mean value from each country intercept value is represented by ε_i (error term) (Oscar, 2010).

Testing Assumptions

The following assumption tests are carried out for this research

1. Skewness test: the variables skewness is tested by generating histograms. If the data skewed the log of the variables are generated.
2. Test for normality: this test shows errors or residuals distribution which is essential for assumption testing, this can be tested by Shapiro-Wilk test or K density graph.
3. Homoscedasticity test: this test indicates variance homogeneity, by using robust regression command the correction can be done.
4. Multi collinearity test: the variables collinearity tested by corr or vif command, from the collinear variables only one variable should be included in the model.
5. Linearity test: in the linear regression model, the basic assumption is that there should be a linear relationship between the dependent and independent variable. The Lowess graph can help to test their linearity, if their relationship is not linear, correction can be done by generating log or the square root of the variables.
6. Independence test: this test is necessary for vast panel data of many years, xtserial (independence test) is done to check serial autocorrelation. The correction can be done by xtregar regression; if both independence and homoscedasticity are significant, robust regression is required.
7. Model specification test: The relevance of included variables must be tested by linktest or ovtest.

8. Outliers: leverages, influential observations, and outliers generate skewed results and coefficients. Influence can be measured by cooksd method by generating d if the value of d is more than 4/n, observation should be omitted. n denotes the number of observations.
9. Hausman test: this test is done for selecting fixed or random effect (Hausman et al. 1981).
10. Test for endogeneity: this test is done to check the possibility of endogeneity in the model by using (instrumental variables, GMM modeling, panel VAR models)

3.8 Reliability and Validity

The well-known advantage derived from using desk research strategy is its usefulness to conduct internationally comparative research relatively in an efficient and cost-effective way, as the quick availability of different type and quality data for large geographical area helps to save time and cost. A collection of such kind of database is difficult for the individual researcher. Nevertheless, the reliability and validity of the existing data should be verified. Here, data reliability means the consistency and dependability of the data and data validity mean the appropriateness of the data for the intended research concept (Neuman 2004). There are various international organizations that provide public access for internationally comparative data. The reliability of the data is expected to be high since the database mentioned above selected for this research are the most known and reliable source of data for professional and other purpose in data collection. Although the databases are reliable, they may contain missing data or errors, as such the reliability of the data is ensured by cleaning and processing the data properly. The validity of the data is granted by selecting the appropriate indicators for measuring variables based on theories and literature. Although the desk research strategy does not facilitate the direct contact of the researcher with the necessary units through the help of secondary data, the availability of the required information is ensured.

Chapter 4: Research Findings

In this chapter, the results of the collected data are analyzed, described and interpreted following the structure of the research questions provided at the beginning of the study. The analysis is structured in such a way that the two main sub research questions are analyzed using both descriptive and inferential analysis. In the descriptive analysis, charts, figures, and tables are used to present and describe the data while in the inferential analysis the extent of relationships and influences among different variables are interpreted and explained using output tables from STATA.

4.1. The impact of credit rating on FDI inflow

4.1.1 Descriptive analysis

Table 5: Descriptive statistics of variables used in the analysis of credit rating impact on FDI

Variable	Observation	Mean	Std. Dev.	Min	Max
OBS_ID	1,360	680.5	392.7425	1	1360
CONTINENT_ID	1,360	2.529412	1.311865	1	6
COUNTRY_ID	1,360	68.5	39.2732	1	136
Year	1,360	2011.5	2.873338	2007	2016
FDI value	1,314	4649.811	9832.147	6	109373.6
Credit rating	833	53.92674	22.666	10	100
International trade	1,339	-7.58424	19.36848	-96.3	58.9
Infrastructure development	1,120	4.290693	1.175281	1.681174	6.772096
Skilled labor	1,260	1428.227	4224.765	0.4	42315
Natural resource availability	1,110	17.99299	26.4322	0	99.97017
Population size	1,330	4.75E+07	1.63E+08	35322	1.38E+09

Source: Own research, 2017.

As presented in table 7, the FDI data used in this analysis is comprised of the total value of inward investment for 136 countries with 1314 observations for 10 years (from 2007 to 2016). The FDI data ranges from USD 6 million up to USD 109373.6 million with an average of 4649.811 USD million and a standard deviation of USD 9832.15 million. Similarly, credit rating data ranges from 10 to 100 values out of 100 with an average rating value of 53.93 and a standard deviation of 22.66 with in the period 2007 to 2016.

Data on both FDI and credit rating are categorized based on continents i.e. Asia, Europe, Africa, Latin America and the Caribbean, North America and Oceania/Australia. Among the six continents, based on the availability of credit rating data, a total of 136 countries were selected for this study (i.e. Asia 35, Europe 41, Africa 26, Latin America and the Caribbean 26, North America 3 and Oceania/Australia 5). Due to the limited amount of observation, the results of North America and Oceania/Australia could not be generated.

After collecting, cleaning and categorizing the data, the next step followed is to check the appropriateness of fixed and random effect model of ordinary least square (OLS) model. For this, a simple histogram was drawn on Stata for the FDI value and the histogram shows the skewness of the data, i.e. the mean value is less than the mode while ideally, it should be at

the center showing that the mean is equal to the mode. To make the observations distributed normally in the histogram, the logged FDI value is created. As we can see from the figures 2 and 3 below, in the normal FDI values the histogram is skewed while in the logged FDI value histogram the observation is normally distributed.

Figure 2: Histogram of dependent variable FDI value

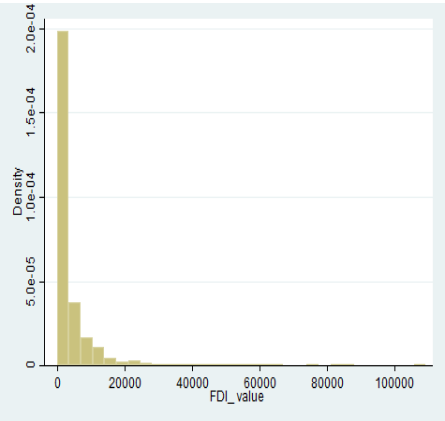
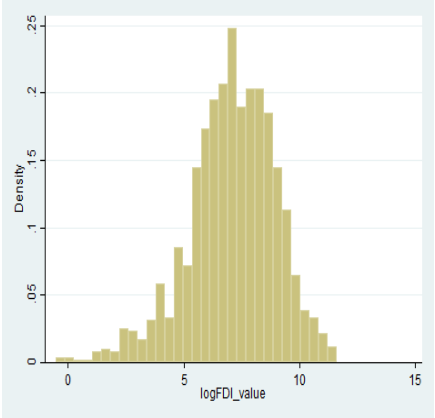


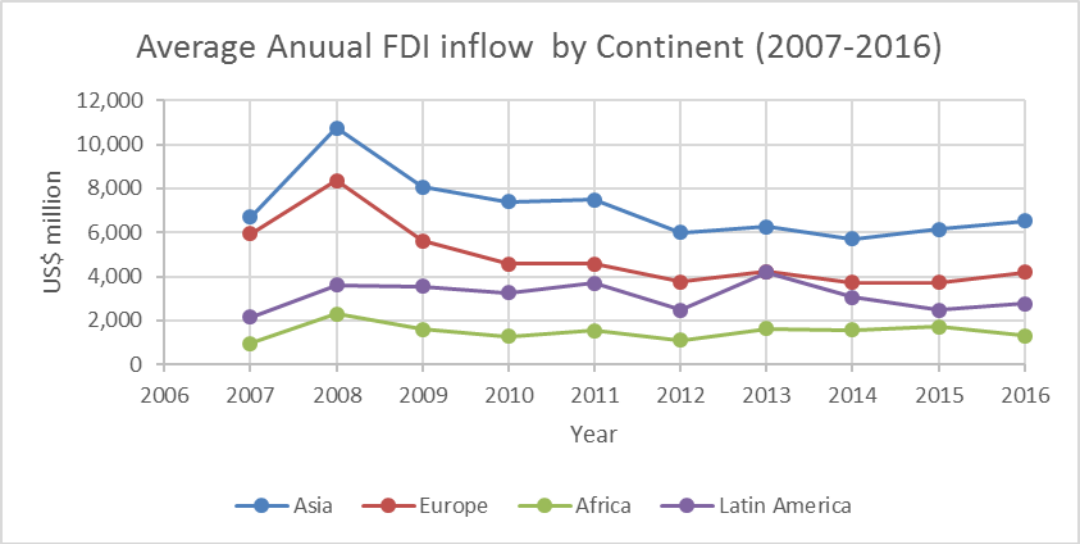
Figure 3: Histogram of dependent variable log FDI value



Source: Author, 2017 (Based on FDI markets database 2016).

Patterns and continental distribution of FDI inflow

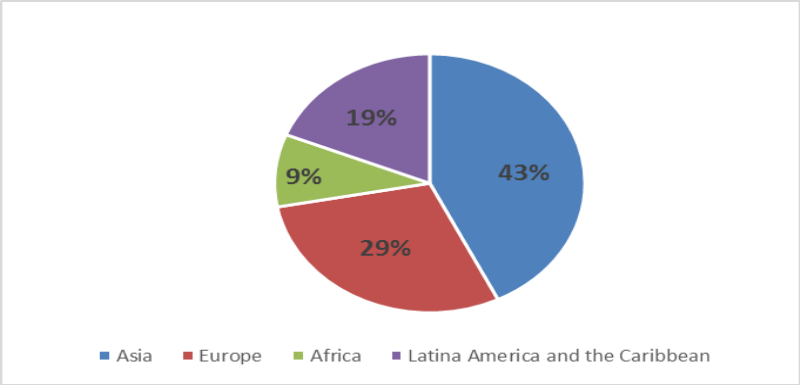
Figure 4: Patterns of FDI inflow based on continents (2007-2016)



Source: Author, 2017 (based on FDI markets database 2016).

Looking at the trend of FDI value of continents from figure 4 (2007 to 2016), Asia holds an outstanding capacity of FDI inflows in the world with a USD 71,034.65 million followed by Europe USD 48,693.67 million. Latin America and the Caribbean and Africa are holding less competitive positions with USD 31298.19 million & USD 15064.68 million respectively. Africa's FDI inflow has declined in 2016 while Latin America and the Caribbean show a little bit improvement in the inflow from 2015 downfall. Within the sample period, in 2008 the highest FDI inflow was registered for Asia, Europe, and Africa. For Latin America and the Caribbean, the highest FDI inflow was in 2013.

Figure 5: Continental distribution of FDI inflow (2007-2016



Source: Author, 2017 (Based on FDI markets database, 2016).

Chart 1 shows the share of FDI inflow of continents from 2007 to 2016. Accordingly, Asia attracted a large number of foreign investors (43%) followed by Europe (29%). Latin America & the Caribbean and Africa received the lowest FDI which has (19%) and (9%) respectively relative to Asia and Europe.

Table 6: Description of explanatory variables used to analyse the impact of credit ratings on inward foreign direct investment

Variable name	Measurement
Credit rating	Measures year by year credit rating score ranging from 0 to 100 without logging the variable
Log Infrastructure development	Measures countries overall infrastructure development ranging between 1-7 (1 = extremely underdeveloped; 7 = extensive and efficient by international standards) in log
International trade (trade openness)	Measures countries share of import plus export as % of GDP without logging the variable
Log Skilled labor	Measures year by year populations secondary & tertiary-level education attainment from the total population (in log)
Log Natural Resource Availability	Measures fuel export as a percentage of total exports (in log)
Log Population Size	Measures the total population of countries in millions (in log)

Source: Own research, 2017.

4.1.2 Inferential analysis

In this analysis, the main aim is to see the impact to which credit rating has on the total inward investment at the global level.

In analyzing the extent of credit rating impact on FDI, pooled OLS, fixed and random effect regression analysis was carried out in STATA. To select the best-fitted model from the fixed and random effect model, the Hausman test was conducted. If the P-value of the test is insignificant, it means the difference in the coefficient is unsystematic so we accept the null hypothesis. Based on the Hausman specification test, the random effect model was the best-fitted model for this analysis.

From the regression result table, we can see that credit rating has a significant positive influence on the global inward investment. One percent improvement in the credit rating of countries increases the flow of inward investment by 73.65 % with the expected sign of the coefficient.

Table 7: Random effect estimates of FDI at the global level

VARIABLES	Global level Log FDI value
Credit rating	0.00584**
	(0.00)
Log Infrastructure development	1.223***
	(0.22)
International trade	0.00533
	(0.01)
Log Skilled labor	0.414***
	(0.15)
Log Natural Resource Availability	0.0482*
	(0.03)
Log Population size	0.336**
	(0.15)
Constant	-2.652
	(1.74)
Observations	557
R-squared	0.7365
Number of Country	105

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author, 2017 (Based on FDI markets database, 2016).

From the control variables used for this analysis, an improvement of overall infrastructure development, availability of more skilled labors, natural resource endowment and population size of a country creates a conducive environment for attracting high value of the inward investment at the global level. Even though it is not significant, international trade has a positive value with the expected sign of coefficient implying that international investors prefer to make their investment in a place where a higher share of import plus export relative to the country GDP. The finding of this analysis is in line with researches that have been done by Janicki and Wunnava, 2004; Kocia, 2009; Onyeiwu and Shrestha, 2004 and Mijiyawa, 2010.

Development of the overall infrastructure of a country is an important factor for promoting inward FDI flows. The availability of quality infrastructure can be measured by considering utilities like water, electricity, telecommunication, and transportation system. It also increases the productivity level of investments, therefore, it stimulates the inflow of FDI. In addition, the presence of skilled labor force is usually considered as a pull factor of investment for foreign multinational companies. This is because the highly educated workforce has a better understanding of complicated issues and are able to think creatively, contribute new ideas that are essential for doing research, marketing sales, and design sectors. They also contribute new innovations useful for ICT sectors.

According to Asiedu (2015), countries that are endowed with abundant resource will attract more foreign direct investment. Anyanwu and John, (2011), also indicated that natural resource availability and oil exploitation attracts huge foreign direct investment into Africa. From this, we can understand that resource rich country has the tendency to attract more resource seeking investments.

The influence of credit rating on the total amount of FDI inflows: Continental analysis

In this part of the analysis, we try to find out how the impact of credit rating varies across different continents on the value of inward investment attraction. The six continents used here are Asia, Europe, Africa, Latin America & the Caribbean, North America and Australia/Oceania. However, at the final stage of Stata analysis (after the Hausman test), due to insufficient observation for North America and Australia/Oceania, the analysis result is only extracted for four continents i.e. Asia, Europe, Africa and Latin America & the Caribbean.

Table 8: Random effect estimates of FDI, estimated separately for each continent

	Asia	Europe	Africa	Latina America & the Caribbean
VARIABLES	Log FDI value	Log FDI value	Log FDI value	Log FDI value
Credit rating	0.00657**	0.00489*	0.00564	-0.00340
	(0.00)	(0.00)	(0.01)	(0.01)
Log Infrastructure development	1.466***	1.298***	0.307	0.751
	(0.39)	(0.47)	(0.59)	(0.53)
International trade	0.00468	-0.0146	-0.00379	0.0224*
	(0.00)	(0.01)	(0.01)	(0.01)
Log Skilled labor	0.0553	-0.112	0.345	0.368
	(0.19)	(0.45)	(0.42)	(0.33)
Log Natural Resource Availability	0.0523	0.0390	0.100*	-0.123*
	(0.03)	(0.06)	(0.06)	(0.07)
Log Population size	0.485**	1.010**	0.556	0.422
	(0.19)	(0.50)	(0.47)	(0.42)
Constant	-3.262	-10.30*	-5.159	-2.442
	(2.29)	(5.92)	(6.77)	(5.11)
Observations	156	185	79	126
R-squared	0.7939	0.7046	0.5425	0.7339
Number of Country	28	33	19	20

Robust standard errors in parentheses

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

Source: Author, 2017 (Based on FDI markets database, 2016).

The continental analysis result indicated in table 10 shows that, in Asia and Europe, credit rating has significant positive impact on inward investment and the improvement of credit rating promotes FDI inflow to the two continents. In Asia, every 1% improvement of credit rating increases the value of the inward foreign direct investment by 0.66%. In Europe, it has 0.49% positive impact on FDI flows to the continent. Controlling other factors of inward investment, the development of countries infrastructure and the population size of countries have a significant positive effect on the value of inward investment into the continents.

In the case of Africa, credit rating has a positive sign of coefficient but it does not have a significant impact on FDI flows to the continent. However, natural resource availability is the significant factor for inward investment into the continent. For every 1 % increase in the availability of natural resource, the amount of inward investment value increases by 10 %. This implies that much of the FDI inflows to Africa countries are not following the credit ratings of the countries rather the investments are following the availability of abundant natural resources of the continent.

As stated by Anyanwu (2012), many African countries are reach in oil, mineral and natural gas and therefore receive much foreign direct investment in natural resource based sectors. Indeed, many theoretical and empirical literature has shown that the main motivation of multinational companies (MNCs) driving to Africa is that to get a secure access to those natural resources. A study conducted by Hailu (2010), on the demand side factors affecting inflow of foreign direct investment to African countries, concludes that natural resource availability is the most significant factor for African countries inward investments. Besides, resource seeking investors engaged in making a large investment in Africa due to the large natural resource availability of the continent. The oil and gas sector also plays a significant role in increasing foreign direct investment inflow into Africa (Hlongwana, 2015). Anyanwu and John, (2011), also indicated that natural resource availability and oil exploitation attracts huge foreign direct investment into Africa supported by Asiedu (2002), that FDI flow to Sub-Saharan Africa tends to be natural resource based mainly on extractive industries.

In the case of Latin America & the Caribbean, credit rating has no significant influence on the flow of inward FDI with a negative coefficient sign. From the control variables, international trade and availability of natural resource are the significant variables to attract inward investment but the coefficient sign of availability of natural resource is negative which is not as expected. The negative sign of the coefficient might be explained by Rogmans & Ebbers's (2013), argument that countries endowed with high level of natural resources are most likely to have a protectionist policy thereby limiting potential resource seeking foreign direct investments which is consistent with the study done by Poelhekke and Ploeg (2010), that the net effect of natural resource endowment on total inward FDI quickly become negative for countries that are geographically close to many other large markets.

The appropriateness of the independent variables to explain the dependent variable is explained by 54.25%. From this, it can be concluded that most of the investments attracted to Africa are by following the resource of the continent.

The influence of credit rating on the total amount of FDI inflows into Africa: Regional analysis

Table 9: Random effect estimates of FDI, estimated separately for regions of Africa

VARIABLES	East Africa Log FDI value	West Africa Log FDI value	Northern Africa Log FDI value	Southern Africa Log FDI value
Credit rating	-0.0311***	0.0235***	-0.00525	0.00656
	(0.01)	(0.01)	(0.02)	(0.03)
Log Infrastructure dev't	-1.097	3.075*	-2.083	-0.234
	(0.76)	(1.62)	(1.53)	(5.59)
International trade	-0.0563***	-0.0610***	-0.0282	0.0607***
	(0.01)	(0.01)	(0.09)	(0.02)
Log skilled labor	-0.501	1.773***	-1.224	0.164
	(0.69)	(0.49)	(0.76)	(1.86)
Log Natural Resource Availability	0.0201	0.272***	0.154**	1.788
	(0.04)	(0.07)	(0.06)	(1.34)
Log Population size	0.505	-0.329	1.631*	-1.287
	(0.42)	(0.69)	(0.94)	(3.16)
Constant	2.252	-3.115	-9.638	26.14
	(3.79)	(10.96)	(13.24)	(50.52)
Observations	25	18	19	16
R-squared	0.9881	0.9884	0.9958	0.9992
Number of Country	6	5	3	4

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Source: Author, 2017 (Based on FDI markets database, 2016).

The above regional analysis, table 11 shows that in the case of East and West Africa, credit rating has 3.11% & 2.35% influence on the flow of inward investment value respectively. In the case of East Africa, the coefficient sign of credit rating is negative which shows that when credit rating increases by 1% the inflow of inward FDI decrease by 3.11%. One explanation for this finding is that, even if the credit rating of the regions is low, in most cases investors are prepared to take a risk when investing in less developed countries because they can chase a high rate of return from such kind of investment while in the case of developed countries, the potential for large rate of return is rare hence investors focus more on the quality of investment environment. The negative relationship between credit rating and the value of inward investment suggests that high average credit rating of one region will reduce FDI flows to the other regions. Competition for foreign direct investment fund happens not only at country level but also at regional level.

In the case of Northern and Southern Africa, the impact of credit rating is insignificant. From the control variables, the result of international trade is significant for East, West and Southern Africa but the coefficient sign of East and West Africa is negatively related to inward investment. The reason for this can be the low trade openness of the two regions. As stated by Ramasamy and Yeung, (2010) the larger the degree of trade openness of a country,

the lower restrictions imposed by the host country on international trade. As the regions openness to trade decrease, there is a restriction on international trade in the regions. This affects FDI inflow to the regions negatively. For instance, a study done by Erdal and Mahamut (2008) indicates that multinational company engaged in export oriented investments prefer to make their investment in a place where the economy is more open since the restriction on international trade creates higher transaction cost associated with exporting. Natural resource availability is a positive significant factor for the west and Northern Africa. Whereas infrastructure development and availability of skilled labor have significant influence for investment flow into West Africa.

4.2 The determinants of credit rating for Africa and non-Africa countries

4.2.1 Descriptive analysis

The sovereign credit rating data is collected from www.trading economics.com database including ratings given by the three well-known credit rating agencies i.e. Moody's, Standard and Poors and Fitch. From each credit rating agencies, credit rating data starting from 2007 to 2016 were collected and categorized on yearly basis for each country. The sovereign credit ratings given by the agencies range from the highest AAA to the lowest D. Numerical values are assigned to the grades on a linear scale from 100 for AAA to 0 for D (see from chapter two into numerical conversion table 3). The grade is divided into two sections i.e. investment and speculative grade. Aaa is the highest grade a country can get and D is the lowest grade. Investment grade ranges from Aaa to Baa3 (from 100 to 55 value), whereas ratings between Ba1 to D (from 50 to 0) are included in the speculative grade. The rating scores are given for each country on the basis of average rating score of the aggregate ratings from the three rating agencies.

Table 11 below shows the statistical summary of major variables included for this analysis. The credit rating data ranges from 10 to 100 values out of 100 with an average rating value of 53.89 and a standard deviation of 22.66 within the period of 2007 to 2016.

Credit rating data is gathered for 136 countries (Asia 35, Europe 41, Africa 26, Latin America and the Caribbean 26, North America 3 and Australia/ Oceania 5) and the countries are categorized into six continents. The selection of countries and the time period of the panel size are made based on the availability of data for credit rating and its explanatory variables. The analysis was done for the above mentioned six continents however at the end of the analysis, the result of North America, Oceania/Australia and Regional analysis for Africa could not be generated because of the limited amount of observation the continents/the regions have to run the Stata command.

Table 10: Descriptive statistics of variables used to analyse credit rating and its determinants

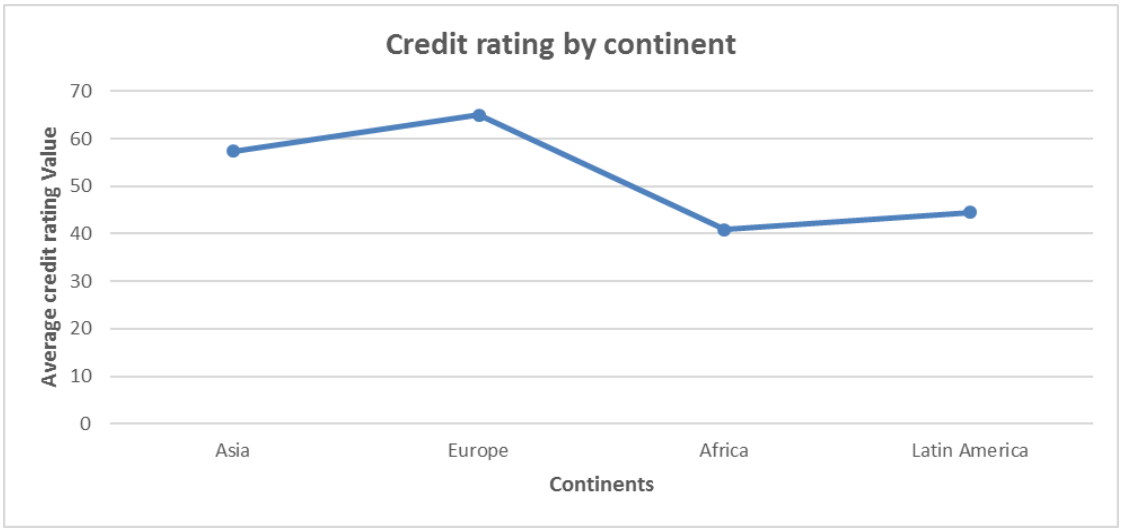
Variable	Observation	Mean	Std. Dev.	Min	Max
OBSID	1,359	748.8948	432.1555	2	1496
CONTINENT_ID	1,359	2.530537	1.311691	1	6
COUNTRY_ID	1,359	68.4908	39.28619	1	136
Year	1,360	2011.499	2.874618	2007	2016
Credit rating	833	53.89602	22.66973	10	100
Per capita income	1,320	18104.49	23888.69	243.3027	179478.6
Real GDP growth	1,348	3.347255	4.200877	-21.5	26.3

Inflation rate	1,360	5.361103	14.50286	-10.1	475.8
External balance/gov't debt	1,253	-3.0124	14.65252	-64.7863	48.45225
Fiscal balance	1,145	22.15217	10.39719	-13.091	67.5
External Debt	664	120.5984	66.26845	6.426482	416.8878
Foreign reserve	1,157	807.9336	2568.665	1.34E-06	34161.14
Current account balance	1,310	-2.04512	10.14507	-54.3	45.5
control for corruption	1,281	4.620687	2.011098	1.3	9.5
Government effectiveness	1,215	85.85679	51.92818	1	200
Population size	1,330	4.75E+07	1.63E+08	35322	1.38E+09
Country size	1,340	836940.2	2260986	29.2	1.71E+07

Source: Own research, 2017.

From table 12, we can see that for the dependent variable (credit rating) data used includes 136 countries by having 1359 observations for 10 years (from 2007 to 2016). The variable ranges from 10 to 100 values with the mean value of 53.89 and a standard deviation of 22.66.

Figure 5: Average credit rating of continents



Source: Author, 2017 (Based on Trading economics.com database, 2016).

As can be seen from figure 5, Europe holds the highest average rating which is 65 out of 100 within the time span of 2007 to 2016 followed by Asia with 57 points. Latin America and the Caribbean stands in the third place (44) while Africa has the least rating score (41) compared to the three continents. The overall average rating score of Africa and Latin America & the Caribbean throughout the analysis time period (from 2007 to 2016) is below the investment grade. i.e. their average rating is less than 55 (speculative grade).

Table 11: Description of variables

Variables name	Measurement
Credit rating	Measures year by year credit rating score ranging (from zero to 100)
Per capita income	Measures GDP per capita in us dollar
Log GDP growth	Measures average annual real GDP growth (in log)
Inflation rate	Measures consumer price annual inflation rate (normal)
External balance/Government debt	Measures government debt relative to GDP (normal)
Fiscal balance	Measures average annual government budget surplus relative to GDP (normal)
External Debt	Measure external debt relative to total export (normal)
Log Foreign reserve	Measures total foreign reserve relative to import (in log)
Log Current account balance	Measures total current account balance relative to GDP (in log)
Control for corruption	Measures countries level of control for corruption ranging between 1-7 (1 = extremely corrupted; 7 = best control for corruption) (normal)
Government ineffectiveness	Measures the effectiveness level of governments ranging between 1-7 (1 = extremely ineffective; 7 = most effective) (normal)
Log Population size	Measures the total population of countries in millions (in log)
Log Country size	Measures the total surface area of countries in square km (in log)

Source: Own research, 2017.

4.2.2 Inferential Analysis

Determinants of credit rating: Global analysis

In determining the factors that affect credit rating, pooled OLS, fixed and random effect regression analysis is carried out in STATA. The fit variables selected for this study were: per capita income, Real GDP growth, inflation rate, external balance (government debt), fiscal balance, external debt, foreign reserve, current account balance control for corruption and level of government effectiveness, population size and country size included as control variables.

In STATA, to choose the best-fitted model from the fixed effect and random effect models and to determine the most significant factors of credit rating, a Hausman test was conducted and the test asserted that the best-fitted model for this analysis is the random effect model.

Table 12: Random effects estimates of the determinants of credit rating at the global level

VARIABLES	Global Credit rating
Per capita income	0.00151***
	(0.00)
Log GDP growth	2.646***
	(0.97)
Inflation rate	-0.159
	(0.12)
External balance	0.114
	(0.15)
Fiscal balance	0.00738
	(0.11)
External Debt	-0.0786**
	(0.03)
Log Foreign reserve	0.721
	(0.50)
Log Current account balance	-0.242
	(0.56)
Control for corruption	6.670***
	(1.70)
Government effectiveness inverse	252.7
	(310.32)
Log Population size	2.509*
	(1.39)
Log Country size	0.597
	(1.62)
Constant	-33.78
	(26.69)
Observations	76
R-squared	0.7607
Number of Country ID	21

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author, 2017 (Based on Trading economics.com database, 2016).

The result of the random regression model (table 14) shows that at the global level, there is a positive significant relationship between credit rating and per capita income, real GDP growth, control for corruption and population size. However, external debt has a significant negative effect on credit rating. The adjusted R2 of the analysis claims that the above explanatory variables describe the dependent variable (credit rating) by 76.07 percent. This shows that there are other variables which can explain credit rating by 25.4 percent other than the above-mentioned variables.

According to Cantor and Packer (1996), per capita income measures the tax potential of the borrowing country. The greater tax potential base shows there is a higher ability of the government to repay its loan. The increase in per capita income has a positive impact on credit rating. Concerning to GDP growth rate, countries with a comparatively high level of economic growth rate indicate that they have a higher probability of paying existing debt

burden. As stated in various literatures, a country with a high GDP growth rate indicates the country's ability to service its debt burden. The variable has a positive influence on credit rating.

With regards to external debt, the more external debt burdens a country has, the higher the probability of default. When the countries debt currency highly rises relative to their earnings from foreign currency (export), the weight of this burden even increases at a higher rate. As the finding Afonso, et al. (2011) indicates, sovereign rating and a country's overall external indebtedness have a negative relationship. This is because a higher debt level means a sign of additional burdens on the government and it may place pressure on the ability of governments to meet its debt.

As stated by Mellios and Paget-Blanc (2006) sovereign credit ratings have a negative relationship with default probability which measures the risk of investing in the country. As the default probability of a country increase, investors do not want to invest there because of the available credit risk. Corruption perception shows the extent to which public power is exercised for private interest or gain. It also includes both grand and petty form of corruptions as well as holding the position of the state by private interests and elites. As the control for those mentioned corrupted systems increase, more FDI will be attracted into countries.

Determinants of credit rating: Continental analysis

Table 13: Random effect estimates of credit rating, estimated separately for each continent

VARIABLES	Asia Credit rating	Europe Credit rating	Africa Credit rating	Latina America & the Caribbean Credit rating
Per capita income	0.00140***	0.00415***	0.00278***	0.000191
	(0.00)	(0.00)	(0.00)	(0.00)
Log GDP growth	1.396*	3.690**	0.615	1.723
	(0.78)	(1.76)	(0.66)	(1.38)
Inflation rate	-0.0945	-0.0612	0.0351	-0.0508
	(0.06)	(0.21)	(0.11)	(0.24)
External balance/government debt	0.0362	0.115	-0.144***	0.404
	(0.13)	(0.25)	(0.05)	(0.34)
Fiscal balance	0.151**	0.396**	0.101**	-0.310*
	(0.06)	(0.16)	(0.05)	(0.19)
External Debt	-0.0330***	-0.0400	-0.0203***	0.0156
	(0.01)	(0.04)	(0.01)	(0.03)
Log Foreign reserve	0.151	-0.268	-0.209**	0.846**
	(0.31)	(0.25)	(0.09)	(0.40)
Current account balance	-0.191	-0.122	0.179***	-1.166**
	(0.15)	(0.15)	(0.06)	(0.51)
Control for corruption	3.777**	2.167	0.503	2.569
	(1.84)	(4.78)	(0.71)	(2.16)
Government effectiveness inverse	533.4*	945.3	1,419***	1,557**
	(304.11)	(1,369.50)	(273.21)	(749.76)
Log Population size	1.652	9.033	-1.775	1.829

	(1.27)	(6.39)	(1.27)	(2.69)
Log Country size	3.022**	-7.307	3.425***	2.126
	(1.33)	(5.88)	(0.73)	(1.99)
Constant	-47.97**	-58.61	3.325	-40.51
	(20.73)	(70.53)	(18.00)	(26.02)
Observations	101	30	67	76
R-squared	0.7154	0.9872	0.9042	0.7791
Number of Country ID	17	8	15	13

Robust standard errors in parentheses

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

Source: Author, 2017 (Based on Trading economics.com database, 2016).

As we can see from table 15, after Hausman test, the continental random effect analysis result of Asia shows that per capita income, real GDP growth, fiscal balance, control for corruption and government effectiveness level has a positive effect on credit rating, whereas external debt has a negative effect on credit rating. The adjusted R^2 for this analysis shows that the selected variables explain the dependent variable (credit rating) by 71.54 percent.

In the case of Europe, per capita income, GDP growth, and fiscal balance came out as a significant factor of credit rating. The three significant variables have a positive impact on credit rating. The adjusted R^2 for this analysis shows that the variables explain the dependent variable (credit rating) by 98.72 percent.

In the case of Africa, per capita income, external balance/government debt, fiscal balance, external debt, foreign reserve and government effectiveness are the significant factors of credit rating. Per capita income, fiscal balance, current account balance and government effectiveness has a positive relationship with credit rating. On the other hand, external balance/ government debt and external debt has a negative impact on credit rating. The coefficient sign of foreign reserve was expected to be positive but it shows a negative coefficient sign. The explanation for this is that foreign debt of a country should be covered by international reserves. When the foreign reserve of a country continuously declines, eventually it will have a negative value and the country will not be able to cover its external debt through its foreign reserve. The increasing negative amount of foreign reserves result in a negative influence on the country's credit rating. The foreign reserve data used for this analysis asserted that most of the African countries foreign reserve data value has a continuously increasing negative value which indicates that through time the increment of their external balance (foreign debt) is much higher than the reserve amount. The GDP growth rate of Africa, although the coefficient sign is positive, it is not significant. As stated by Cantor and Packer, (1996) even though some countries of Africa experience a higher GDP growth rate, the rate might not be at the level which can cover the debt burden of the country.

Finally, in the case of Latin America & the Caribbean, the only significant variables are a fiscal balance, foreign reserve, current account balance, and government effectiveness. Foreign reserve and government effectiveness have a positive impact on credit rating and fiscal balance and current account balance have a negative impact on credit rating. Theoretically, they are expected to have a positive effect. The reason for the negative impact of the current account balance is that the budget deficit is a major problem for many developing countries. Besides, some studies argue that in the event that government expenditure is wasteful, the increase in government expenditure decreases the amount of their current account balance and eventually becomes negative and creates budget deficit, in this

case, the negative current account balance has a negative effect on the flow of foreign direct investment (Hlongwana, 2015). Moreover, as stated by Afonso et al., (2011) countries with a higher current account balance deficit counted as higher credit rating since this deficit could indicate growth potentials (opportunities) of the countries and investors are willing to cover the deficit by means of investment or loans. The adjusted R2 for this analysis shows that the independent variables used in this model explain credit rating by 77.91 percent. This shows that there are also other factors besides the above mentioned significant ones which can explain the model by 22.09 percent.

Test for endogeneity

Endogeneity in the model for FDI was checked by doing an instrumental variable estimation. Luckily, in this model, there are a number of variables that affect credit rating but FDI and thus can be used for instrumenting credit rating. The following variables were taken as instruments for credit rating: inflation rate, external balance, fiscal balance, external debt, log foreign reserve, current account balance, and control for corruption. Since these variables are indicators of macroeconomic performance and public finance, they are less likely to have a direct effect on FDI apart from their indirect effect through credit rating. The instrumental variable model was done by using OLS, random effects and fixed effects.

The result of the instrumental variable model indicated that credit rating significantly influences the attraction of inward investment. This asserts that the model does not violate the endogeneity test. (For further information, see annex 5).

4.3 Summary of findings

This study analyzed the impact of the credit rating on FDI inflows and analysis at global, continental and regional levels were conducted for 136 countries of the world over ten years period (2006-2016). At the global level, the analysis result shows that credit rating has significant positive influence on global inward investment. 1% improvement in the credit rating of countries increases the flow of inward investment by 0.58%. From the control variables, an improvement of overall infrastructure development, availability of more skilled labors, natural resource endowment, and increment of population size creates a conducive environment for attracting high value of the inward investment. Even though it is not significant, International trade has a positive value implying that international investors prefer to make their investment in a place where a higher share of import plus export relative to the country GDP.

From the continental analysis, in Asia and Europe, credit rating has significant positive impact for inward investment. Every 1% improvement of credit rating will increase the value of the inward foreign direct investment by 0.66% in Asia and 0.49% in Europe. Controlling other factors of inward investment, the development of countries infrastructure and population size of countries have a significant positive effect on the value of inward investment into the continents.

In the case of Africa, credit rating has no significant impact on FDI flows, however, natural resource availability came out as significant. Indeed, many theoretical and empirical literature has shown that the main motivation of multinational companies (MNCs) driving to Africa is that to get a secure access to those natural resources. This implies much of the FDI inflows to Africa countries are not following the credit ratings of the countries but rather the investments are following the availability of abundant natural resources of the continent. The significance result of natural resource availability for attracting FDI into Africa is in line with the finding of Anyanwu and John 2011, Anyanwu 2012, Hailu 2010, Hlongwana, 2015 and Asiedu 2002. Indeed, many theoretical and empirical literature has shown that the main motivation of multinational companies (MNCs) driving to Africa is that to get a secure access to those natural resources.

In the case of Latin America & the Caribbean, there is no significant relationship between credit rating and FDI inflow and the coefficient has a negative sign. From the control variables, international trade and availability of natural resource are the significant variables to attract inward investment but the coefficient of availability of natural resource is negative which is not as expected. The reasons for a negative sign of the coefficient could be countries endowed with a high level of natural resources are most likely to have a protectionist policy thereby limiting potential resource seeking foreign direct investments. As confirmed by Poelhekke and Ploeg (2010), the net effect of natural resource endowment on total inward FDI can quickly become negative for countries that are geographically close to many other large markets.

Regional level analysis done for Africa shows that credit rating has 3.11% & 2.35% influence on the flow of inward investment value for East Africa and West Africa respectively. But in the case of East Africa region, the coefficient sign of credit rating is negative which shows that when credit rating increases by 1% the inflow of inward FDI decrease by 3.11%. One explanation for this finding is that even if the credit rating of the regions are low, in most cases investors are prepared to take a risk when investing in less developed countries because they can chase a high rate of return from such kind of investment. While in developed

country case, the potential for large rate of return is rare so investors focus more on the quality of investment environment. These show us whether the credit rating of countries in the region increasing or decreasing, the inward investment level is not significantly affected by the rating of the region. Therefore, investments made in the region are not following the credit rating of countries within the region. The other reason for the negative relationship between credit rating and the value of the inward investment is that even if the credit rating of the region is increasing, the higher increasing rate of the credit rating of other regions will have a negative impact on investments flow into the region (FDI crowding effect). Competition for foreign direct investment fund happens not only at country level but also at regional level.

In the case of Northern Africa and Southern Africa, the impact of credit rating is insignificant. From the control variables, the result of international trade is significant for East, West and Southern Africa but the coefficient sign of East and West Africa is negatively related to inward investment. The reason for this can be the more the countries depend on imports and less on the amount of exports, the value international trade becomes negative since international trade is measured as the sum of import plus export as a share of GDP. This, in turn, affects the flow of inward investment negatively. Natural resource availability is a positively significant factor for West and North Africa whereas infrastructure development and availability of skilled labor has positive significant influence for investments flow into West Africa.

In analyzing the determinant factors of credit rating, the result of the random regression model shows that at the global level, there is a positive significant relationship between credit rating and per capita income, real GDP growth, control for corruption and population size. However, external debt has a significant negative effect on credit rating. From the continental analysis, for Asia, per capita income, real GDP growth, fiscal balance, control for corruption and government effectiveness level have a positive significant effect on credit rating. Whereas external debt has a negative effect on credit rating. In the case of Europe, per capita income, GDP growth, and fiscal balance come out as a positive significant factor for credit rating. In the case of Africa, per capita income, external balance/Govt debt, fiscal balance, external debt, foreign reserve and government effectiveness are the significant factors of credit rating. On the other hand, external balance/government debt and external debt have a negative impact on credit rating. The coefficient sign of foreign reserve was negative implying that foreign debt of a country should be covered by international reserves. When the foreign reserve of a country becomes continuously declining, eventually it will have a negative value and the country could not cover its external debt through its foreign reserve. The increasing negative amount of foreign reserve results to have a negative influence on the country credit rating. The foreign reserve data used for this analysis also asserts that most of Africa countries foreign reserve data value have a continuous increasing negative value which indicates that through time the increment of their external balance (foreign debt) is much higher than the reserve amount.

Finally, in the case of Latin America & the Caribbean, foreign reserve and government effectiveness were found to have a positive significant impact on credit rating where as fiscal balance and current account balance have a negative impact. The reason for the negative impact of the current account balance is that budget deficit is a major problem for many developing countries. Besides, some studies argue that, in the event that government expenditure is wasteful, the increase in government expenditure decreases the amount of their current account balance and even becomes negative and creates a budget deficit, in this case,

the negative current account balance has a negative effect on the flow of foreign direct investment. Moreover, as stated by Afonso, Gomes, et al., (2011) countries with a higher current account balance deficit counted as higher credit rating since this deficit could indicate growth potentials (opportunities) of the countries and investors are willing to cover the deficit by means of investment or loans.

Chapter 5: Conclusions and recommendations

5.1 Conclusions

This study has empirically examined the impact of credit rating on the inflow of FDI at a global, continental and regional (for Africa) level using panel data analysis. The study used 10 years data from 2007-2016 by taking 136 countries ((Asia 35, Europe 41, Africa 26, Latin America and the Caribbean 26, North America 3 and Australia/ Oceania 5) as samples.

The first part of the thesis examined the impact of credit rating on the attraction of FDI at different levels. At the global level, credit rating was found to be significant in attract inward investments. However, the relationship between credit rating and inward foreign direct investment varied across different continents and regions of Africa. In Asia and Europe, the results show that credit rating has a positive and significant effect on FDI inflows. This is in line with research done by Janicki and Wunnava's (2004) work, which found that risk rating is a key determinant of FDI flow into central and east European countries (CEEC). Moreover, the study done by Kocia (2009) indicated that level of country risk is the most commonly mentioned determinant factor explaining FDI in Poland. Therefore, improving the credit rating of countries within these continents is important very to enhance FDI inflows. On the other hand, results show that credit rating is not significant for Africa and Latin America & the Caribbean continents. As explained by various studies, most of the investments inflows to Africa is by seeking the resource of the continent. For instance, Onyeiwu and Shrestha, (2004) and Hailu, (2010) showed that natural resource availability is the most significant determinants of FDI inflows to Africa. Besides, the finding of Asiedu, 2015 and Anyanwu, 2012 concluded that countries endowed with abundant natural resource will attract more FDI. As many of African countries are rich in natural resources like oil, natural gas, and minerals, much of the investments attracted into the continent tends to natural resource oriented sectors. Moreover, many theoretical and empirical literature also explained that the main motive of MNCs to invest in Africa is for the sake of securing access to those natural resources regardless of their credit rates. For Latin America & the Caribbean, although credit rating is not significant, it has an unexpected negative coefficient sign. The explanation for this is that, sometimes, even if the average credit rating of continents is increasing, having a better credit rating in another continent might reduce the foreign direct investments already attracted into the continents (FDI crowd effect). This indicates competition for FDI happens not only at country level but also at the continental level. Moreover, as stated by Cai et al., (2016), in most cases, investors prepare to take a risk when they decide to invest in developing countries because they can chase a higher rate of return on their investment while the potential to get a large rate of return is rare in developed countries. In this case, whether the credit rating of the continent is increasing or decreasing, it does not have any effect on attracting investments.

Although, credit rating was found to be not significant for Africa in general, regional analysis revealed different results for different regions. It was found out that credit rating has a significant influence in West and East Africa but not North and Southern Africa. In Western Africa, credit rating has a positive impact on FDI inflows, whereas the relationship is negative in East Africa, indicating that an increase in rating negatively affects the amount of FDI inflow in this part of Africa. This could be better credit rating in other regions reduces investments into this region as investors have a tendency to go to regions which have better credit ratings. In conclusion, it is important for regions to compete for each other not only to improve other factors of FDI but also on improving their ratings relative to other regions.

The second analysis aimed at identifying the most important determinants of credit rating. In general, per capita income, real GDP growth, fiscal balance, control of corruption, government effectiveness, and current account balance have a positive significance for ratings while external debt has a negative significant influence. External balance/government debt and external debt have a negative impact particularly for Africa. These results are in line with previous researches done by Afonso, et al., 2011; Drakes et al., 2010, and Botha 2014. However, fiscal balance has a negative effect for African and Latin America & the Caribbean countries which is contrary to the finding of Afonso, et al., (2011). Moreover, the result of external balance has a negative significant sign for Africa which opposes the finding of Cantor and Packer (1996). In Cantor and Packer (1996) finding, the variable was insignificant for rating. The reason for the difference in their finding might be in Cantor and Packer (1996) case, the main focus of their research was by using Moody's and Standard and Poor's ratings to identify the determinate factors of credit rating for developing countries but for this research, the central focus was Africa.

5.2 Recommendations

The main objective of this research was to find out the impact of credit rating on FDI inflow into Africa given the reviewed literatures which indicated that credit rating has a significant influence in attracting or deferring potential investors. Contrary to such theories, the results of this study indicated that although it is significant for the West African region, the overall effect of credit rating is found not significant for FDI flow into the continent in general and other regions in particular. Moreover, the result of this study indicated that the investments made in Africa are not following their credit rating rather the investments follow the abundant natural resource of the continent. Since natural resources are natural gifts, natural resource oriented investors decide to invest merely on the availability of such resources. Investments in some African countries are dominated by extractive investments in the resource sector leaving no ground for other countries with no resources to compete, ruling out the main purpose of credit rating in the first place. The benefit and purpose of credit rating could only be realized on the basis that countries or regions could compare and compete in terms of other sectors for instance services and manufacturing which are comparable. As this study was limited to analyse the impact of credit rating in Africa, its extent of influence on different sectors has not been covered. Besides, the fact that a small number of observations were taken for the regional analysis of Africa, may have influenced the results to be abstract and vague. Also measuring the impact of credit rating without taking into consideration that outcomes could be different for different sectors, means that there is a need for further in-depth research. With further research in the area with better data sets and sectoral analysis, the impact of credit rating in African countries could be better understood which in turn will enable appropriate policy recommendations.

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Annex 1: List of Countries included in the analysis based on continent

Asia	Europe	Africa	Latina America and the Caribbean	North America	Oceania/ Australia
Armenia	Albania	Angola	Argentina	Bermuda	Australia
Azerbaijan	Andorra	Benin	Aruba	Canada	Fiji
Bahrain	Austria	Botswana	Bahamas	United States	New Zealand
Bangladesh	Belarus	Burkina Faso	Barbados		Papua New Guinea
Cambodia	Belgium	Cameroon	Belize		Solomon Islands
China	Bosnia-Herzegovina	Cape Verde	Bolivia		
Cyprus	Bulgaria	Republic of the Congo	Brazil		
Georgia	Croatia	Congo (DRC)	Chile		
Hong Kong	Czech Republic	Egypt	Colombia		
India	Denmark	Ethiopia	Costa Rica		
Indonesia	Estonia	Gabon	Cuba		
Iraq	Finland	Ghana	Dominican Republic		
Israel	France	Kenya	Ecuador		
Japan	Germany	Lesotho	El Salvador		
Jordan	Greece	Mauritius	Guatemala		
Kazakhstan	Hungary	Morocco	Honduras		
Kuwait	Iceland	Mozambique	Jamaica		
Kyrgyzstan	Ireland	Namibia	Mexico		
Lebanon	Italy	Nigeria	Nicaragua		
Macau	Latvia	Rwanda	Panama		
Malaysia	Liechtenstein	Senegal	Paraguay		
Maldives	Lithuania	Seychelles	Peru		
Mongolia	Luxembourg	South Africa	Suriname		
Oman	Macedonia FYR	Tunisia	Trinidad & Tobago		
Pakistan	Malta	Uganda	Uruguay		
Philippines	Moldova	Zambia	Venezuela		
Qatar	Montenegro				
Saudi Arabia	Netherlands				
South Korea	Norway				
Sri Lanka	Poland				
Taiwan	Portugal				
Thailand	Romania				
Turkey	Russia				
UAE	Serbia				
Vietnam	Slovakia				
	Slovenia				
	Spain				
	Sweden				
	Switzerland				
	Ukraine				
	UK				

Annex 2: List of Countries included in regional analysis for Africa based on regions

East Africa	West Africa	Northern Africa	Middle Africa	Southern Africa
Ethiopia	Benin	Egypt	Angola	Botswana
Kenya	Burkina Faso	Morocco	Cameroon	Lesotho
Mauritius	Cape Verde	Tunisia	Republic of the Congo	Namibia
Mozambique	Ghana		Congo (DRC)	South Africa
Rwanda	Nigeria		Gabon	
Seychelles	Senegal			
Uganda				
Zambia				

Annex 3: Correlation between FDI and its determinants

Variables name	log FDI value	Credit rating	Log Infrastructure development	International Trade	Skilled Labor	Natural Resource Availability	log Population size
log FDI value	1.0000						
Credit rating	0.2934	1.0000					
log Infrastructure development	0.2414	0.556	1.0000				
International Trade	0.3857	0.2986	0.2559	1.0000			
log Skilled Labor	0.7476	0.0406	0.0041	0.3324	1.0000		
log Natural Resource availability	0.2775	0.0088	0.0282	0.4726	0.2975	1.0000	
log Population size	0.7143	-0.0347	-0.1261	0.3356	0.9213	0.2558	1.0000

Annex 4: Correlation between credit rating and its determinants

Variables name	Credit rating	Per capita income	log GDP growth	Inflation rate	Government debt	Fiscal balance	External debt	log Foreign reserve	log Current account balance	Government effectiveness	log Population size	log Country size
Credit rating	1.0000											
Per capita income	0.7374	1.0000										
log GDP growth	-0.1737	-0.2338	1.0000									
Inflation rate	-0.1907	-0.2658	0.2071	1.0000								
Government debt	0.4539	0.4848	-0.0186	-0.1026	1.0000							
Fiscal balance	0.3133	0.2219	0.155	-0.0228	0.5047	1.0000						
External debt	-0.251	0.0957	-0.1986	0.049	-0.3218	-0.4048	1.0000					
log Foreign reserve	0.5032	0.4839	-0.2658	-0.0722	0.3796	0.1547	-0.1256	1.0000				
log Current account balance	0.3011	0.3057	0.2046	-0.0023	0.4993	0.5199	-0.4001	0.0334	1.0000			
Government effectiveness	-0.7562	-0.6917	0.3117	0.3751	-0.2594	-0.0635	-0.0821	-0.5032	-0.0398	1.0000		
log Population size	-0.0579	-0.2818	0.0995	0.0842	0.0211	0.0924	-0.1048	0.2538	-0.3166	0.215	1.0000	
log Country size	-0.1327	-0.3024	0.0965	0.1074	0.0266	0.1011	-0.0825	0.164	-0.2558	0.2853	0.8048	1.0000

Annex 5: Global level Instrumental variable model estimation random effect result table

VARIABLES	(1) Log FDI value
Credit rating	0.035**
	(0.015)
Log Infrastructure development	0.844
	(0.541)
International trade	-0.007
	(0.006)
Log skilled labor	0.492**
	(0.191)
Log Natural resource availability	0.058
	(0.068)
Log Population size	0.352*
	(0.199)
Constant	-4.462*
	(2.684)
Observations	251
R-squared	0.7196
Number of Country ID	49

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1