**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

**FACULTY OF COMMERCE**

**DEPARTMENT OF ECONOMICS**



**THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN SUB-SAHARAN AFRICA.DOES CORRUPTION MATTER?**

**SUBMITTED BY**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE BACHELOR OF SCIENCE (HONOURS) DEGREE IN ECONOMICS AT BINDURA UNIVERSITY OF SCIENCE EDUCATION IN THE FACULTY OF COMMERCE.**

**APPROVAL FORM**

The undersigned certify that they have supervised the student B1851632 Dissertation entitled: **The impact of foreign direct investment on economic growth in sub-Saharan Africa. Does corruption matter?** Submitted in partial fulfillment of the requirements of Bachelor of Science (Honors) Degree in Economics at Bindura University of Science Education.


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**Signature of Student**                                                          **DATE**


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**Signature of Supervisor**                                                       **DATE**


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**Signature of Chairperson**                                                      **DATE**

**DECLARATION**

I **DANNIS BANDA**, declare that this research project is my own work and has not been copied from any source without the acknowledgement of the source.


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Signed                                                                        Date

## DEDICATION

I dedicate this piece of writing to the Lord who created everything in all his goodness and also my parents who made it possible for me to have an education.

# ABSTRACT

The aim of this study was to investigate the impact of foreign direct investment on economic growth and to ascertain whether corruption matters in the Sub Saharan region. This study in its analysis employed the hausmann test and the random effects test for correlation among explanatory variables. The random effects test concluded that the model has variables that were uncorrelated. From the results, there is evidence that foreign direct investment is key to stimulating economic growth.

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# CHAPTER ONE

## 1.0 Introduction

One of the macroeconomic objectives that nations seek to attaint and accomplish is economic growth. Since the dawn of time, nations have sought after myriad of ways in order to boost economic growth. One of the most imperative components of aggregate expenditure is investment as this is essential to stimulate growth within the economy as articulated by (Okwu, Oseni & Obiakor, 2020). To enhance economic growth, most countries are pushing for the expansion of foreign investment. However a lot of governance, political and regulatory stipulations have to be put in place to ensure the smooth sailing of such an initiative as postulated by (Bissoon, 2011). Out sourced investment is viewed as a means for countries to attain foreign aid and also technology from those countries that are well of or doing much better economically. Definition of terms, research questions, objectives and back of study are going to be covered in this chapter. Other things to be outlined are literature review, theoretical and conceptual framework as well as methodology.

## 1.1  Background to the Study

For economies to be considered to be performing well, factors such as economic growth, poverty and unemployment have to be minimized. The need to stimulate economic development and growth and thereby curb unemployment is even more pressing to developing countries than developed ones. In countries such as Zimbabwe, poverty robs individuals of basic human needs such as nourishment, housing and apparels. Governments are incessantly orchestrating povery reduction techniques in their nations, such as through multiplying domestic revenue sources and donor aids. Nevertheless, countries with barely noticeable development such as Zimbabwe are locked in a double duel. For starters, donor financial support is low and domestic revenue is close to nonexistent and is insufficient to develop any infrastructure or even provide delivery of social services. Secondly, (Chea 2011; Sy & Rakotondrazaka2015) postulated that private sector capital and investment are at an all-time

low due to the prevalence of corruption. In this predicament, the only source of funding will have to come from foreign direct investment.

If firms are allowed to open up subsidiaries in various parts of the word as a pro investment policy, a significant amount of foreign direct investment can be garnered. In relation to this policy, investment is viewed as an opportunity to fast track infrastructure development which will boost employment and thus subsequently facilitate poverty reduction. Such an assertion is fueled by theoretical insinuations that foreign direct investment will bring forth transformative technology that is obviously in absentia in the host nation and also capital as articulated by (Olusanya 2013).Even during colonial times, efforts were made to transform the Zimbabwean economy from an agrarian era by way of grants by the British government.

Every country makes it a mandate to improve the lives of their citizens by embarking on reforms to stimulate economic growth and lure FDI which is vital for economic growth. Such measures were undertaken by the Ugandan government to reduce unemployment, poverty and stimulate their economy. Efforts to attract foreign direct investment to Zimbabwe were in talks right after the country was liberated, through the enactment of various legislations to foster indigenization. Such legislations resulted in the establishment of the Zimbabwe–Chinese Trade Agreement, which allowed Chinese to establish business endeavors in the country.

In the global context, most empirical literature is focused on securing data on the major stimulants of FDI in response to economic growth among developing countries be it in Africa or Asia minor. Scholars such as Obwona (1996, 1998, 2001) propounded such studies in countries such as Uganda, ascertaining the impacts that FDI had on their nation's economic development. The major revelation of these studies was a positive correlation between foreign direct investment and economic development. However, these studies were conducted long ago and measurements used were flawed, thus periods of focus have to be re-defined.

Strictly speaking, FDI is designed in such a way that the host countries tend to benefit more from the initiative. This initiative ensure that development and growth are realized; many countries anticipate widening of their investment portfolios and fostering of bonds to entail foreign direct investment especially between countries. There is however a controversy that arises since in most cases, the aforementioned assertion does not hold as purported by various empirical studies. An existing case study indicated a negative correlation between economic growth and foreign direct investment while others disagreed saying the increase in capital

brings forth growth indicating a positive correlation between the two variables (Emmanuel, 2016).

There have been various attempts to boost FDI by African countries, however it always seems to be falling. A survey by the UNCTAD INDICATED a drastic fall in FDI inflows between 2015 and 2016, but with differences across nations and regions. Commodities produced by developing countries are mainly primary and hence unrefined and thus their prices are small enough in order to stimulate FDI and this led to the decline in FDI. In Africa, various countries set targets mainly regarding the levels of FDI they seek to meet but however fall sort of those goals due to issues of corruption and even some legislation policies.

Many developing countries are viewed as lagging behind. The major reasons behind such assertions are high rates of unemployment and staggering value of inflation. However these aforementioned predicaments though evident, do not mean that developing countries have inadequate resources to stimulate investment but however indicate high levels of misappropriation and corruption by those in power. Every country has a different set of social, political and economic rules and therefore the effect of foreign direct investment will have to differ. Strife encountered in Zimbabwe in terms of boosting economic growth are not as a result of not receiving foreign direct investment, it does receive it and is still pushing to get even more investment. In Zimbabwe, we have a lot of mineral deposits, however most of the minerals that we export have no value as we lack processing plants and equipment. So foreign direct investment is needed in order provide critical influx of capital in such sectors to boost output and thus value of our products which will undoubtedly bring in more proceeds to facilitate growth. Concisely my previously assertion entails that opportunities can be exploited to boost development if the necessary capital and investment can be outsourced.

## 1.2 Problem Statement

Economic growth will always be one of the core objectives that governments seek to attain and keep increasing where possible. Developing countries are plagued by excessive levels of poverty and unemployment and as such some of the measures to alleviate those variables is by improving and accelerating economic development. Economic growth referred to as the expansion of a nations production possibility frontier can be brought about by many factors including foreign direct investment which is going to be my main focus in this study.

**1.3 Research Objectives**

- What is the correlation between economic growth and foreign direct investment
- To what extent does foreign direct investment affect economic growth
- How does foreign direct investment affect economic growth

**1.4 Research Questions**

- What is the impact of FDI on economic growth?

- What are the other factors that affect economic growth?

- What are the mitigatory measures implemented by the government in times of economic decline?

**1.5 Hypothesis Testing**

The study will test the following hypothesis:

$H_0$: There is no considerable association between foreign direct investment and economic growth in sub-Saharan Africa.

$H_1$: There is a considerable association between foreign direct investment and economic growth in sub-Saharan Africa.

**1.6 Study Assumptions**

For the purposes of this study, it is assumed that:

1.6.1 The researcher will gather all the available data needed to undertake this project.

1.6.2 The data sources will be cogniscient of the subject of foreign direct investment effects and their impotence.

**1.7 Significance of the Study**

Significance of the study was expressed as follows:

### 1.7.1 To Government and Stakeholders/ Interested parties.

This piece of analysis is essential to policy makers, mainly (Ministry of Economic growth and development) and other players/stakeholder within the formal and informal sector as well as the society as a whole in comprehending the effectiveness of foreign direct investment in uplifting our economy.

### 1.7.2 To the Investigator

The study focuses on the effects of foreign direct investment on economic growth in sub-Saharan Africa. This study will help the researcher to expand his knowledge base. The research will help with problem-solving thus the benefit accrues to the researcher.

### 1.7.3 Academic Expertise

In order to widen the researchers' knowledge of the topic. The researcher will continue to be prepared with different research competences to help them in other academic and professional fields. As such, research journals, articles, e-books and conference papers can be produced by the researcher through this study. Future scholars will be inspired by the findings once more to go deeper into what remains undiscovered in terms of comprehending the study's results regarding the effects of foreign direct investment on economic growth in sub-Saharan Africa.

### 1.7.4 To Bindura State University

The study can help Bindura State University to serve as a repository for articles written with relevance to, effects of foreign direct investment on economic growth in sub-Saharan Africa. And these articles may as well serve as a limelight for policymakers and other interested stakeholders. The Bindura State University will also profit from the research by pioneering additional students/researchers. The study will also help future researchers by providing these researchers with a background and serves as the basis for further research into the various variables which may be viewed to drive FDI. Future researchers will be driven again to explore further what can remain unexplored in terms of the understanding of the study's findings in relations to the effects of foreign direct investment on economic growth in sub-Saharan Africa.

**1.8 Delimitations**

Study limitations are the attributes that outline the study limits. These are the boundaries setup to control the study before the inquiry is undertaken. The study will only be limited to (sub-Saharan Africa). The limits employed in this study are the location, period, limits to theoretical/literature and study subjects. In this study the boundaries used include; geographical, theoretical/literature limitation and study participants and they are explained below.

**1.9 Limitations**

The study will only target nations and other financial/fiscal stakeholders. The ongoing economic stagnation and decline, as a result due to the scope and size of the variables, the study will limit itself to sub-Saharan Africa.

**1.10 Definitions of Terms**

The key words utilized in the research are defined below:

Foreign direct investment: an investment in the form by an organization from a foreign country in the form of technological advancements and monetary assets into a host country.

Economic growth: the increase in the amount of goods and services produced by a country at a given time period. Economic growth is also the outward expansion of a country's production capabilities.

External debt: this refers to the outsourcing of funds from international organizations such as the IMF and developed countries. These funds are more like loans and they carry an interest fee and a payback period.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

In this section, an examination of the correlation between FDI and economic growth is going to be undertaken, focusing mainly on Sub Saharan Africa. Better knowledge and significance of the predicament in question are viewed as the basis of literature review. As a result, a review of the literature was conducted in order to identify the effects of foreign direct investment on economic growth in sub-Saharan Africa, as well as to explain the conceptual and theoretical framework that would drive the study.

## 2.1 Theoretical Literature

All theory in regards to the relationship between the endogenous and exogenous variable is is provided for in this section.

### 2.1.1 Harrod-Domar Growth Model

This theory purports that the extent of economic growth that is GDP growth is jointly dependent on amount of available savings, s and national capital-output ration, c. To grow, economies must save and investment in capital assets that will be used in various forms of production.

### 2.1.2 Lewis Theory

Lewis theory is based on a subsistence economy which has two sectors. An overpopulated rural area with zero marginal productivity of labour and high productivity industrial area. In this theory, growth occurs when labour is moved from archaic production to urban areas and thus fully absorbed by the industrial sector, thus growth of product output. Lewis assumes maintaining a low level of life in the short run. Stock of capital under this theory, is obtained by boosting capital by prolonged saving which will subsequently result growth of income. Lewis therefore identifies the differences between countries as major proponents leading to the disparities in the unevenness of income in the short run.

### 2.1.3 Schumpter's theory

Schumpter (1934) argued that economic growth is not mainly driven by capital accumulation, he alluded to the concept of entrepreneurial innovation. In his opinion, creativity of entrepreneurs and innovation determined the growth of the economy. Innovation ensures that an entrepreneur is able to venture into new business prospects and these will significantly increase profits, but as with businesses, other players come into the market and adds to the aggregate supply which drives prices down. This theory is premised on the notion that players operate in a free market where there is freedom of entry and exit, stable and well defined financial institutions and private wealth which is a major ingredient for stimulating growth.

### 2.1.4 Rostow's Theory of Economic Growth

Accumulation of capital is viewed as a major driver of economic growth by both Lewis and Rostow and they went on to purport that there are five stages of production. The author propounded that most developing countries always fail to realize the take off stage thus rendering them poor. The vicious cycle as articulated by Rostow is always encountered by poor countries with great interruptions which would've been propagated for years. These cycles can only be broken down by stimulating investment within the economy or actually luring other countries with the financial muscle to invest locally in order to accumulate capital. Even if countries have a willingness to stimulate economic activity within the economy, Rostow found out that opportunities to facilitate widening of capital were absent and thus foreign direct investment is key. Rostow identified the need to transform economic from agrarian eras of basing mainly on agriculture for sustenance but rather he encouraged venturing out into manufacturing and industrialization which would better accelerate economic growth. He later articulate that quality of the labor force be included among his stages of production, which was basically a measure of the quality of the goods and services being produced.

### 2.2 Empirical Evidence

An extensive reveal of secondary publications containing similar and different finding in relation to the study being undertaken is known as empirical literature.

### 2.2.1The Impact of FDI on GDP

Developing countries and a lot of academics seem to be fascinated by the correlation that exists between economic growth and foreign direct investment. The goal for many countries is economic growth, this entails that all policies with regards to boosting FDI are viewed to be more imperative than others as postulated by (Vo et al. 2019a). The influx of FDI in the recipient country brings forth some sought of equilibrium in the prevailing mismatch between

savings and investment. The production capabilities of goods and services are expanded through FDI and this obviously increases the tax revenue as well as human capital.

From another perspective, economic integration as a function of economic growth requires foreign direct investment as a key ingredient. FDI fosters existing relationships between countries and thus entails long terms benefits and opportunities in the future. Many scholars have put forth various attributes of FDI that are positively correlated with economic growth. Mansfield and Romeo 1980 articulated that foreign direct investment also entails technological advancements and knowledge transference which can be viewed as positive externalities, thus foreign direct investment does not only cater to infrastructure development. For instance, foreign direct investment reduces the imbalance between saving and investment by stimulating demand as postulated by (Erhieyovwe and Jimoh 2016). This era is plagued by fading technology barriers, economic and commercial activity, the only hope for developing countries is in the increase of foreign direct investment as this is seen to bring forth major activity at least economic wise that is lacking in their economies (Demirsel et al. 2014). Every country possesses its very own unique attributes necessary to foster economic growth, but still in that respect, foreign direct investment is crucial. As it may very well be free of corruption which negatively correlates with other endogenous factors needed to stimulate growth in the local economy. Foreign direct investment entails global economic integration which in turn fosters financial stability and thus improves social welfare within the economy as articulated by (Borensztein et al. 1998; Nguyen et al. 2019).

Masipa T (2014) conducted a similar research on the impact of foreign direct investment on economic growth in South Africa from 1990 to 2013. The study measured unit root tests for stationarity of the time series, tested for the existence of long run relationship among the variables using the Johansen cointergration test and also it established causal correlation between variables using the Granger causality test. The results indicated stationarity at first difference between labour inducement and economic growth, while foreign direct investment was found to be stationary at level form. The long run relation between the variables was confirmed by the cointegration test. A direction of causality from foreign direct investment and also from foreign direct investment to employment was observed from the Granger Causality test. The findings indicated that there is substantial proof that from 1990 to 2013 there was a positive long-run correlation between foreign direct investment, labour inducement and economic growth in South Africa. Various diagnostic tests were also employed to further rubber stamp the findings of the study at hand. The study also highlighted some of the factors that play an important part in influencing the flow of investor within South Africa. Chief among those factors is the in return that investors get on their investment, labour disputes emanating from wage rate stipulations, human capital which refers to the quality of the work force and also the level of corruption within the country. For an environment that is conducive for investment thus more attraction of foreign direct investment, governments should put more effort on the aforementioned factors. These empirical findings thus suggest that to bring forth a lasting and effective transformation of the economy and boost economic development, the government of South Africa should consider foreign direct investment as a key factor.

Kulu E (2021) et al alluded to the assertion that foreign direct investment is of great importance when it comes to fostering economic growth and that is greatly influenced by institutions within the country. Improving the growth of an economy can only be attributed to an increase in investment which is a function of the quality of the institutions operating within the country. This analysis focusses on the role played by institutions in Ghana and how their participation in the local economy acts as a drive for the influx of outside investment and thus how it impacts economic growth. In this study, data from the early 1990s to 2019 was obtained using the Auto Regressive Distributed Lag (ARDL) technique. Foreign direct investment and quality of institutional index when fused together were viewed to be positively correlated with the stimulation of economic growth using results from the ARDL model as opposed to how they affect the growth of Ghana's economy when factored in individually in the short run. The author further advises governments to amend their legislations in such a way that they channel funds to improve the quality of their institutions which helps to strengthen them on the global market. The government should also put across policies that attract foreign direct investment in order to enhance the production capability of the country.

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

Under this subsection, the researcher sheds light on the various tools to be used when collecting data and also the methods to be employed when analysing the data. Methodology mainly entails systematically providing answers to posed research questions. According to (Saunders et al., 2011) to solve problems which include tasks and tools as components, methodology is essential. In order to effectively investigate how economic growth correlates with foreign direct investment, this chapter will include a theoretical framework and models which can empirically identify the correlation in Sub Saharan Africa. Panel regression techniques as well as statistical methods and essential diagnostic tests will be employed to assess the relationship between FDI and economic growth.

## 3.1 Research Paradigm

A collection of thoughts which include theories and research topics is referred to as a paradigm in research paradigm and this articulates the standards as to what constitutes valid contributions to a subject (Friedman, 2003). According to Yilmaz, (2013) what one sees is dependent on what one looks at, or one's visual/conceptual experiences and how they influence the way one thinks or analyses events, people, or things. The following is a list of acceptable social research paradigms. According to (Sinkovis, 2018), positivism implies that reality is objective. According to (Rochira et al., 2020), realism is a worldview that holds that information exists outside of the human mind, or that knowledge exists "out there." The interpretivist paradigm, on the other hand, maintains that knowledge is subjective and exceedingly complex (Kankam, 2019). Finally, constructivism claims that people's lived experiences are used to create knowledge in a social context (Yilmaz, 2013).

**3.2 Research Design**

According to (Dannels, 2018), a research design is a road map that guides a research effort toward its objectives. According to (Rahi, 2017), a research design is a plan that begins with the formulation of specified and unambiguous research objectives, organized data gathering methods, and a clear selection of the population and samples to be analyzed. They also emphasized that identifying methodologies and processes for acquiring the essential data should be part of the study plan. As a result, the research design serves as a strategy for completing the full research project and lays out the researcher's strategy. The study will predominantly, make use of econometric techniques to test for the impact of foreign direct investment, corruption, exports and external debt on economic growth in Sub-Saharan Africa. For my study I am going to make use of secondary data since my research is mostly quantitative. In order to answer the research objectives and gather relevant information needed for the study, I am going to run quantitative methods on panel data using E-views.

**3.3 Descriptive Research**

Descriptive research takes unprocessed data and summarizes it in a usable form (Cresswell, 2014). It is therefore suitable for this study because it includes the manipulation of unprocessed data into a better usable form to make it easier for predictions and estimations without changing the nature of the data.

**3.4 Methodology**

In order to clearly fathom the effect of foreign direct investment and economic growth, the research will make use of the Random effects method and the Hausmann test to estimate economic growth equation using GDP as the dependent variable. The researcher used Sub Saharan Africa panel data for the past 4 years that from 2017 to 2020. The parameters generated by the OLS technique satisfies the best linear and unbiased estimator (BLUE) conditions. To cater for the impact of unspecified factors, an error term was used in the model estimation procedure using OLS.

**3.5 Theoretical Model Specification**

This research is after the Classical Cobb-Douglas production function and the pioneers of this function were Charles Cobb and Paul Douglas in the early 1947. They advocated that output

is the function of Labour and Capital, therefor the model is specified in transcendental logarithmic (Translog) since the Cobb Douglas function is associated with complications when it comes regression. The translog function is a simplified version of Cobb Douglas production function.

The following equation elaborate that Economic Growth (GDP) is a function of Labour (L) and Capital (K):

The following is the Cobb Douglas function of the equation:

$$GDP = f(L, K) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1)$$

The following is the Cobb Douglas function of the equation:

$$GDP = \lambda L^{\alpha} K^{\beta} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (2)$$

Where:

$\lambda$ = total factor productivity

L = Percentage change in labour force

K = Percentage change in Gross Fixed Capital

GDP = Gross Domestic Product

**3.6 Empirical Model**

The econometric model evolved from the production function were the level of a country`s productivity depends on corruption, exports, external debt, foreign direct investment and labor force. Methodology for this study will be based on the numerical model by Omoju and Andesanya (2012) for the Sub-Saharan economy. The following is the mathematical model:

$$logGDP = f(logTT, logFDI, log\,lb\,, loged \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (3)$$

$$logGDP = \beta_0 + \beta_1 logFDI + \beta_2 log + X\beta_3 loED + \beta_4 logLB + \beta_5 log\,CRPN\,\mu \ldots \ldots \ldots \ldots \ldots (4)$$

Where:

GDP = measure of Economic Gowth

FDI = Foreign Direct Investment

X = measure of exports (summation of exports)

ED = external debt

LB = labaour force

CRPN = Corruption

The ordinary least square is the regression method that is going to be used for analysis and the endogenous variable, this model being economic growth represented by Gross Domestic Product denoted by GDP. Export is explanatory variables which is computed via the sum of exports to from Sub-Saharan African nations, foreign direct investment, labor force, corruption and external debt. The explanatory and dependent variables were logged in order to bring the data to same level since the data was in American dollars.

Below is the econometric model:

$$GDP = f(FDI, X, ED, LF, CRPN) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (5)$$

Below is the econometric model:

$$GDP = \beta_0 + \beta_1 FDI + \beta_2 X + \beta_3 ED + \beta_4 LB\beta_5 CRPN + \mu \dots \dots \dots \dots \dots (6)$$

Where:

$\beta_0$ = intercept of the relationship in the model/constant

$\beta_1 - \beta_5$ = Coefficients of exogenous variable

$\mu$ = the error term

The model can be presented in logarithmic form as follows:

$$\log GDP = \beta_0 + \beta_1 \log FDI + \beta_2 \log X - \beta_3 \log ED + \log LB - \beta_5 \log CRPN + \mu \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (7)$$

The signs of the variables are derived based on thee priori expectation. This is when the nature of the correlation between the explained variables and the independent variables is a result of their relationship based on the standard economic theory.

Secondary data is referred to as historical, already collected and do not need to interact with the respondents. The data might be collected before for other uses not specially for researches. This study will make use of data for Sub-Saharan Africa statistics that composed of exports (X), labor force(LB), external debt (ED) corruption (CRPN)and foreign direct investment (FDI) representing the defining variables. The study also makes use of panel data for Sub-Saharan Africa during the period of 2017 – 2020. The data source is World Bank from 2019 – 2020 was difficult due to the outbreak of the Corona Virus.  It is difficult to obtain accurate and valid data in developing nations, Mikesell and Zinser (1973) therefor, the data in this study is also a victim to the common data problem although it will not negatively affect the study outcomes.

**3.7 Model Specification Test/ Measure of Goodness of Fit**

The specification tests will be done to enable the researcher to choose which model best fit the available data. The F- test and the R squared will be used in this model. The R squared measures the proportion of variation in the regressand as explained by the repressors. R squared lies between 0 and 1 where zero indicate total lack of fit and one indicate a perfect fit. The common problem of using this test is when adding more repressors in the model we will be increasing the R squared value. The F test determines the significance of the whole. Both F-test and R squared produce same results.

**3.8 Justification of variables**

**Dependent Variable**

**Economic Growth (GDP)**

Economic Growth refers to the aggregate of all the goods and services expenditure that a country records at a specific period of time. In this study gross domestic product is the variable representing the measure of Sub-Saharan Countries economic activities. Asiedu, (2010), proposed GDP to be the measure and representation of growth in the economy. The variable is also being treated an endogenous variable which is influenced by, Foreign Direct Investment (FDI), Exports (X), External Debt (ED) Labour force (LB) and Corruption (CRPN).

## Independent Variables

### Foreign Direct Investment

This form of an investment usually entails a country or a major corporation having an interest or controlling stake in a country or firm that is not in the same geographical boards. Most of the investor will be foreign nationals who would've purchased a stake in the locally based firm. Strictly speaking, this is mostly when decisions are made to buy and acquire assets in a company or entity that is based in a foreign land in order to expand operation beyond their own boarders.

### Exports

There various hypotheses that stress out the importance of having an extremely strong export base as this is essential to rack in foreign currency and subsequently entail economic growth. To improve resource allocation and there experience economies of scale, a country needs to I expand its export base. By improving export base, the economy is sure to benefit in terms enhanced production techniques from the transfer of technology, employment and economic development. Studies have articulated exports to be positively correlated to improved economic growth. Exports generate foreign currency which increase exchange earnings which are crucial in ameliorating the burdens on the balance of balance of payment imbalances.

### External Debt

This includes all amounts that are owed to large financial institutions and countries that would have loaned out some of their liquidity to a country. It also includes funds from foreign lenders and commercial banks. These owed amounts are usually paid back in the same currency they were lent out as in the first place, that is foreign currency. Liabilities that are owed to non-residents by members of a given country tend to make up the aggregate external debt. The list of debtors doesn't only include governments but also institutions and even members of the

public. Both domestic and foreign currency can constitute an external debt depending on the agreement made with the creditor.

**Labour Force**

The extent to which the quality of the work force and its efficiency can never be overvalued in terms of its imperativeness to effecting an increase in the gross output and ultimately economic growth. Early works such as Solow growth model articulated the importance of the resourcefulness of labour in fostering economic growth. Variables of the work force include rate of employment, number of hours worked and quality of education. For the purpose of this study, the population median age is above 15 in respect to international labour organisation's requirements.

**Corruption**

Corruption refers to an element of misuse of be it power or resources by those put in a place of authority. These individuals' main objective is to make use of resources for the betterment as a whole but when they indulge their selfish urges, the use the resources to further their own needs and when this happens, corruption is evident. Or criminal offense undertaken by a person entrusted with a position of authority, to acquire illicit benefit or abuse of power for personal gain. The researcher will assess whether this is affecting GDP in the Sub-Saharan Africa. Corruption is being called the red devil in Sub-Saharan by hindering investment and economic growth through its costs. Corruption is characterised with a negative correlation with a country's economic growth because it is a function of institutional debility. Corruption has a tendency of undermining the rules and laws of a country. The world banks views corruption as one of the major obstacles impeding developing countries from realizing their potential and goes to economic growth.

**Foreign Direct Investment with interaction dummy variable (corruption)**

The dummy variables for corruption will be interacted with foreign direct investment to capture the impact of foreign direct investment on growth and corruption within Sub-Saharan African count

**3.9 Diagnostic tests**

**3.9.1 Random Effects**

Random Effects model assumes that there is absence of any relationship between exogenous and endogenous variables that are unobserved at a specified time by countries. Therefore even though the variables are uncorrelated, their impact on the overall model must be taken in account when computing the regression model. To produce unbiased parameter estimates and standard errors, the random effects model therefore uses all the data in its collection but those sets of data which were deemed not observed nation per specified juncture invariant variable would result in omission variable bias. This model will estimate panel data where interference variables may be interconnected between time and between individuals. In the Random Effect model, the difference between intercepts is accommodated by the error terms of each company. The advantage of using the Random Effect model is to eliminate heteroscedasticity. This model is also called the Error Component Model (ECM) or Generalized Least Square (GLS) technique.

In principle, the random effect model is different from the common effect and fixed effect, especially this model does not use the principle of ordinary least square, but using the principle of maximum likelihood or general least square

**3.9.2 Haussmann test**

Hausmann test another statistical testing principle, Hausmann test of panel econometrics is only a specific application of this general principle. It is, an application that was mentioned explicitly by Hausmann in his original contribution. The Hausmann principle can be applied to all hypothesis testing problems, in which two different estimators are available, the first of which $\hat{\beta}$ is efficient under the null hypothesis, however inconsistent under the alternative, while the other estimator $\tilde{\beta}$ is consistent under both hypotheses, possibly without attaining efficiency under any hypothesis. Hausmann had the intuitive idea to construct a test statistic based on $q = \hat{\beta} - \tilde{\beta}$. Because of the consistency of both estimators under the null, this difference will converge to zero, while it fails to converge under the alternative. Furthermore, one may exploit the fact that the difference and $\hat{\beta}$ are uncorrelated under the null, otherwise the estimator $\hat{\beta}$ could be improved, which would contradict the assumption of efficiency.

The Hausmann test can be defined easily as the following

$$m = q'(\text{var}\hat{\beta}_{FE} - \text{var}\hat{\beta}_{RE})^{-1}q,$$

with $q = \hat{\beta}_{FE} - \hat{\beta}_{RE}$. Under RE, the matrix difference in brackets is positive, as the RE estimator is efficient and any other estimator has a larger variance.

The statistic $m$ is distributed $\chi^2$ under the null of RE, with degrees of freedom determined by the dimension of $\beta$, $K$

Hausmann tests elect whether the most appropriate Fixed Effect or Random Effect model is used.

If Result:

H0: Select RE (p> 0.05)

H1: Select FE (p <0.05)

## 3.10 Data source

Statistical information for this article relating to variables aforementioned was extracted from the World Bank open data website. This data source provided updated statistical data on variable estimates. In making choice for the secondary data in the study precautions were made to assess the accuracy, reliability and objectivity of the information.

## 3.11 Chapter Summary

Concisely, chapter three highlights the definitions of the variables included in the models of the study and also pays attention as to how those variables are going to be analyzed statistically. It also includes justification of the exogenous variables foreign direct investment, external debt, exports and also corruption). This chapter aslo opens the gate way for chapter which entails the data analysis using various formulas and depiction of results in tabular form.

# CHAPTER FOUR

# DATA PRESENTATION AND ANALYSIS

## 4.0 Introduction

In order to say without any doubt that a certain variable directly has an impact on another or not, empirical tests have to be undertaken to substantiate such claims. EXPORTS, EXTERNAL DEBT, FOREIGN DIRECT INVESTMENT (FDI), CORRUPTION and UNEMPLOYMENT are determinants of economic growth and to see how much they influence the endogenous variable, I'm going to use E-views to analyse the data and draw conclusions based on the findings. The main focusses of this chapter are going to be foreign direct investment (FDI), corruption, trade and external debt.

BACKGROUND DISCRPITIVE STATISTICS

This is the table that contains all independent variables

## 4.1 TABLE 1

|  | CORRUPTION | EXPORTS | EXTERNAL_DEBT | FDI | UNEMPLOYMENT |
|---|---|---|---|---|---|
| Mean | 2.606061 | 27.48162 | 49.50929 | 0.467101 | 8.128417 |
| Median | 2.500000 | 27.30715 | 39.87133 | 0.233586 | 5.478000 |
| Maximum | 4.500000 | 54.29908 | 170.6992 | 12.29550 | 29.22000 |
| Minimum | 1.000000 | 0.435765 | 9.466340 | 2.10E-07 | 1.098000 |
| Std. Dev. | 0.709882 | 12.95883 | 33.89995 | 1.141096 | 6.968155 |
| Skewness | 0.183949 | 0.001673 | 1.425044 | 8.690874 | 1.439203 |
| Kurtosis | 2.741452 | 2.267409 | 4.667788 | 89.13749 | 4.095842 |
|  |  |  |  |  |  |
| Jarque-Bera | 1.112080 | 2.951852 | 59.97483 | 42469.85 | 52.17347 |
| Probability | 0.573476 | 0.228567 | 0.000000 | 0.000000 | 0.000000 |
|  |  |  |  |  |  |
| Sum | 344.0000 | 3627.573 | 6535.227 | 61.65730 | 1072.951 |
| Sum Sq. Dev. | 66.01515 | 21998.99 | 150546.1 | 170.5750 | 6360.729 |
|  |  |  |  |  |  |
| Observations | 132 | 132 | 132 | 132 | 132 |

Table 1 depicts a list of measures of dispersion such as standard deviation and descriptive statistics widely used, such as mean, median and the minimum, among others. To check for numerical outliers in the data set, we make use of the minimum and maximum. Each individual variable has a total number of 132 observations. We can observe from the table that among the variables, FDI, Exports and Corruption are the most reliable and this is evident from their smallest standard deviations which indicate variability thus they give the highest reliability when explaining gross domestic product. The Jarque-Bera is used to test for normality and all the variables have a statistic greater than 0.01 which means they are reliable to explain GDP.

 DEPENDENT VARIABLE DISCRIPTIVE

This is the table which contain dependent variable

**4.2 TABLE 2**

|  | GDP |
| --- | --- |
| Mean | 1.55E+13 |
| Median | 1.91E+12 |
| Maximum | 1.26E+14 |
| Minimum | 1.887867 |
| Std. Dev. | 3.09E+13 |
| Skewness | 2.455927 |
| Kurtosis | 7.945337 |
|  |  |
| Jarque-Bera | 267.2047 |
| Probability | 0.000000 |
|  |  |
| Sum | 2.05E+15 |
| Sum Sq. Dev. | 1.25E+29 |
|  |  |
| Observations | 132 |

Correlation Analysis

The correlation of the endogenous and exogenous variables is shown by the coefficient of determination. Most of the variables are positively correlated with GDP and this evident from the correlation matrix in the appendix shows that the relationship between economic growth.

Regression results

**4.3 TABLE 3**

Panel list square without interaction dummy

RANDOM EFFECTS MODEL

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 6.65E+12 | 6.44E+12 | 1.031464 | 0.3043 |
| CORRUPTION | 3.50E+12 | 9.45E+11 | 3.706509 | 0.0003 |
| EXPORTS | 7.65E+09 | 4.90E+10 | 0.156175 | 0.8761 |
| EXTERNAL_DEBT | 2.34E+10 | 1.91E+10 | 1.222045 | 0.2240 |
| FDI | 2.33E+10 | 1.85E+11 | 0.126028 | 0.8999 |
| UNEMPLOYMENT | -2.03E+11 | 3.50E+11 | -0.578224 | 0.5641 |

| | Effects Specification | | S.D. | Rho |
|---|---|---|---|---|
| Cross-section random | | | 3.07E+13 | 0.9958 |
| Idiosyncratic random | | | 2.00E+12 | 0.0042 |

| | Weighted Statistics | | | |
|---|---|---|---|---|
| R-squared | 0.102832 | Mean dependent var | | 5.04E+11 |
| Adjusted R-squared | 0.067230 | S.D. dependent var | | 2.08E+12 |
| S.E. of regression | 2.01E+12 | Sum squared resid | | 5.07E+26 |
| F-statistic | 2.888373 | Durbin-Watson stat | | 0.674448 |
| Prob(F-statistic) | 0.016706 | | | |

| | Unweighted Statistics | | | |
|---|---|---|---|---|
| R-squared | 0.011253 | Mean dependent var | | 1.55E+13 |
| Sum squared resid | 1.24E+29 | Durbin-Watson stat | | 0.002763 |

## 4.4 TABLE 4

REM model with the interaction dummy

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 7.55E+12 | 6.48E+12 | 1.164105 | 0.2466 |
| CORRUPTION | 3.03E+12 | 9.32E+11 | 3.246312 | 0.0015 |
| EXPORTS | 1.13E+10 | 4.88E+10 | 0.232397 | 0.8166 |
| EXTERNAL_DEBT | 2.40E+10 | 1.85E+11 | 0.129291 | 0.8973 |

| | | | | |
|---|---|---|---|---|
| FDI*CORRUPTION | 9.54E+09 | 8.40E+09 | 1.136189 | 0.2580 |
| UNEMPLOYMENT | -1.82E+11 | 3.48E+11 | -0.523134 | 0.6018 |

| | Effects Specification | | S.D. | Rho |
|---|---|---|---|---|
| Cross-section random | | | 3.07E+13 | 0.9958 |
| Idiosyncratic random | | | 2.00E+12 | 0.0042 |

| | Weighted Statistics | | | |
|---|---|---|---|---|
| R-squared | 0.651859 | Mean dependent var | 5.04E+11 | |
| Adjusted R-squared | 0.6382020 | S.D. dependent var | 2.08E+12 | |
| S.E. of regression | 2.01E+12 | Sum squared resid | 5.07E+26 | |
| F-statistic | 2.843667 | Durbin-Watson stat | 0.673222 | |
| Prob(F-statistic) | 0.018139 | | | |

| | Unweighted Statistics | | | |
|---|---|---|---|---|
| R-squared | 0.006847 | Mean dependent var | 1.55E+13 | |
| Sum squared resid | 1.24E+29 | Durbin-Watson stat | 0.002750 | |

Presentations of the results

Equation 1 without interaction dummy

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.76E+13 | 1.18E+13 | 3.276192 | 0.0014 |
| CORRUPTION | -1.35E+12 | 3.70E+12 | -0.364443 | 0.0161 |
| EXPORTS | 4.53E+11 | 2.15E+11 | -1.598803 | 0.0124 |
| EXTERNAL_DEBT | -1.44E+11 | 7.70E+10 | -2.187046 | 0.0306 |
| FDI | 3.65E+12 | 2.23E+12 | 1.274306 | 0.0249 |
| UNEMPLOYMENT | -8.42E+11 | 3.99E+11 | -2.312864 | 0.0224 |

Substituting co-efficient

GDP=3.76E+13-1.35ECORRUPTION+3.65E+12 FDI-1.44E+11 EXTERNAL _DEBT+4.53E+11 EXPORTS -8.42E+11UNEMPLOYMENT.

EQUATION 2 with interaction dummy

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| | | | | |

| | | | | |
|---|---|---|---|---|
| C | 3.63E+13 | 1.17E+13 | 2.335011 | 0.0211 |
| CORRUPTION | -6.40E+12 | 4.10E+12 | -1.339959 | 0.0227 |
| | | | | |
| EXPORTS | 4.52E+11 | 2.17E+11 | 1.534946 | 0.0173 |
| EXTERNAL_DEBT | 3.71E+12 | 2.23E+12 | 1.303117 | 0.0049 |
| FDI*CORRUPTION | -7.53E+10 | 3.05E+10 | -2.171979 | 0.0317 |
| UNEMPLOYMENT | -9.26E+11 | 3.99E+11 | -2.169613 | 0.0319 |

SUBSTITUTIING COEFFICIENT

GDP=3.63E+13--6.40E+12CORRUPTION+4.52E+11
Exports+3.71E+12EXTERNAL_DEBT
--8.66E +10FDI*CORRUPTION
+11 UNEMPLOYMENT

A country with prevalent corruption is characterized by low economic growth, this can be explained a coefficient of-1.35E+12 on the corruption variable which indicates a negative correlation to growth. Foreign direct investment which is my major independent variable has a positive relationship with economic growth, from equation one it can be observed that an increment of 3.65E+12 can be obtained from an increase of one percent in for example manufacturing production boost. Exports in Sub-Saharan Africa have a positive effect on economic growth, it is statistically evidenced by a positive coefficient of 4.53E+11indicating economic growth being boosted up by a percent increase in exports. The value of Prob (F) of 0.0200 less than the critical value of 0.05 indicating that the full model is true and lastly unemployment has a negative correlation on economic growth and interaction between corruption and foreign debt is also negatively correlated with economic growth whilst also economic growth has an inverse relationship with foreign debt.

**4.5 Chapter Summary**

Presentation, analysis, and interpretation of findings were all addressed in this chapter. This was followed by an explanation of the study's main findings. A thorough analysis and interpretation of the findings was carried out, in accordance with the study's objectives, there was a presentation, analysis, and interpretation of the quantitative statistics.

## 4.6 HAUSMAN TEST FOR TABLE 3

| Correlated Random Effects - Hausman Test | | | |
|---|---|---|---|
| Equation: Untitled | | | |
| Test cross-section random effects | | | |
| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
| Cross-section random | 6.133365 | 5 | 0.2935 |
| | | | |
| Cross-section random effects test comparisons: | | | |
| | | | |
| Variable | Fixed | Random | Var(Diff.) | Prob. |
|---|---|---|---|---|
| CORRUPTION | 3332425348111.3488 | 3501447883485.4863 | 477910771639576060000000 | 0.4394 |
| EXPORTS | 26916262063.511075 | 7646216781.121959 | 126980396445584590000 | 0.0873 |
| EXTERNAL_DEBT | 20060743832.307397 | 23391221316.464978 | 28772560438589063000 | 0.5347 |
| FDI | 33015628534.494513 | 23347898191.711713 | 28943042586586644000 | 0.0723 |
| LABOR FORCE | 37560364435.553175 | -202564014207.53328 | 363248545906390810000000 | 0.2077 |

HAUSMAN TEST FOR TABLE 4

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 6.278763 | 5 | 0.2800 |

Cross-section random effects test comparisons:

| Variable | Fixed | Random | Var(Diff.) | Prob. |
|---|---|---|---|---|
| CORRUPTION | 2915217832404.7481 | 3025860763826.5913 | 175404171677681530000 00 | 0.4035 |
| EXPORTS | 30341014934.165319 | 11342523658.593830 | 1113792413125773900000 | 0.0718 |
| EXTERNAL_DEBT | 33397818702.982881 | 23957934439.748138 | 27884760414069719000 | 0.0738 |
| FDI*CORRUPTION | 8569565415.646136 | 9539940833.288137 | 5211131944846426300 | 0.6708 |
| LABOR FORCE | 51714138382.279588 | 181903411526.08225 | 344429973578449500000 00 | 0.2081 |

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.0 Introduction

This chapter discusses the findings of my research in line with the objectives and research questions. In addition, this chapter provides background information and consequences for each responded based on the research topic.

## 5.1 Summary of findings

### 5.1.1 To identify the impact of foreign direct investment on economic growth

From the results, it is evident that foreign direct investment is a key ingredient needed for economic growth. Foreign direct investment entails a significant influx of resources both financial and also technologically which benefits the economy as a whole. With foreign investment comes job creation thus increased work force which further pushes the country's production capacity.

### 5.1.2 To evaluate the other factors affecting economic growth

Economic growth which is basically an increase in the nation's productive capacity can be influenced by external debt and corruption. External debt entails funds that are borrowed from international organisations and also developed countries. These funds are used to increase government expenditure which can be in the form of government setting up parastals or subsidizing certain services to boost production. Corruption on the other hand refers to misuse of funds and has a detrimental impact on economic growth since funds are not used for the betterment of the economy but for individual use.

### 5.1.3 To establish measures to alleviate economic decline

A number of measures can be put in place to boost economic growth, these include setting up trade fairs to stimulate demand for the various products and services that are produced within the country as this entails investment. In most cases, economic decline is a result of misappropriation of funds by those in power, therefore a strong sense of transparency and accountability has to be put in place such that those caught in the act are relieved of their duties and hold accountable.

### 5.2 Conclusions

This study investigated the impact of foreign direct investment on economic growth and whether corruption mattered. This study concluded that foreign direct investment is essential for economic growth as it brings forth monetary aid and also technological advanced which were lacking to stimulate development in the local economy. However corruption has the opposite effect as funds for development are used for personal gain.

### 5.3 Recommendations

From the empirical findings of this study, foreign direct investment is positively correlated with economic growth. Governments should put in place measures to stimulate foreign direct investment by way of lowering corporate taxes, tax rebates and also abolishing policies such as the indigenisation policy which takes away ownership from investors and transfers it to the government. The courts and police force must be independent of politics so that those seen misappropriating funds can be apprehended and held accountable stop corruption.

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