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COLLEGE OF HUMANITIES

FOREIGN DIRECT INVESTMENT, INSTITUTIONS AND INDUSTRIALISATION IN SUB-SAHARAN AFRICA

BY

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THIS THESIS IS SUBMITTED TO THE DEPARTMENT OF FINANCE, UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF MASTER OF PHILOSOPHY (M. PHIL) IN FINANCE

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DECLARATION

I, Ohene Kofi Achampong Osei, do hereby declare that this thesis has not been documented for presentation in this or any other University. I, therefore, declare that this thesis is my own work, and all references have been recognised accordingly. I bear full responsibility for any shortcomings.

…… ……

OHENE KOFI ACHAMPONG OSEI **DATE**

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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

…….. …….

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(SUPERVISOR)

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(SUPERVISOR)

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DEDICATION

I dedicate this thesis to the Almighty God for His love and protection throughout this period of research.

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LIST OF ABBREVIATIONS

- FDI – Foreign Direct Investment

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- UNECA – United Nations Economic Commission for Africa
- MNCs – Multinational Corporations
- OECD – The Organisation for Economic Co-operation and Development
- USA – United States of America
- FEM – Fixed Effects Model
- REM – Random Effects Model
- ECM – Error Components Model
- GDP – Gross Domestic Product
- WGI – World Governance Indicators
- WDI – World Development Indicators
- AGRI – Agriculture
- SERV – Services
- PSAV – Public Safety and Absence of Violence
- INSTU – Institutions
- CCOR – Control of Corruption
- VACC – Voice and Accountability
- REGQ – Regulatory Quality
- GEFF – Government Effectiveness
- RLAW – Rule of Law
- IMP – Imports
- EXP – Exports
- INV – Investment

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ABSTRACT

This study aims at establishing the role that inward foreign direct investment (FDI) and institutions played in the industrialisation process of 40 sub-Saharan African countries, over the period of 1996 through 2015. The study used a fixed effect method (FEM) of estimation for the analysis of data which was sourced from the world development indicators (WDI) database of the world bank and the world governance indicators (WGI) database, also of the world bank.

The findings of the study based on the model employed show that inward FDI played a neative role in the industrialisation process of the countries under study. That is to say FDI was detrimental to industrialization. Institutions were however important in the promotion of the manufacturing sector of these countries. Good institutions provide a good business climate that enable the growth of the industrial sector of Sub- Saharan African countries. Other findings from the study showed that Agriculture and Export had a negative relationship with Industrialization, whereas, Imports had a positive relationship with Industrialization.

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CHAPTER ONE

INTRODUCTION

This chapter gives a general background of the research topic. It further elaborates on the purpose, objective, research questions, significance, scope and limitations of the study. Then, a summary of the remaining chapters of the research work is finally given.

1.1 Background of the Study

The African continent has been lagging behind in terms of development, over the past several decades, compared with the rest of the world. Most African countries have failed to diversify their economies, and they usually engage in primary sector activities. These economic activities do not bring the countries much value, as regards the creation of jobs and value added final products (United Nations Economic Commission for Africa, 2013).

Industrialisation is the movement of an economy from a mainly primary sector base to a manufacturing base. Kuznets (1973) also defines it as the structural changes experienced by less developed countries in the transition from an agricultural to an industrial economy, which comes along with societal changes. Industrialisation is widely recognised as a necessity for the development of the African continent. Most developed countries all went through this process in the development of their nations. Some economists have thus hypothesised a theory which states that the industrial sector is the engine of growth in an economy. This is referred to as the "engine of growth argument" (Kaldor, 1967; Cornwall, 1977). Recent empirical studies also confirm

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industrialisation as the major driving force of economic development. (Rodrik, 2008; Szirmai and Verpagen, 2011).

Industrialisation however requires high levels of financial investments and technology. Most African countries lack the financial strength and technical resources to industrialise their economies. It is therefore imperative that they attract external sources of financial and technological support, through foreign direct investment (FDI) in their bid to catch up with the industrialised world.

Foreign direct investment (FDI) in Africa has been on the rise for several decades. It rose by as much as 40% between 2014 and 2015. Policy makers and governments have played a major role in this increase in foreign investment inflows. Most countries receiving inward bound FDI provide very generous tax and investment incentives for the investors. Foreign direct investment has now become one of the major sources of finance in developing economies (DenisiaTheories have shown various effects of FDI in a host economy. Dahlman, (2009) and Di Maio, (2009) show that FDI played a pivotal role in the transformation of the economies of some East Asian countries into industrial economies.

The prospective benefits of FDI include increases in employment, export promotion and capital formation. These remain some of the most important reasons for seeking FDI. These allow domestic firms to be more efficient and improve on their performance. FDI inflows is said to have both financial and technological spillovers which propels the host country's economy in economic growth. Also, Borensztein, Gregorio and Lee (1998) show that host countries could benefit from FDI through forward and backward linkages. When a foreign firm enters into a local economy, it creates a linkage effect. This occurs when multinational firms use local inputs sourced from domestic firms. Hence, more domestic firms will be created to satisfy the needs of

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the multinational firms. FDI is preferred to other forms of capital inflows because it tends to be more stable. This reduces the risk associated with sudden fluctuations in flows and leaves the host country less vulnerable.

Vibrant institutions are needed because they create a good economic environment. Institutions may help in reducing the activities that may hinder the normal duties of business. In critiquing the industrialisation policies of most governments, many economists have failed to acknowledge the role institutions tend to play in this process. Many scholars have found that good institutional quality is needed for economic growth and development (Acemoglu, Johnson, Robinson, and Thaichareon, 2003). This simply means that for a country to develop, the government needs to put in the right structures that will enable economic activities to thrive. Research has shown that a good institutional framework always goes hand in hand with economic development (Ranis, 1989). Institutions have the ability to enhance growth or stifle development. Ranis (1989) characterises institutions as having an accommodative ability for economic growth or as being obstructive in the development process through the implementation of bad policies such as sole supplier rights, and domestic market exclusivity, among others. Institutional quality may therefore make or break an economy.

It also has been found that FDI has a greater impact on economic development under certain conditions. Azman-Saini, Baharumshah, and Law (2010) show that under a good institutional environment, FDI has a greater impact on economic growth and development.

1.2 Problem Statement

In 2008, the African continent's exports of natural resources represented 73% of its total exports. When compared to Asia, North America, and Europe which recorded 14%, 20% and 14%

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respectively, it is evident that the continents reliance on the primary sector is very high. This kind of trade exposes the continent to exogenous shocks such as sudden price drops. This is alarming and suggests that African countries have put themselves at high risk.

Industrialisation continues to be relevant as an engine of growth in developing countries (Szirmai and Verspagen, 2011). However, African countries still encounter problems in their bid to industrialise. From (Fig 1.1) from 1996 to 2002 it can be seen that there was a slight increase in industrialization of the countries being studied was on the rise. However, after 2003 industrialization has been falling. It is therefore evident that industrial activities in African countries have been on the decline for the period in which the study was conducted even though FDI inflows have seen a number of increases and decreases over the period of study as seen in (Fig 1.2).

A major problem that these countries may face is the mobilization of capital to engage in industrial activities due to the capital-intensive nature of the industry. A good way for the countries to acquire this capital is through Foreign Direct Investment. Economic theory suggest that foreign investment inflows should be growth enhancing. The literature on the effects of FDI on industrialization have been inconclusive. An empirical study found FDI to have a positive and significant influence on industrialization (Rodrıguez-Clare, 1996; Markusen and Venables, 1999). However, Gui-diby and Renard (2015) on the contrary finds no significant relationship between capital inflows and industrialisation in their study which was focused on the African continent. There is a common view that these results may be associated to peculiar characteristics of host economies. This current study would therefore attempt to establish whether FDI would boost the industrialisation process of African countries in the presence of good institutions.

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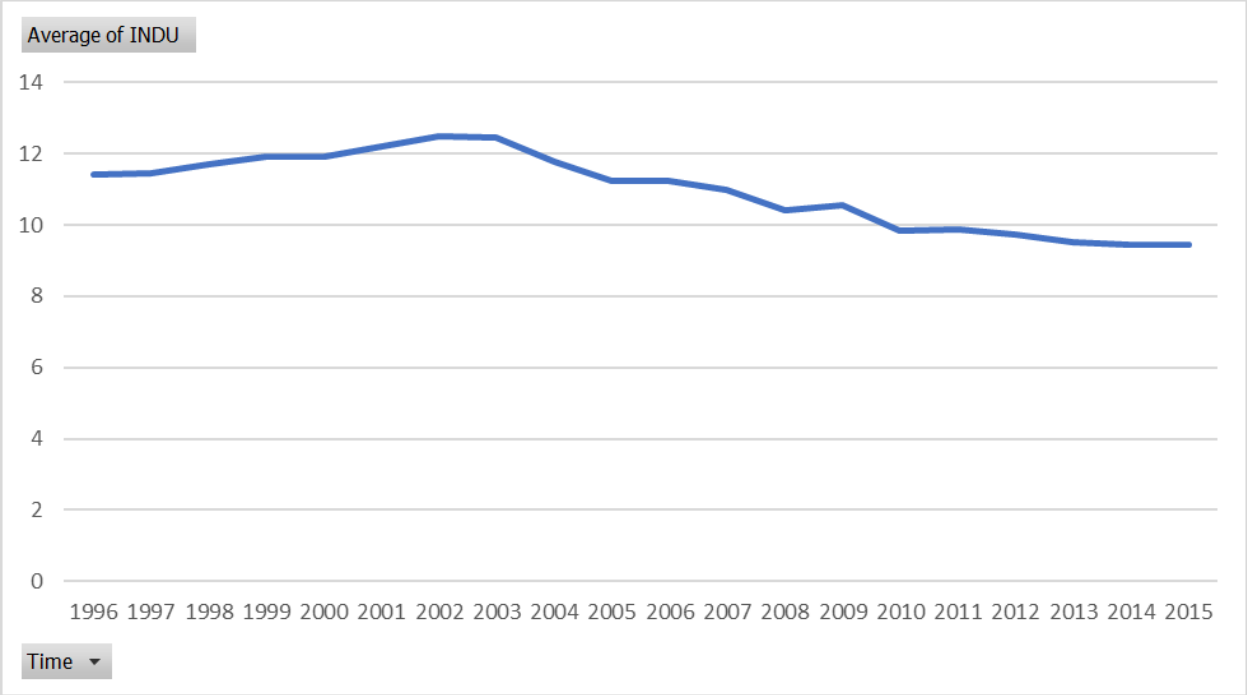

Figure 1.1: Average value added of the manufacturing sector (% of GDP) for all countries under the study from 1996 to 2015

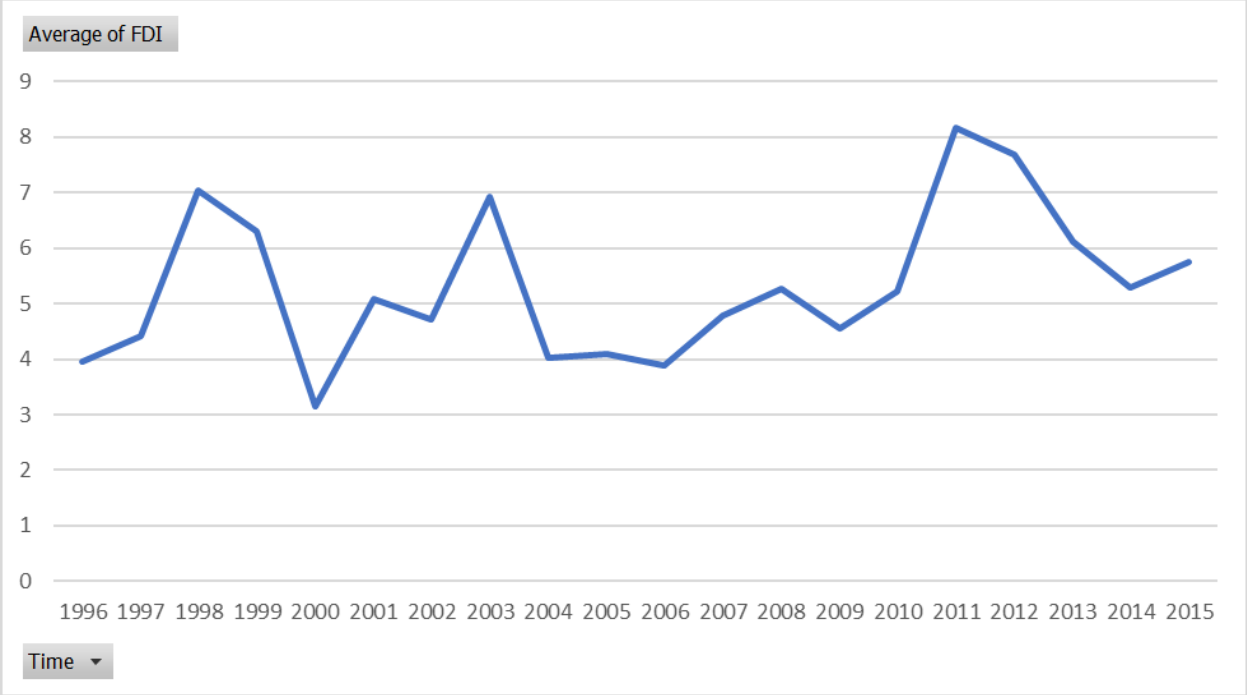

Figure 1.2: Average of net inflows of FDI for all countries under the study from 1996 to 2015

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There is a dearth of empirical studies that focus on the effects of FDI on industrialisation in the presence of good institutions in the African context. There is a need to investigate this because previous studies have failed to look closely into the dual role that institutions play in both the attraction of foreign direct investment and industrialisation. This study is important because of the move by most African countries to start diversifying their economies. Also, it is important because FDI in Africa has been rising steadily, thereby making it necessary to determine the conditions that need to be present, in order to best exploit FDI to achieve all the objectives of the investment inflows. The results should guide policy makers in formulating policies concerning industrialisation.

1.3 Research Purpose

The purpose of this study is to examine t7he conditions under which FDI can be best exploited to have a greater impact on industrialisation in African countries. The main focus of the study is to examine the extent to which good institutions boost the impact that FDI has on industrialisation. The study also builds on existing literature that examine the effects of FDI on industrialisation, and also literature that examines the impact of institutions on industrialisation.

1.4 Research Objectives

The study seeks to achieve two main objectives, that is, to:

1. Investigate the impact of foreign direct investment on Industrialisation in Sub-Saharan Africa

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2. Investigate the impact of institutional quality on industrialisation in Sub-Saharan Africa

1.5 Research Questions

The study seeks to answer the following questions:

1. What is the relationship between FDI and industrialisation in Sub-Saharan Africa?
2. What is the relationship between institutional quality and industrialisation in Sub-Saharan Africa?

1.6 Significance of the Study

The study holds a lot of significance and is of great importance to policy makers, academics and in practice. The study builds on the existing literature on foreign direct investment, and Institutions and Industrialisation. This research adds to the scant literature on the effects of FDI on industrialisation and improve on the discussions on how African countries can exploit FDI better. This study should help regulators and policy makers make better policies based on the results and findings of the research. The study also paves the way for other researchers to develop studies in the field.

1.7 Scope of the Study

This research focuses on three (3) main issues namely, FDI, Institutions and Industrialisation in sub-Saharan Africa. The study excludes countries without the relevant data for the study. Therefore, the study is conducted on forty (40) countries in sub-Saharan Africa. An expanded

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research scope into more developing countries should call for extra time and as the research period is limited, the study only looks into the sub-Saharan African region.

1.8 Limitations of the Study

Data availability is a major barrier to this research, as data on employment in the manufacturing industry is unavailable for most African countries. This data is very essential in conducting a very robust study on industrialisation. Consequently, it limits the researcher to only value added of the manufacturing sector as a proxy for industrialisation. Subsequent studies can improve upon the study with available relevant data in years to come. Also, though the study is concerned with the industrial sector, available data for FDI does not give a breakdown of FDI directed towards the manufacturing sector. The data aggregates all FDI inflows, which includes both primary sector and service sector seeking FDI. This presents another limitation to this study.

1.9 Organisation of the Study

This study is presented in the following outline. Chapter one presents the introduction of the study. Following this chapter, Chapter Two presents a review of existing literature and a review of existing theories which provide explanations for the findings of the study. It also includes an empirical review, which discusses the findings of past researchers to give a better insight into the study. Chapter Three explains the methodology employed for the study. In this chapter, all econometric tools employed for the analysis are discussed. Chapter Four of this study presents the empirical results and the discussion of the findings. The study is summarised in the final chapter - chapter five. This chapter also includes all conclusions and recommendations.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a synthesis of past literature pertaining Industrialization, FDI and Instiurions. It first takes a look at all the theories surrounding the research which is followed by an empirical review of past results by researchers in the areas of study listed above.

2.2 Theoretical Review

This subsection of the literature review is dedicated to the theories underpinning this study. First, the study discusses the relationship between FDI and industrialisation. The paper then discusses both the direct and the indirect effects of FDI inflows on industrialisation. The next set of theories delve into the impacts and effects of government policies and institutions on industrialisation.

2.2.1 Direct Effects of FDI on Industrialisation

Rodriguez-Claire (1996), and Markusen and Venables (1999) have developed very insightful theoretical models that analyse the effects of FDI on manufacturing sector growth. First and foremost, the model that was developed by Rodriguez-Claire (1996) analyses the impact of FDI inflows on industrialisation in terms of employment, which is the "ratio of employment generated in upstream industries through the demand for specialised inputs to the labour force

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hired directly by the firm" (Rodriquez-Claire, 1996). Upstream firms refer to all firms that deal with the extraction of raw materials needed in another stage of production, usually by another firm all together. Firms in the upstream part of the production process do not do anything with the material itself, such as processing the material. These firms simply find and extract the raw material. Therefore, any firm that relies on the extraction of raw materials commonly will rely on upstream firms in its production process.

A linkage and a competition effect come about from the emergence of a Multinational Company (Markusen and Venables, 1999). Competition effects arise when foreign firms entering into a host country, compete with local firms which are producing similar goods. The extent to which the competition effect may affect local firms may vary. It may increase based on the extent to which the multinational companies create surpluses of goods on the market. The competition effect may also decrease based on the level of productivity of the local firms. Linkage effects also arise when multinational corporations that enter into an economy use local firms for inputs and supplies raw materials and intermediate goods. This increase in demand for locally produced goods is able to boost the local economy. If the extent to which multinational corporations use local inputs is lower than that of local firms, a decrease in the use of local inputs or a total shutdown of local final goods producers would lead to the shutdown of local intermediate goods products because of the associated drop in demand from the local firm. Conversely, if foreign firms use more locally made inputs than local final goods producers, there will be an increase in the number of firms that engage in the production of intermediate goods. This will be as a result of backward linkages. According to Markusen and Venables (1999), due to the rise in the demand of intermediate products, new local firms will be formed to satisfy the increase in demand from the foreign firms. This will lead to a drop in the prices of locally produced

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intermediate products. This drop in prices will be beneficial for not only the multinational corporations but also to local final goods producing companies through reductions in production costs.

2.2.2 Indirect Effects of FDI on Industrialisation

The indirect effects of foreign direct investment on the growth of the manufacturing sector come from technological transfers. Technological transfers are mostly realised from the licensing or outright acquisition of intellectual property. Technological transfers can also be acquired through worker mobility (Fosfuri, Motta, and Ronde, 2011; Glass and Saggi, 2002). Technological transfers are important because they increase profit and can also boost the productivity of a firm. The number of jobs and the number of enterprises in the manufacturing sector and also, the amount of goods that this sector produces may increase due to factors such as the strength and the magnitude of forward and backward linkages for upstream or downstream firms. Downstream firms refer to all firms involved in the processing of materials collected during the upstream stage into a finished product. The downstream stage further includes the actual sale of that product to other businesses, governments or private individuals. The type of end user will vary depending on the finished product. Regardless of the industry involved, the downstream process has direct contact with customers through the finished product.

Upstream domestic enterprises that provide intermediate goods to both foreign and local firms may have access to foreign technology from the multinational corporation, through the conduction of training programmes for their/ staff, hiring ex-staff members of the foreign enterprises or directly licensing the technologies i.e., vertical spillovers. All these measures will lead to the production of quality goods that meet the standards of the multinational firm's parent company. Also, local firms will be able to improve their productivity through the access to low

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cost, quality inputs from upstream firms, the ability to hire ex-staff of multinationals, strengthen their research and development to copy the products of the multinationals. This would lead to the development of more competitive firms who operate in the same industry as the MNCs, i.e., horizontal spillovers.

2.2.3 Effect of Institutions on Industrialisation

The objectives of FDI may not always be in line with the objectives of the host countries. Maximising the positive effects on FDI depends on a number of factors: the use of locally produced inputs by MNCs, the ease of movement of skilled workers, and the existence of competition effects. If these factors are not addressed, it may lead to loss of jobs. The government must thus intervene to reduce the negative effects of foreign capital flows by formulating policies that are aimed at providing support for local enterprises to catch up with multinational corporations, reducing the collapse of local enterprises and encouraging vertical linkages, and attracting foreign investors whose objectives are in line with theirs. In order for a country to attract the best foreign investors to boost industrialisation, the government should create a business environment by formulating policies that focus on training the labour force, insuring the availability of quality infrastructure, ensuring a stable political climate, and reducing administrative bottlenecks.

Competition effects caused by the entry of multinational companies into a domestic economy will lead some local firms in the same sector to record losses due to lower profits and increased fixed costs. Authorities are expected to intervene to prevent a further deterioration in productivity. The government can intervene directly through the development of better education systems, promotion of research and development and improvement of transport systems.

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Rosenstein-Rodan (1943) mentions this direct role of government in industrialisation in his theory "big push industrialisation." He proposes that governments need to play a more active role involving the coordination of investment projects and also in providing adequate training for both skilled and unskilled workers. These initiatives provide long term benefits because they create both complementary industries and increased literacy. Murphy, Shleifer and Vishny (1989b) advocate for stronger government policies through improved infrastructure (railway lines and airports), subsidy for expenses of firms in the manufacturing sector, and provision of cheap capital to undertake projects.

2.3 Empirical Review

The empirical review is presented in three parts. First, a review of empirical studies on the relationship between FDI and Industrialisation is presented. Next, empirics on the role of institutions on industrialisation and development are reviewed. The last part of the empirical review presents a synthesis of research on institutions and their impact on FDI.

2.3.1 FDI, Industrialisation and Economic Development Empirics

There exists substantial literature on the impact of foreign capital inflows on industrialisation. The study looks at some important papers in this area to give a general overlook into this field. Kaya (2010) investigates globalisation and its impact on industrialisation. The author uses a sample of 64 developing countries over a period spanning 1980-2003. The results show that inward FDI has a negative effect on industrialisation. That is to say, countries that had more foreign investments were found to have lower levels of industrialisation. Kaya (2010) also showed that FDI from a developing country to another developing country did not have a

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significant effect on manufacturing. He proved that concerns were unwarranted for issues of de-industrialisation due to developing nations investors' investing in other countries.

With a focus on OECD countries, Kang and Lee (2011) use a generalised method of moments (approach) to investigate the issues and causes concerning de-industrialisation. Their model puts a lot of focus on FDI. They are able to prove that an increased flow of FDI causes an increase in the employment rate of the manufacturing sector. Also, their study is able to disprove previous arguments concerning FDI and de-industrialisation. They show that FDI outflows are of great significance in studying de-industrialisation. A shift abroad of capital (FDI outflow) initiates de-industrialisation, as this causes a reduction of employment in the local manufacturing sector.

Barrios, Gorg and Strobl (2005) used a data set from 1972 -2000 to analyse the impact of FDI on development of local industrial firms in the republic of Ireland. The model they used proxied the effect of the FDI on the entry of new firms by calculating the employment in foreign owned factories divided by total employment in industry. Per their results, FDI can be positive for local firms' growth, hence that the larger the amount of capital inflows, the more efficient the local firms would be. Blomstrom (1986) provides similar results using data from 1965 to 1970. The study finds that an increase in the level of FDI in a host economy will increase the number of firms in the economy. In other words, there are less firms present before the multinational corporation enters the industry.

Similarly, Sharma's (1984) investigation into southeast and east Asian countries found evidence proving that these countries experienced a surge in economic performance in the same period where there was substantially large inflow of FDI into the host country. This surge in economic performance was able to push these countries into a whole new group that the researcher referred to as "newly industrialised countries". Using a sample of 83 developing countries over the period

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of 1984 through 2003, Busse and Hefecker (2007) find that internal and external conflict, law and order, quality of bureaucracy, and government stability significantly affect the economic activities of multinational corporations. Lui (2002) in an investigation into the effects of FDI on industrialisation in China finds that value added generated by firms' increases was impacted positively by FDI in firms in the Shenzhen Special Economic Zone.

With a focus on Brazil, Chile and Venezuela, Alfaro and Rodriguez-Claire (2004) use firm-level data to study the impact of spillovers due to the entry of multinational corporations. The authors did not find significant results for the effects of horizontal spillovers due to an increase in FDI. They however found evidence in support of backward linkages. Rodriguez-Claire (1996) studied the effect of FDI on the economy in terms of employment. He found that depending on the extent to which multinational companies use local goods in the production of their final products, backward and forward linkages may occur.

In the results of the analysis conducted by Gui-diby and Renard (2015) on the role that FDI played in the industrialisation process of 47 African countries, FDI had an insignificant relationship with industrialisation. Their study employed a feasible least square regression on a data set from the year 1980 to 2009. Their findings were a major departure from the findings of previous studies which have mostly found an either positive or negative relationship. They cite the ineffective policies of African governments in attracting manufacturing sector seeking FDI as the main cause for this result.

With a focus on 69 developing countries, Borensztein, De Gregorio and Lee (1998) analysed the role of FDI flows from industrialized countries in the process of technological spillovers and economic development in these countries. The main results from their cross-sectional analysis show that foreign direct investment has a positive impact on economic development. This effect

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may differ based on the level of human capital that a country may have. They also show that foreign direct investment could be a very good way where technology from the advanced industrial countries are transferred to developing countries.

2.3.2 Institutions, Industrialisation and Economic Development Empirics

Da Rin and Hellman (2002) show that if governments create a strong legal framework that boosts the establishment of banks, it can play a catalytic role in industrialisation. This would provide credit to local manufacturing firms. In the analysis of the impact of government policies on industrialisation, Bjorvatn and Coniglio (2012) find that developing countries need interventions by governments more than developed countries in the industrialisation process. Dahlman (2009), Rodrik (1996) and Rodrik (1995) in the assessment of industrialisation in Asian countries explain that government policies, tax reductions, tariff protection, improved intellectual property laws and better procurement systems were essential to industrialisation.

Agbloyor, Gyeke-Dako, Kuipo and Abor (2016) use the generalised method of moments' technique to investigate whether countries with better institutions use FDI better to have a greater impact on economic growth. The authors used sub-Saharan countries as sample over the period from 1996 to 2010. They find that in countries with low natural resources and low financial development, institutions have a positive impact on economic growth.

2.3.3 FDI and Institutions Empirics

The relationship between institutions and foreign direct investment cannot be discerned from theory. This is because, the theoretical relationship between these economic variables remains unclear. To understand the relationship they hold, an empirical review of the extant literature is of importance.

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Tang and Zhang (2016) looked into the absorptive capacities and benefits of inward FDI into china over an 8-year period. They used a fixed effects model after they rejected all the assumptions for pooled OLS and the random effects model. Results from their study show that FDI policy was very beneficial to manufacturing export capacity. Papaioannou (2009) also used both panel data and cross-sectional data techniques in studying the effect of cross-border borrowing. Their findings showed that improvements in government policies led to significant rises in international finance for economic development.

In their study, Kucera and Principi (2014) investigate whether a strengthened democratic system and higher foreign investment inflows are necessary for industrial development. They sought to explore the idea that multinationals preferred to invest in dictatorship regimes because of their weaker policies and institutions. The paper employed a generalised method of moments estimator for their analysis of 54 countries over the period of 1994 – 2010. Their results showed a positive and statistically significant relationship between democracy and outward FDI from the USA. That is to say, more democratic nations receive more FDI from USA multinationals, which disproves the notion that multinationals preferred to invest in authoritarian regimes. Consistent with this are findings from Vadlamannati (2012) who found similar results between democracy and FDI in his studies. Bisson (2011) covers a sample of 45 developing counties and his analysis shows that the level of institutions in a host country is important in attracting inward FDI.

Similar to these articles, Biglaiser and Staats (2010) investigate whether political institutions affect FDI. Their study is focused on 138 developing countries within a period from 1976-2004. Their findings show that among all the different institutional indicators used, the most prominent in the attraction of FDI were enforcement of property rights, the uphold of rule of law or the absence of lawlessness, and court systems that were highly efficient and effective. However,

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institutional indicators that were not directly tied to investment risk, such as respect for human rights, showed less significance.

Vibrant institutions that provide checks and balances on leaders elected by stakeholders have a positive effect on the attraction of FDI (North and Weingast, 1989). Institutional quality tends to reduce arbitrary government regulations that stifle regular business processes, and also lowers the risk of policy reversal. Lothian (2006) shows that foreign investors are more attracted to countries with higher quality institutions. His results help to explain why majority of FDI does not flow form rich countries into poor countries. Alfaro, Kalemli-Ozcan and Volosovych (2008) also investigate the Lucas paradox and find that institutional quality is the main explanation for this paradox. Asiedu and lien (2011) find that investors prefer countries with better institutions when operating in non-resource exporting countries and prefer less democratic governments when they operate in resource seeking countries. Asiedu (2006) also find that foreign investors prefer countries with effective rule of law. The paper also finds evidence that political instability and corrupt governments and government officials are hinderances to the inflow of capital into the sub-Saharan African region. Wei (2000) finds results that are consistent with this.

Cleeve (2012) find that political instability and corruption have an insignificant relationship with FDI. However, foreign investors prefer countries with strong investment profiles, strong democratic governments with all the appropriate checks and balances, and a strong macroeconomic climate. As such, these countries attract larger proportions of FDI from multinational enterprises. With the spotlight on Russia over the period of 1996 through 2007, Ledyaeva, Karhunen and Kosonen (2013) find that foreign investors originating from countries with high rates of corruption and undemocratic governments tend to invest in areas like Russia with similar characteristics to their home countries.

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Using a fuzzy set analysis, Pajunen (2008) sought to better understand the causal relationship that exists between FDI flows and institutional factors. The study used a data set which included 47 host countries. These countries comprised of both developing and developed countries. In sum, his results provided support for the view that in the attraction of Multinational Enterprises (MNEs) to provide long-term investments, institutional factors were of great importance.

Kobrin (1976) conducted a cross sectional analysis on 59 developing countries. The aim of the study was to establish the relationship between capital flows as a vehicle for institutions. His findings show that FDI serves as a direct and continuous agent of manufacturing sector growth and intensifies the relationship between industrialisation and institutions.

2.4 Conclusion

From the literature reviewed above, it can be seen that both FDI and institutions can have either positive, negative or insignificant impact on industrialisation. The following conclusions can thus be drawn. First of all, the objectives of foreign investors may not always be in line with host nations. Secondly, governments have the ability to play a major role in the industrialisation process. Based on this, this paper sets out to investigate whether FDI can aid the industrialisation process in the presence of quality institutions.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the analytical model employed in the study is specified. The variables used are also explained together with their predicted signs based on theory and empirics. A detailed overview is presented for all the data analytical processes employed, together with all the statistical tests performed on the data.

3.2 Estimation Technique

For the purpose of this study, both the fixed effects model (FEM) and the random effects model (REM) which may also be referred to as the error components model (ECM) were employed in analysing the data. Even though these two estimation techniques provide reliable results, the Hausman specification test was used in selecting which of the two results to use.

The purpose of this study is to explore the effects of foreign direct investment and institutional quality on industrialisation. This study uses panel data analysis on annual data which span the period from 1996 to 2015 for selected African countries.

A distinction stated by Brooks (2008) between the fixed effects model and random effects model states that the fixed effects model is considered to be more appropriate when the sample is somewhat made up of the entire population, whereas, a random effects model is considered more appropriate for random sampling. Looking at a more statistical distinction, the REM is more appropriate when the composite residual term, comprising of the individual specific residual and

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cross-sectional residual are uncorrelated with the explanatory variables. This implies that the FEM is considered ideal only when the residual variables are not correlated with the independent variables. The Hausman specification test is thus used to decipher if the unique residual terms are correlated with the regressors. The results of the test are used to determine whether the fixed effects model or the random effects model is a better suited for the analysis.

3.3 Empirical Model

The Empirical model is similar to previous studies in the area of FDI and Industrialisation by Gui-diby and Renard (2015). The basic model is specified as follows:

$$INDU_{it} = \beta_1 \mathrm{FDI}_{it} + \beta_2 Institutions_{it} + \beta_3 \mathrm{AGRI}_{it} + \beta_4 INV_{it} + \beta_5 EXP_{it} + \beta_6 IMP_{it} + \beta_7 GDPCAP_{it} + \beta_8 (GDPCAP^2)_{it} + \alpha_i + \mu_t + \varepsilon_{it}$$

Index *i* denotes the country (i=1,2,3,4……40)

Index t denotes the time period (t=1996,1997,1998, 1999…….2015)

α_i captures the country effect

μ_t captures the unobserved time specific effects

ε_{it} is the idiosyncratic or random error

β_i for $i = (1,.....,t)$ are slope coefficients.

INDU represents the measurement for industrialisation

FDI represents the measurement for foreign direct investment

INSTU measure the institutional indicators

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AGRI represents the measurement for agriculture

INV represents the measurement for investment

EXP represents the measurement for export

IMP represents the measurement for import

GDPCAP represents the measurement for the level of income

$(GDPCAP)^2$ represents the square of GDPCAP

3.4 Data and Sources

The data set for the research comprise yearly observations of 40 countries in the sub-Saharan region. These countries are Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Dem. Rep., Congo, Rep., Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. The study covers a period from 1996 to 2015 for a total of 20 years. This time period was selected because of data availability on the variables for Institutions.

Data on the variables net FDI inflows, value added of the manufacturing, service and agricultural sectors, gross fixed capital formation, exports, and imports as a percentage of GDP were extracted from the world bank database World development Indicators(WDI). The six Kaufman indicators were used as proxies for institutions. The indicators control of corruption, voice and accountability, regulatory quality, political stability and absence of violence, government

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effectiveness, rule of law, the data on institutions were extracted from the World Governance Indicators (WGI) database of the World Bank.

3.5 Variables and A Priori Expectation

3.5.1 Dependent Variable

The study seeks to assess the effect of FDI and Institutions on Industrialisation in sub-Saharan Africa. Based on the extant literature, industrialisation can be proxied using two indicators. Dodzin and Vamvakidis (2004), Gui–diby and Renard (2015), and Kang and Lee (2011) use the value added of the manufacturing sector as a percentage of GDP. Different studies, including those of Kaya (2010) and Kang and Lee (2011) also use the share of employment in the manufacturing sector. Due to the unavailability of data on the share of employment in the manufacturing sector in Africa, value added of the manufacturing sector was used, as suggested by Chandra (2003), Dodzin and Vamvakidis (2004), Kang and Lee (2011) and Gui-Diby and Renard (2015).

3.5.2 Independent Variables

The two main variables under study are foreign direct investment and institutions. The variable foreign direct investment was proxied by net foreign direct investment inflows as a percentage of GDP as used by Gui-diby and Renard (2015), Kang and Lee (2011) and Kaya (2010). This variable is an aggregate of both resource-seeking FDI inflows and manufacturing sector inflows. This presents itself as a limitation to the study because this study is mainly concerned with the manufacturing sector. Unfortunately, there is lack of data presenting a sector by sector breakdown of the FDI inflows received by sub-Saharan African countries.

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Institutions was proxied by the Kaufman indicators. These indicators are control of corruption, voice and accountability, regulatory quality, political stability and absence of violence, government effectiveness and lastly, rule of law. Following Agbloyor et al (2016) and Kose et al (2011), an aggregate measure for the six Kaufaman indicators on institutional quality is found by averaging the six indicators. All these seven indicators are included in the model sequentially. This adds up to a total of seven regressions for the study.

3.5.3 Control Variables

A set of control variables are included to test for robustness of the results in the presence of those variables. These include investment, level of income, agriculture, imports and exports. These control variables have been extensively reviewed in literature (see Gui-diby and Renard, 2015)

Investment is included in the model as one of the controls and is proxied by gross fixed capital formation as a percentage of GDP at current prices, as used by Gui-diby and Renard (2015). This can also be viewed as an effort to develop on technologies that already exist in a country. It has been argued extensively that domestic investment is of great importance to local economies because profits gotten from these investments are more likely to be kept in the economy and reinvested. Similar studies have used it as a control variable (Bornschier and Chase-Dunn 1985; Kentor 2001; Kentor and Boswell 2003; Jorgenson 2006). Rowthorn and Ramaswamy (1997) and Kaya (2010) discover a positive relationship between industrialisation and investment for both OECD countries and developing countries. Kaya (2010) explains that an increase in domestic investment should lead to an increase in the demand for manufactured goods which leads to an increase in the importance of this sector in relation to the agricultural and service sector. Based on this, investment and industrialisation are likely to have a positive relationship.

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Agriculture can be an explanatory variable for industrialisation; Value added of the agricultural sector as a percentage of GDP is also added to the model. The expansion/ contraction of one sector should lead to the contraction/ expansion of the other sectors. Kang and Lee (2011) include the service sector in their model, whereas Gui-diby and Renard (2015) use the agricultural sector in their model. Because of the heavy reliance of African countries to the agricultural sector and thus is of more importance to the region, agriculture is included in the model. In order not to create multi-collinearity issues, services are not combined with agriculture.

Imports and exports can also be explanatory factors for industrialisation. These variables are proxied by imports and exports of goods and services, both as a percentage of GDP. Gui-Diby and Renard (2015) find that imports have a positive impact on industrialisation in their study which focuses on African countries. They also find that exports have a negative impact on industrialisation. They cite the reason for this being that African countries export more primary goods and import larger quantities of manufactured products. Many scholars have argued that there is negative relationship between heavy dependence on primary sector exports and industrialisation. It has been shown that this may lead to the phenomenon known as the "resource curse" (Auty, 2000). On this basis, the predicted signs for exports will be negative, whereas, imports will carry a positive predicted sign.

The next variable used for the study is the level of household income. Many studies, including Kang and Lee (2011), and Dong et al. (2011) have proxied market size and level of household income using GDP per capita. These studies find that the level of income has a positive relationship with industrialisation. Per capita GDP is used because it can be used as a means of observing the changes in demand in relationship to increases in national income and the impact it

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has on industrialisation. For the purpose of this study, I use the logarithm of GDP per capita at Purchasing Power Parity in 2010 constant prices. The use of this data reduces the issue of heteroskedasticity, gets rid of exchange rate fluctuations and also represents real purchasing power.

Lastly, the final variable used in the study is the square of the logarithm of GDP per capita. This is introduced into the model to show that when the GDP per capita of a nation rises, the consumption patterns of the citizens move from goods to services. Many scholars have argued that the manufacturing sector moves with an inverted-U shape along with the level of income. The inverted-U theory shows that there may be a positive correlation between the level of income and industrialisation. This may remain so to a particular point of level of income, at this point, the relationship becomes negative, hence de-industrialization is said to occur. Evidence of this has been found by Gui-diby and Renard (2015) and Kaya (2010) in developing countries, while Rowthorn and Ramaswamy (1997) and Kang and Lee (2011) in OECD countries. It can be assumed that as consumers' level of income increases, they move from consuming non-processed products to manufactured products, and finally from manufactured products to services. To show the inverted-U theory, the per capita GDP's coefficient should be positive, whereas the square of per capita GDP should be negative. This will show that the level of income will have a curve linear effect on industrialisation. Based on this, the predicted signs for per capita GDP will be positive, whereas, the square of the per capita GDP will be negative.

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Variable	Expected Sign	Label Used	Data Source
Foreign Direct investment	+	FDI	WDI
Institutions	+	INSTU	WGI
Investment	+	INV	WDI
Agriculture	-	AGRI	WDI
Import	+	IMP	WDI
Export	-	EXP	WDI
Level of income	+,-	GDPCAP, $(GDPCAP)^2$	WDI

Table 3.1: Apriori Expectations

3.6 Statistical Tests

3.6.1 Hausman Test

The study employs the Hausman specification test, which was used in choosing between the two panel data estimation techniques (fixed effects model and random effects model). Panel data brings about issues such as a potential correlation between the errors and the regressors. The test which was formed by James Durbin, De-Min Wu, and Jerry A. Hausman is used to determine which of the models fits better with the characteristics of the data, i.e. the estimator which is more consistent. The null hypothesis for the Hausman specification test shows preference for the random effects model over the fixed effects model. The null hypothesis states that the random

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effects model is more appropriate and the alternative hypothesis states that the fixed effects model is more appropriate. The null hypothesis will be rejected if the chi-squared probability is less than a 5% significance level. The result of the Hausman test will indicate which model will be adopted for the study.

3.6.2 Correlation Analysis

Correlation tests are used to determine the linear relationship between two variables under investigation. The value gotten from this test is known as the correlation coefficient. It is measured on a scale of -1 to 1. The sign that the correlation coefficient bears shows us the direction of the linear relationship in which the two variables under investigation may have. That is to say, it describes whether the variables may have a direct or an indirect relationship. A value of 0 indicates that there is no linear correlation, a value of close to -1 indicates a strong negative linear correlation, and a value close to 1 indicates a strong positive linear relationship.

3.7 Robustness Checks

To test the robustness of the results, the study relied on the alteration and insertion of different variables and time periods into the model. In order to see the effect that the services sector has on industrialization, the variable Agriculture was substituted for Services. These two variables could not be used in the model simultaneously in order to avoid multicollinearity issues. The variables Import and Export were both substituted by Trade in order to see the wholistic effect that these two variables had on industrialization. Also, to account for the fact that average industrialization was increasing in the first half of the date and started declining in the second half of the time period under study, the time period was divided into two. The first period will run from 1996 to

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2005 and the second period was run from 2006 to 2015 Also to account for endogeneity, the generalized method of moments method (GMM) was used.

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CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter of the study is focused on carrying out the various empirical analysis that helps examine the relationship between the variables for the study. The various tests and econometric model described in chapter 3 of this work are carried out in this chapter, and the empirical results explained. The chapter begins with a discussion of the descriptive statistics of the variables employed in this study, an assessment of the results of statistical tests run on the various variables, a presentation and discussion of results obtained from the panel regression carried out and its empirical implications.

4.2 Descriptive Statistics of Variables

	Count	Mean	Standard deviation	Minimum	Maximum
INDU	704	10.996	6.689	.2371	39.465
FDI	771	5.312	11.364	-82.892	161.824
AGRI	727	25.708	16.637	.8920	93.977
INV	735	22.506	17.234	-2.424	219.069
EXP	738	34.320	22.161	4.429	124.393
IMP	738	46.016	35.151	10.492	424.817
GDPCAP	776	7.807	1.006	5.570	10.597
$(GDPCAP)^2$	776	61.956	16.476	31.029	112.297
INSTU	663	-.638	.618	-2.100	.880
CCOR	663	-.619	.6136	-1.773	1.217
VACC	663	-.642	.731	-2.226	1.007
REGQ	663	-.656	.634	-2.298	1.127
PSAV	663	-.520	.910	-2.845	1.282
GEFF	663	-.705	.612	-1.885	1.049
RLAW	663	-.688	.645	-2.130	1.077

Table 4.1: Descriptive Statistics

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Table 4.1 above gives a description of the data used in the study. The first column shows the names of the various variables used in the model, the following columns show the number of observations for each variable - the mean, the standard deviation and the minimum and maximum values observed for each variable respectively. It was noticed that the number of observations differ for the various variables. This yields an unbalanced panel and could be attributed to issues of missing values in the data set obtained, stemming from the fact that this study employed secondary data for which the researcher has limited or no control over. The mean as a descriptive statistic serves as a measure of central tendency, which gives an idea of an average for all observations under each variable. As a measure of average percentage total GDP, as seen from Table 4.1, industrialisation, FDI, Agriculture, investment, export and import make up approximately 11, 5, 26, 23, 34 and 46 percent of total GDP, respectively. From these variables listed, it can be observe that on average, investments, import and export take relatively higher percentages of GDP. It could be further observed that for the countries under study, if the total GDP should be shared amongst the entire population, averagely 8 percent of the total GDP is what accrues to each individual country.

The variables institutions, control of corruption, voice and accountability, regulatory quality, political stability and absence of violence, government effectiveness and rule of law are indices measured on a scale of -2.5 to 2.5 hence, for values close to - 2.5, performance of those variables could be said to be poor and below standard; whereas values close to 2.5 could be said to have performed favourably and above standard. Table 4.1 shows that all that variables mentioned above assume values below zero. This is an indication that for the countries sampled, on average, performance for corruption control, voice and accountability, regulatory quality, political stability and absence of violence, government effectiveness and rule of law have been below

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standard. The variable institutions, which condenses the various indicators as previously explained in earlier chapters, assumes a value of -0.688. This shows that the average performance of all variables mentioned above has been below average.

The standard deviation provided a measure of spread of the data set. As such, it gives an indication of how spread out or clustered the values assumed for the various variables are around the mean or far off from the mean. In relation to the mean or average value, a high standard deviation value shows that the data points are largely dispersed, whereas a smaller standard deviation value means that the data points are closer to the mean value with little dispersion.

The minimum and maximum values reported give a fair idea of the range of values assumed by the observations under the various variables. The wider apart the minimum value from the maximum value, the more spread out the observations recorded for a given variable, which further reflects in the standard deviation values reported.

From table 4.1, it can be observed that the variables that measure performance of state institutions have a lower ranged. This is seen in how close the maximum and minimum values are, and as shown in the values reported for their standard deviations. Variables such as industrialisation, FDI, Agriculture, investment, export and import, however, are observed to have a higher range of values since, their minimum and maximum values are wide apart.

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4.3 Correlations

Using the Pearson ranked correlation as a measure of the apparent linear relationship between a pairwise comparison of variables, table 4.2 presents the correlation coefficients. The Pearson's ranked correlation coefficient assumes a value between 0 and 1, with either positive or negative sign to depict the nature of the relationship. A positive correlation implies a positive relationship, whereas a negative correlation implies an adverse relationship between a pair of variables. The strength of the correlation, if closer to zero, shows a weak correlation; whereas if close to one, depicts a perfect relationship.

A correlation of zero shows no relationship whatsoever between a given pair of variables hence, a pair of variables with correlation greater than 0.5 can be said to have a strong correlation. The correlation was tested for the following pairs of variables: investment and FDI, investment and import, agriculture and export, Agric and GDP per capita, agriculture and PSAV, investment and import, export and import, export and GDP per capita as well as GDP per capita and PSAV. Given that the variables GDP per capita and GDP per capita squared are invariably the same items, only, one is a scaled version of the other. It is expected that a positive correlation between a given variable and GDP per capita will translate into a similar positive relationship between the same variable and GDP per capita squared, with a similar degree of correlation strength, and vice versa.

The variables INSTU, CCOR, VOCC, REGQ, PSAV, GEFF and RLAW are observed to have very high correlations mostly exceeding 0.7. This could be due to the fact that these variables are very alike both in terms of what is sought to measure and their respective functions. Concerns might be raised about the possible case of multicollinearity in our model because of the apparent similarity between these institutional variables as measured by the degree of their correlation. It

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should however be noted that these issues of possible multicollinearity do not hold and would not pose threats to the accuracy of results presented at the end of the study. This is due to the fact that these variables are not all employed in the model at the same time but rather introduced one after the other. The accuracy of results is therefore not marred by issues of possible multicollinearity.

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	INDU	FDI	AGRI	INV	EXP	IMP	GDPCAP	(GDPCAP)^2	INSTU	CCOR	VACC	REGQ	PSAV	GEFF	RLAW
INDU	1														
FDI	-0.172***	1													
AGRI	-0.383***	0.0296	1												
INV	-0.0448	0.591***	-0.358***	1											
EXP	0.123***	0.239***	-0.561***	0.423***	1										
IMP	0.139***	0.608***	-0.179***	0.753***	0.605***	1									
GDPCAP	0.192***	0.0157	-0.748***	0.306***	0.677***	0.215***	1								
(GDPCAP)^2	0.190***	0.0192	-0.738***	0.304***	0.681***	0.219***	0.998***	1							
INSTU	0.247***	-0.0255	-0.482***	0.112***	0.137***	0.0727*	0.453***	0.446***	1						
CCOR	0.238***	-0.0269	-0.435***	0.0499	0.0569	0.0946**	0.344***	0.339***	0.884***	1					
VACC	0.151***	-0.0114	-0.289***	0.0427	0.0394	0.0426	0.272***	0.266***	0.875***	0.688***	1				
REGQ	0.211***	-0.0883**	-0.387***	0.0762*	0.0178	-0.0750*	0.388***	0.377***	0.904***	0.744***	0.801***	1			
PSAV	0.242***	0.0618	-0.521***	0.220***	0.349***	0.206***	0.511***	0.509***	0.834***	0.665***	0.632***	0.639***	1		
GEFF	0.258***	-0.0674*	-0.492***	0.0807**	0.0833**	0.0140	0.457***	0.448***	0.931***	0.851***	0.785***	0.868***	0.668***	1	
RLAW	0.232***	-0.0450	-0.459***	0.0838**	0.103***	0.0491	0.429***	0.423***	0.967***	0.870***	0.817***	0.871***	0.769***	0.908***	1

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

Table 4.2: Correlation Matrix

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4.4 Panel Regression Results Analysis

Given the panel nature of the data set which was employ in the analysis, we resort to using a panel regression model to analyse the relationship between the independent and dependent variables. As explained already, a Hausman test is conducted to determine whether a fixed effect or a random effect regression model is a better option. The results of the probability of the chi-squared statistic, given our level of significance, influences our decision to reject the null hypothesis which posits a use of a random effect regression model.

4.4.1 Hausman Test

The statistical model employed in this study requires that we introduce the institution variables one after the other and run each regression independently. In view of this, a separate Hausman test is run for each case for each new independent institution variable introduced. The Hausman test yields a chi-squared probability score of 0.000 for each test conducted; this leads to a rejection of the null hypothesis. A rejection of the null hypothesis is an indication that the fixed effects model in this case is more preferred. As such, the fixed effects regression model is used throughout the estimation process.

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	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.03833**	-0.03763**	-0.03163*	-0.03614**	-0.03435**	-0.03672**	-0.03589**
	(0.01610)	(0.01602)	(0.01624)	(0.01627)	(0.01638)	(0.01623)	(0.01613)
INSTU	3.1281***						
	(0.6751)						
GDPCAP	1.3932	3.6701	2.3773	4.4628	4.5023	5.9245	0.4068
	(5.3863)	(5.3006)	(5.4797)	(5.3786)	(5.4603)	(5.3511)	(5.4773)
$(GDPCAP)^2$	-0.5376	-0.6620**	-0.5903*	-0.7181**	-0.7037**	-0.7943**	-0.4859
	(0.3382)	(0.3338)	(0.3437)	(0.3385)	(0.3437)	(0.3372)	(0.3428)
AGRI	-0.05598***	-0.06628***	-0.05484**	-0.06314***	-0.06703***	-0.07097***	-0.05704***
	(0.02064)	(0.02035)	(0.02127)	(0.02076)	(0.02089)	(0.02059)	(0.02074)
INV	0.0008355	-0.0008483	-0.008083	-0.01099	-0.007168	-0.003220	-0.0003336
	(0.02022)	(0.02008)	(0.02032)	(0.02028)	(0.02059)	(0.02035)	(0.02030)
EXP	-0.03842***	-0.04388***	-0.04974***	-0.04779***	-0.05159***	-0.04153***	-0.04016***
	(0.01486)	(0.01454)	(0.01470)	(0.01476)	(0.01484)	(0.01503)	(0.01491)
IMP	0.01605*	0.01865**	0.01939**	0.02257**	0.02277**	0.02098**	0.01584*
	(0.009116)	(0.008969)	(0.009196)	(0.009047)	(0.009173)	(0.009061)	(0.009208)
CCOR		2.5915***					
		(0.5128)					
VACC			1.6492***				
			(0.5463)				
REGQ				1.4472***			
				(0.4617)			
PSAV					0.4682		
					(0.3074)		
GEFF						1.9084***	
						(0.5416)	
RLAW							2.4650***
							(0.5939)
_cons	37.529*	27.466	32.571	24.209	22.483	17.791	41.884*
	(21.421)	(20.993)	(21.807)	(21.320)	(21.617)	(21.159)	(21.869)
N	561	561	561	561	561	561	561
R^2	0.240	0.246	0.222	0.223	0.212	0.227	0.234
adj. R^2	0.172	0.178	0.152	0.154	0.141	0.158	0.165
F	20.287	20.930	18.336	18.449	17.264	18.857	19.617
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.3 : fixed effects regression model results (1996- 2015)

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Table 4.3 presents the fixed effects regression results performed during the period from 1996 to 2015 on all the countries that are being investigated in the study. The various columns labelled 1 to 7, correspond with the various regressions run for each of the variables for institution which have been discussed in the previous chapter.

4.5 Discussion of Results

4.5.1 Explanatory Variables

Of the seven regressions that were run, six of them show that the relationship between foreign direct investment and industrialisation is negative and significant at a 5% significance level. Model 3 also follows these results but is only marginally significant at a 10% significance level (see table 4.3). A reason for this could be the failure of governments in providing a good environment where investors are willing to direct their investments towards the manufacturing sector (Gui-Diby and Renard, 2015). Foreign direct investment may not always be beneficial to the host country's needs. Empirical studies by Alsan, Bloom, and Canning (2006), and Asiedu (2006) show that countries that are more highly endowed with natural resources tend to receive more inflows of capital from foreign nationals. Therefore, the negative impact of foreign direct investments on industrialisation can be pinned on the fact that resources are being directed towards the primary sector (Alsan et al, 2006).

In the case of institutions, the results show overwhelming evidences that good institutions have a direct role in promoting industrialisation. There is a strong evidence that the relationship between institutions and other variables is positive. Six out of the seven indicators used to proxy institutions have coefficients that are positive and significant at a 1% level of significance. This

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means that control of corruption, voice and accountability, regulatory quality, government effectiveness and rule of law all seem to be necessary for industrialisation. This implies that for a country to grow its industrial sector quickly, it has to increase its control on corruption, allow better levels of voice and accountability, have better regulations, make their governments more effective and ensure rule of law in the country. The only indicator that showed insignificant results is Political Stability and Absence of Violence (see table 4.3)

4.5.2 Control Variables

The variable investments came out with insignificant results throughout the seven regressions. It is thus, not worth considering in the discussion. Per the results, the level of income or market size also has an insignificant impact on industrialisation. This is because, the seven models consistently show an insignificant result for the coefficient associated with GDPCAP. However, when we look at the square of GDPCAP, it shows a negative and significant relationship at a 5% significance level for the second, fourth, fifth and sixth models. Due to these results, This study is unable to prove whether a non-linear relationship (inverse-U) exists. The study is therefore unable to show the theory of Clark (1957). This can be explained by considering that most of the countries in the sample are only in the early stages of industrialisation and have not begun to reach the state where they begin to turn down.

Coefficients associated with imports and exports match those found by Gui-Diby and Renard (2015) and Kang and Lee (2011). In the analysis of these two variables, it must be noted that imports coming into the sub-Saharan African region are mostly manufactured goods. On the other hand, exports coming out of this region are mostly primary sector goods (non-processed). The results showed that imports had a positive impact on industrialisation. All the coefficients associated across all the seven models were positive and significant. Stein (1992) gives an

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explanation for these results, the paper cites the reason for this as being the importation of capital or intermediate products which has a positive impact on the promotion of the industrial sector. Also, due to the nature of the imports being mainly manufactured goods, the importation of these goods lead to technological spillovers, which lead to enhanced growth of the industrial sector in the country.

Pertaining to exports, the results show an overwhelmingly negative and significant relationship with industrialisation across the seven regressions run. All the coefficients for this variable are significant at a 1% significance level. These negative results can be explained by the natural resource curse phenomenon and the economic policies set by most African countries that were examined in this study. This refers to the paradox where countries may have high levels of natural resources but will still have low levels of economic growth and worse development outcomes (Frankel, 2012). To add to this, countries that are highly endowed with natural resources tend to focus heavily on development of their industries at the expense of other sectors, thus the reason for the negative impact of exports on industrialisation.

Lastly, the agricultural sector also shows a strongly negative impact on industrialisation, the seven models all bring out similar results. All the coefficients associated with agriculture are negative and significant at a 1% significance level. An explanation of the negative effect of agriculture on industrialisation can be found in the results of Corden and Neary (1982) and Botta (2010) who show that a boom in one specific sector (being the agricultural sector) may contribute to a reduction in the growth of the industrial sector or may even lead to de-industrialisation. This is because, resources may be diverted away from the manufacturing sector to the primary sector.

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4.6 Robustness Checks

The substitution of the variable AGRI for SERV does not cause a deviation from the main results that much. FDI still has a negative impact on industrialisation for the fixed effects model. However, the significance of the results seems to be reduced. The signs for the institutional indicators are all positive and significant at 1% for both the fixed effects model apart from PSAV which is barely significant at only 10%. The variables GDPCAP $(GDPCAP)^2$, SERV and INV all present insignificant results for the model employed. IMP and EXP both have similar signs with that of the main results. IMP has a positive and significant relationship, whereas as EXP has a negative and significant relationship.

When IMP and EXP are substituted for TRADE, the sign for FDI is positive and significant. The results for GDPCAP, $(GDPCAP)^2$, INV and TRADE are all insignificant for both models. The insertion of TRADE into the models does not change the signs for the institutional indicators, which still remains positive and significant at 1% for both estimation techniques. The coefficients for AGRI all have negative signs and are all significant at 1% for the estimation technique used

The data sample was then split into two halves resulting in two groups of data which span the period of(1996 to 2015) and (1996 to 2005) the results presented are very interesting. For this period, FDI does not seem to have a significant relationship with industrialisation. The institutional indicators also show insignificant results, with only INSTU and CCOR having significantly positive signs at 10% and 5% respectively. The coefficient for AGRI still remains negative and significant at 1% across board, in line with the main results. IMP, EXP and INV all have insignificant impacts on industrialisation for this period.

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For the next time period (2006 to 2015) the coefficients for FDI are barely significant with only a few of the models producing negative results at 1% significance. The impact of AGRI remains negative and significant at 1% for both estimation techniques. Coefficients for INV and EXP both have negative signs that are significant. IMP also has a positive and significant impact on the dependent variable in this time period.

When the GMM estimator is used the impact of FDI on Industrialization of Sub-Saharan African countries remains negative. The coefficients for AGRI and EXP remain negative when this method is used. Investment and import on the other hand both have positive and significant results when the GMM method is used.

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	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.03215**	-0.03047*	-0.02492	-0.02917*	-0.02761*	-0.02874*	-0.02968*
	(0.01611)	(0.01607)	(0.01622)	(0.01630)	(0.01641)	(0.01629)	(0.01614)
INSTU	3.3565***						
	(0.6826)						
GDPCAP	0.2965	2.9574	0.9722	3.6159	3.4001	5.2361	-0.7711
	(5.4355)	(5.3624)	(5.5267)	(5.4367)	(5.5194)	(5.4222)	(5.5251)
$(GDPCAP)^2$	-0.4530	-0.6027*	-0.4866	-0.6484*	-0.6237*	-0.7329**	-0.4005
	(0.3418)	(0.3380)	(0.3473)	(0.3425)	(0.3476)	(0.3420)	(0.3462)
SERV	0.001151	0.01385	-0.002613	0.006979	0.01460	0.01419	0.005811
	(0.02107)	(0.02081)	(0.02178)	(0.02132)	(0.02127)	(0.02111)	(0.02106)
INV	0.005742	0.004060	-0.003989	-0.006408	-0.001124	0.001118	0.004702
	(0.02035)	(0.02030)	(0.02044)	(0.02047)	(0.02077)	(0.02060)	(0.02044)
EXP	-0.04200***	-0.04541***	-0.05464***	-0.05092***	-0.05222***	-0.04425***	-0.04234***
	(0.01624)	(0.01612)	(0.01618)	(0.01627)	(0.01641)	(0.01658)	(0.01633)
IMP	0.01706*	0.01931**	0.02034**	0.02371**	0.02303**	0.02192**	0.01639*
	(0.009339)	(0.009258)	(0.009392)	(0.009320)	(0.009441)	(0.009366)	(0.009436)
CCOR		2.5979***					
		(0.5189)					
VACC			1.9649***				
			(0.5535)				
REGQ				1.5327***			
				(0.4702)			
PSAV					0.5936*		
					(0.3110)		
GEFF						1.7873***	
						(0.5526)	
RLAW							2.6654***
							(0.5971)
_cons	39.429*	26.893	36.022	24.532	23.640	16.717	44.093**
	(21.681)	(21.265)	(22.094)	(21.591)	(21.901)	(21.463)	(22.133)
N	558	558	558	558	558	558	558
R^2	0.233	0.234	0.216	0.213	0.202	0.212	0.226
adj. R^2	0.164	0.165	0.145	0.142	0.130	0.141	0.157
F	19.359	19.496	17.558	17.251	16.165	17.226	18.697
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.4: Fixed Effects with AGRI substituted for SERV

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.04049**	-0.03974**	-0.03328**	-0.03850**	-0.03691**	-0.03907**	-0.03783**
	(0.01616)	(0.01612)	(0.01638)	(0.01641)	(0.01654)	(0.01632)	(0.01620)
INSTU	3.5530***						
	(0.6573)						
GDPCAP	-2.0820	0.03334	-1.9972	0.3797	-0.02006	2.6019	-3.4014
	(5.2353)	(5.1963)	(5.3587)	(5.2850)	(5.3578)	(5.2641)	(5.3040)
$(GDPCAP)^2$	-0.3538	-0.4707	-0.3592	-0.5051	-0.4637	-0.6215*	-0.2843
	(0.3320)	(0.3300)	(0.3393)	(0.3355)	(0.3402)	(0.3343)	(0.3356)
AGRI	-0.05910***	-0.07193***	-0.05890***	-0.06896***	-0.07313***	-0.07698***	-0.06008***
	(0.02071)	(0.02041)	(0.02142)	(0.02088)	(0.02103)	(0.02063)	(0.02082)
INV	0.02220	0.02366	0.01848	0.01572	0.02227	0.02119	0.02159
	(0.01847)	(0.01845)	(0.01875)	(0.01878)	(0.01895)	(0.01866)	(0.01854)
TRADE	-0.003106	-0.003369	-0.005229	-0.002049	-0.003457	-0.0006215	-0.003972
	(0.005097)	(0.005090)	(0.005207)	(0.005187)	(0.005219)	(0.005188)	(0.005121)
CCOR		2.8319***					
		(0.5102)					
VACC			1.9277***				
			(0.5444)				
REGQ				1.6518***			
				(0.4619)			
PSAV					0.6288**		
					(0.3071)		
GEFF						2.2552***	
						(0.5320)	
RLAW							2.8621***
							(0.5768)
_cons	52.828**	43.398**	51.713**	42.166**	42.087**	32.482	58.674***
	(20.656)	(20.450)	(21.181)	(20.814)	(21.082)	(20.689)	(20.994)
N	561	561	561	561	561	561	561
R^2	0.231	0.233	0.206	0.207	0.193	0.214	0.224
adj. R^2	0.163	0.166	0.137	0.137	0.123	0.146	0.156
F	22.041	22.319	19.110	19.154	17.644	20.064	21.233
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

Table 4.5: Fixed Effects with IMP and EXP substituted for TRADE

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	INDU	INDU	INDU	INDU	INDU	INDU	INDU
FDI	-0.02150	-0.02714	-0.02277	-0.02536	-0.02518	-0.02275	-0.02584
	(0.02684)	(0.02652)	(0.02692)	(0.02684)	(0.02734)	(0.02690)	(0.02684)
INSTU	1.8954*						
	(1.1155)						
GDPCAP	-27.175*	-27.359*	-30.453*	-27.458*	-29.146*	-27.269*	-28.934*
	(15.485)	(15.331)	(15.514)	(15.571)	(15.630)	(15.557)	(15.499)
$(GDPCAP)^2$	1.4172	1.4381	1.6180	1.4386	1.5512	1.4332	1.5314
	(1.0100)	(0.9996)	(1.0109)	(1.0156)	(1.0190)	(1.0141)	(1.0108)
AGRI	-0.1740***	-0.1842***	-0.1762***	-0.1797***	-0.1801***	-0.1766***	-0.1798***
	(0.03786)	(0.03736)	(0.03796)	(0.03781)	(0.03862)	(0.03790)	(0.03780)
INV	-0.002547	-0.001133	0.002191	-0.0009345	0.007077	0.003199	0.002315
	(0.03564)	(0.03505)	(0.03552)	(0.03596)	(0.03552)	(0.03540)	(0.03555)
EXP	-0.006310	-0.008112	-0.007685	-0.006917	-0.005271	-0.001592	-0.005724
	(0.02525)	(0.02507)	(0.02540)	(0.02538)	(0.02545)	(0.02547)	(0.02535)
IMP	0.002834	0.003628	0.001989	0.004740	0.003490	0.004086	0.001962
	(0.01215)	(0.01204)	(0.01224)	(0.01223)	(0.01225)	(0.01218)	(0.01226)
CCOR		1.9936**					
		(0.8254)					
VACC			1.0036				
			(0.7911)				
REGQ				0.8495			
				(0.7049)			
PSAV					0.06254		
					(0.5524)		
GEFF						1.2185	
						(0.9152)	
RLAW							1.1530
							(0.9642)
_cons	142.00**	142.44**	154.67***	142.33**	147.93**	141.13**	148.40**
	(58.980)	(58.435)	(59.257)	(59.315)	(59.593)	(59.299)	(59.092)
N	221	221	221	221	221	221	221
R^2	0.193	0.205	0.187	0.186	0.180	0.188	0.186
adj. R^2	0.002	0.018	-0.005	-0.006	-0.014	-0.004	-0.006
F	5.306	5.755	5.112	5.088	4.868	5.136	5.084
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.6: Fixed Effects for time period changed to 1996 to 2005

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	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.02277	-0.02177	-0.02201	-0.02260	-0.02480	-0.02243	-0.02084
	(0.01685)	(0.01692)	(0.01687)	(0.01693)	(0.01686)	(0.01688)	(0.01688)
INSTU	1.8884						
	(1.1896)						
GDPCAP	-15.525**	-14.512**	-14.616**	-14.315**	-14.922**	-13.637*	-16.112**
	(7.0057)	(6.9910)	(6.9714)	(6.9940)	(6.9514)	(6.9869)	(7.0641)
$(GDPCAP)^2$	0.5037	0.4768	0.4648	0.4587	0.4866	0.4404	0.5323
	(0.4435)	(0.4447)	(0.4432)	(0.4444)	(0.4419)	(0.4438)	(0.4451)
AGRI	-0.04029	-0.03618	-0.04228	-0.03386	-0.03549	-0.02684	-0.03843
	(0.02969)	(0.02965)	(0.03009)	(0.02964)	(0.02941)	(0.03030)	(0.02958)
INV	-0.01984	-0.02371	-0.02200	-0.02337	-0.01687	-0.02406	-0.02028
	(0.02289)	(0.02287)	(0.02284)	(0.02289)	(0.02299)	(0.02285)	(0.02288)
EXP	-0.05405***	-0.05716***	-0.05592***	-0.05717***	-0.05522***	-0.06027***	-0.05411***
	(0.01895)	(0.01890)	(0.01889)	(0.01893)	(0.01883)	(0.01904)	(0.01896)
IMP	0.03923***	0.03790***	0.03821***	0.03827***	0.04054***	0.03793***	0.03756***
	(0.01295)	(0.01297)	(0.01294)	(0.01300)	(0.01297)	(0.01295)	(0.01293)
CCOR		0.5524					
		(0.7322)					
VACC			1.2728				
			(0.9628)				
REGQ				0.2569			
				(0.7820)			
PSAV					0.7871*		
					(0.4087)		
GEFF						-1.0191	
						(0.9092)	
RLAW							1.4223
							(0.9107)
_cons	103.85***	96.920***	98.943***	96.273***	99.202***	91.179***	106.51***
	(27.967)	(27.616)	(27.610)	(27.751)	(27.451)	(27.709)	(28.377)
N	340	340	340	340	340	340	340
R^2	0.208	0.203	0.206	0.202	0.211	0.205	0.208
adj. R^2	0.090	0.084	0.088	0.083	0.094	0.086	0.090
F	9.696	9.391	9.575	9.319	9.882	9.499	9.684
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

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

Table 4.7: Fixed Effects for time period changed to 2006 to 2015

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	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
L.INDU	0.7542***	0.7157***	0.7965***	0.7296***	0.7737***	0.7739***	0.7689***
	(0.03090)	(0.03611)	(0.03065)	(0.03551)	(0.02089)	(0.02875)	(0.02300)
FDI	-0.01027***	-0.01356***	-0.01348***	-0.01291***	-0.01381***	-0.01576***	-0.01240***
	(0.002940)	(0.002487)	(0.003305)	(0.002559)	(0.003511)	(0.003727)	(0.002260)
INSTU	1.1992**						
	(0.4870)						
AGRI	-0.07037***	-0.06718***	-0.07154***	-0.06910***	-0.06874***	-0.08010***	-0.06908***
	(0.01141)	(0.008360)	(0.01082)	(0.008479)	(0.01339)	(0.01153)	(0.01008)
INV	0.01493***	0.01188***	0.01250***	0.007564**	0.01702***	0.01457***	0.01463***
	(0.005211)	(0.003794)	(0.004530)	(0.003712)	(0.004680)	(0.004651)	(0.004505)
EXP	-0.01761**	-0.02558***	-0.03059***	-0.02614***	-0.02082***	-0.02193***	-0.02383***
	(0.007701)	(0.005009)	(0.005559)	(0.006784)	(0.005040)	(0.008242)	(0.005788)
IMP	0.01033***	0.01196***	0.01411***	0.01331***	0.01084***	0.01098***	0.01140***
	(0.002305)	(0.001543)	(0.002026)	(0.001962)	(0.001749)	(0.002328)	(0.001975)
GDPCAP	-10.493	-13.973***	-18.544**	-11.994***	-22.773***	-15.228**	-17.269**
	(7.8230)	(2.5836)	(7.4284)	(3.5232)	(7.4311)	(6.4272)	(6.7797)
$(GDPCAP)^2$	0.5068	0.7141***	1.0339**	0.5844***	1.2940***	0.8047**	0.9285**
	(0.4979)	(0.1683)	(0.4519)	(0.2121)	(0.4537)	(0.3994)	(0.4256)
CCOR		1.0391***					
		(0.3518)					
VACC			0.2040				
			(0.2606)				
REGQ				0.2273			
				(0.3220)			
PSAV					0.3377		
					(0.2940)		
GEFF						0.9066***	
						(0.3247)	
RLAW							0.9120***
							(0.2222)
_cons	55.364*	70.146***	84.952***	62.349***	101.78***	74.055***	82.033***
	(30.189)	(10.107)	(30.347)	(14.976)	(30.123)	(25.992)	(26.561)
N	527	527	527	527	527	527	527
R^2							
adj. R^2							
F							
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.8: GMM Estimation method for entire sample (1996- 2015)

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the summary of the entire study is highlighted. Here, a brief overview of the entire study will be presented. Following this will be the conclusion. This will give a better clarification of all deductions and inferences which were gleaned from the findings of the analysis that was conducted. The last part of this chapter is dedicated to recommendations for policy and for future research

5.2 Summary of Findings

This study sought to investigate the impact that foreign direct investment and institutions played in the industrialisation process of sub-Saharan African countries. Due to the unavailability of data for key variables such as manufacturing and FDI inflows, a total of 40 countries in the sub-Saharan region with consistent data which run from 1996 to 2015 were considered for the study. This timeframe was chosen mainly because the data for the institutional indicators started from the year 1996. Indicators used to measure institutions were the Kaufman indicators (Kaufman et al, 2010). These variables were sourced from the world governance indicators database of the world bank. All other variables were sourced from the world development indicators database.

The model used was adopted from existing literature and modified to suit the requirements of the research. Both the fixed effects model and random effects model are estimated in the analysis of

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the relationship that the FDI and institutions have with industrialisation. A Hausman test is conducted to determine which of the two estimators is more consistent or is a better fit for the purpose of the study. The Hausman test results led to the use of the fixed effects model for the analysis.

In addition to estimation, the impact of FDI and institutions on industrialisation, the study tried to show the inverse-U theory of industrialisation (Clark, 1957). However, due to insignificant results for the proxies used in measuring this phenomenon, the study was unable to prove this theory.

Also, the study investigated the impact of Agriculture on industrialization. The study found that Agric had a negative relationship with industrialization. The study also found that imports had a played a positive role in the industrialization process of the countries under study. However, exports had a negative relationship. This was because of the nature of the exports and imports coming from these countries.

Finally, the study found evidence that showed that FDI had a negative impact on industrialisation in the sub-Saharan African region. This shows that FDI inflows is actually detrimental to the industrialisation process of the countries studied. The study also showed that good and vibrant institution were important for the growth of the manufacturing sector. All proxies, but one, showed a positive impact on industrialisation. The only proxy to come out with an insignificant relationship was Public Safety and Absence of Violence.

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5.3 Conclusion

The issue of industrialisation has become of great importance as African countries are being called on to transform their economies into manufacturing-based economies. Foreign direct investment has also been on the rise over the past decades and has been proven to boost development, given the right environment for investment to thrive. This study was thus structured to address all these issues pertaining to the stated objective.

The main objectives of this study are first and foremost, to establish the relationship that foreign direct investment has with industrialisation. The second is to investigate the effect that institutions have on industrialisation.

The results remain robust to the alteration of the time period in which the analysis was conducted, through the use of different sub-periods. Also, different variables are altered and inserted, such as trade balance and service sector. The results on FDI were rather very interesting. They showed an overwhelmingly negative relationship between FDI and industrialisation. This shows that FDI's ability to boost the manufacturing sector in sub-Saharan African countries lies in the fact that most inflows of capital are resource seeking FDI, focused rather on the primary sector rather than the manufacturing sector, which may lead to de-industrialisation.

Overall, it can be seen from the results that the institutional indicators used in the analysis have diverse and profound effects on the industrialisation process.

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5.4 Recommendations

The findings from the analysis of the study bring about very interesting recommendations for both policy makers and other researchers who may want to study this field in the future. These recommendations are discussed in this subsection.

On policy, it is necessary for policy makers in these countries studied to redesign policies that will be aimed at attracting FDI. These policies must offer potential investors the right incentives to invest in the manufacturing sector. The policies must also be able to incentivise current foreign investors already in the country to move their investments to the manufacturing sector. These policies may include favourable taxation, property rights and ensuring a just judicial system. Moving on, policy makers must also create and streamline sound industrial policies which are aimed at attracting FDI. These policies will be important in ensuring that the set objectives will be met.

On future research, researchers can break the data set into countries whose main focus is industrialisation. This is because, the study assumes that all countries are set out to industrialise their economies. This study did not consider which countries actually had industrialisation as their main objective. Also, future researchers may also look at different channels through which FDI may impact on industrialisation, such as Human development, trade openness, good infrastructure, financial development and macroeconomic stability.

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APPENDIX

	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.04095**	-0.04012**	-0.03496**	-0.03892**	-0.03825**	-0.03967**	-0.03840**
	(0.01673)	(0.01665)	(0.01699)	(0.01699)	(0.01705)	(0.01682)	(0.01682)
INSTU	3.2783***						
	(0.6493)						
GDPCAP	-6.4142	-4.3505	-5.1253	-3.9320	-3.7855	-2.3732	-7.1107
	(5.0888)	(5.0284)	(5.2072)	(5.1042)	(5.1354)	(5.0456)	(5.1834)
$(GDPCAP)^2$	0.1265	0.01480	0.07594	0.0004862	-0.001002	-0.1019	0.1697
	(0.3131)	(0.3104)	(0.3205)	(0.3146)	(0.3166)	(0.3117)	(0.3181)
AGRI	-0.07391***	-0.08345***	-0.07800***	-0.08339***	-0.08456***	-0.08825***	-0.07680***
	(0.02090)	(0.02062)	(0.02148)	(0.02108)	(0.02117)	(0.02078)	(0.02102)
INV	-0.02253	-0.02333	-0.03385	-0.03690*	-0.02996	-0.02477	-0.02547
	(0.02072)	(0.02061)	(0.02092)	(0.02086)	(0.02112)	(0.02083)	(0.02084)
EXP	-0.03018**	-0.03568**	-0.04328***	-0.04031***	-0.04360***	-0.03136**	-0.03288**
	(0.01523)	(0.01493)	(0.01516)	(0.01522)	(0.01519)	(0.01536)	(0.01534)
IMP	0.01742*	0.01971**	0.02235**	0.02496***	0.02411**	0.02203**	0.01795*
	(0.009388)	(0.009259)	(0.009521)	(0.009360)	(0.009449)	(0.009315)	(0.009502)
CCOR		2.7195***					
		(0.5090)					
VACC			1.3950***				
			(0.5241)				
REGQ				1.4898***			
				(0.4659)			
PSAV					0.7541**		
					(0.3088)		
GEFF						2.3596***	
						(0.5318)	
RLAW							2.4597***
							(0.5821)
_cons	57.626***	48.310**	50.075**	45.506**	43.894**	39.994**	60.191***
	(20.598)	(20.263)	(21.065)	(20.600)	(20.699)	(20.304)	(21.045)
N	561	561	561	561	561	561	561

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R^2							
adj. R^2							
F							
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A1 Random effects regression model results

	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.03280*	-0.03102*	-0.02577	-0.02986*	-0.02966*	-0.02991*	-0.02995*
	(0.01684)	(0.01685)	(0.01710)	(0.01715)	(0.01721)	(0.01702)	(0.01695)
INSTU	3.6640***						
	(0.6628)						
GDPCAP	-7.4887	-5.1554	-6.5505	-4.6687	-4.8308	-2.9339	-8.3543
	(5.1602)	(5.1160)	(5.2809)	(5.1945)	(5.2241)	(5.1454)	(5.2588)
$(GDPCAP)^2$	0.2358	0.1140	0.2082	0.09143	0.1051	-0.01618	0.2880
	(0.3170)	(0.3151)	(0.3246)	(0.3197)	(0.3214)	(0.3172)	(0.3222)
SERV	-0.01113	0.002540	-0.009800	-0.001887	0.005687	0.003516	-0.004938
	(0.02132)	(0.02104)	(0.02216)	(0.02163)	(0.02146)	(0.02125)	(0.02138)
INV	-0.01725	-0.01910	-0.02954	-0.03244	-0.02412	-0.02061	-0.02037
	(0.02098)	(0.02098)	(0.02120)	(0.02120)	(0.02145)	(0.02122)	(0.02112)
EXP	-0.03779**	-0.04112**	-0.05125***	-0.04682***	-0.04753***	-0.03732**	-0.03880**
	(0.01677)	(0.01673)	(0.01687)	(0.01694)	(0.01700)	(0.01711)	(0.01695)
IMP	0.01934**	0.02144**	0.02384**	0.02701***	0.02522**	0.02387**	0.01935**
	(0.009679)	(0.009642)	(0.009806)	(0.009722)	(0.009812)	(0.009708)	(0.009809)
CCOR		2.7998***					
		(0.5188)					
VACC			1.8313***				
			(0.5403)				
REGQ				1.6567***			
				(0.4790)			
PSAV					0.9138***		
					(0.3144)		
GEFF						2.3611***	
						(0.5456)	
RLAW							2.7701***
							(0.5921)
_cons	58.199***	46.277**	51.886**	43.742**	43.115**	36.693*	61.100***
	(20.932)	(20.625)	(21.444)	(20.977)	(21.077)	(20.697)	(21.408)
N	558	558	558	558	558	558	558
R^2							

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adj. R^2							
F							
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A2: Random Effects with AGRI altered to SERV

	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.04262**	-0.04180**	-0.03633**	-0.04091**	-0.04030**	-0.04142**	-0.03994**
	(0.01674)	(0.01669)	(0.01705)	(0.01708)	(0.01713)	(0.01686)	(0.01684)
INSTU	3.6289***						
	(0.6311)						
GDPCAP	-8.8843*	-6.9461	-8.5164*	-7.0374	-7.0434	-4.6959	-9.9457**
	(4.9679)	(4.9423)	(5.1111)	(5.0275)	(5.0599)	(4.9713)	(5.0444)
$(GDPCAP)^2$	0.2455	0.1375	0.2394	0.1487	0.1551	0.006875	0.3077
	(0.3088)	(0.3078)	(0.3176)	(0.3126)	(0.3147)	(0.3096)	(0.3131)
AGRI	-0.07588***	-0.08733***	-0.08070***	-0.08776***	-0.08901***	-0.09237***	-0.07881***
	(0.02092)	(0.02063)	(0.02158)	(0.02115)	(0.02125)	(0.02078)	(0.02106)
INV	-0.003338	-0.0008467	-0.007821	-0.01165	-0.002446	-0.003396	-0.005080
	(0.01885)	(0.01882)	(0.01922)	(0.01924)	(0.01933)	(0.01899)	(0.01897)
TRADE	0.0005405	0.00001873	-0.001236	0.001979	0.00001286	0.003427	-0.0001630
	(0.005214)	(0.005202)	(0.005342)	(0.005330)	(0.005335)	(0.005284)	(0.005252)
CCOR		2.9449***					
		(0.5037)					
VACC			1.6641***				
			(0.5210)				
REGQ				1.6900***			
				(0.4639)			
PSAV					0.8861***		
					(0.3076)		
GEFF						2.6454***	
						(0.5204)	
RLAW							2.8083***
							(0.5641)
_cons	69.111***	60.390***	65.730***	59.858***	58.844***	50.879**	73.330***
	(19.945)	(19.782)	(20.531)	(20.156)	(20.265)	(19.872)	(20.302)
N	561	561	561	561	561	561	561
R^2							
adj. R^2							
F							

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	(1) INDU	(2) INDU	(3) INDU	(4) INDU	(5) INDU	(6) INDU	(7) INDU
FDI	-0.01051	-0.01777	-0.01207	-0.01548	-0.01195	-0.01252	-0.01565
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A3: Random Effects with IMP and EXP altered to TRADE

.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	(0.02646)	(0.02616)	(0.02676)	(0.02660)	(0.02705)	(0.02656)	(0.02651)
INSTU	2.3729**						
	(0.9785)						
GDPCAP	-21.028*	-21.373*	-24.051**	-22.139*	-22.686*	-21.432*	-22.595**
	(11.470)	(11.401)	(11.499)	(11.481)	(11.580)	(11.453)	(11.503)
$(GDPCAP)^2$	1.1779	1.2015*	1.3919*	1.2717*	1.3153*	1.2133*	1.2852*
	(0.7211)	(0.7161)	(0.7210)	(0.7205)	(0.7269)	(0.7195)	(0.7226)
AGRI	-0.1778***	-0.1876***	-0.1847***	-0.1856***	-0.1824***	-0.1794***	-0.1852***
	(0.03551)	(0.03499)	(0.03566)	(0.03553)	(0.03630)	(0.03565)	(0.03548)
INV	-0.02879	-0.02458	-0.02416	-0.02886	-0.02032	-0.02214	-0.02408
	(0.03430)	(0.03384)	(0.03459)	(0.03481)	(0.03452)	(0.03424)	(0.03436)
EXP	-0.01771	-0.01872	-0.02189	-0.02045	-0.01960	-0.01193	-0.01827
	(0.02410)	(0.02391)	(0.02434)	(0.02427)	(0.02440)	(0.02453)	(0.02424)
IMP	0.01152	0.01195	0.01197	0.01472	0.01254	0.01317	0.01059
	(0.01180)	(0.01170)	(0.01193)	(0.01190)	(0.01197)	(0.01184)	(0.01193)
CCOR		2.2622***					
		(0.7680)					
VACC			1.0086				
			(0.7163)				
REGQ				1.1608*			
				(0.6698)			
PSAV					0.4840		
					(0.5175)		
GEFF						1.7916**	
						(0.8511)	
RLAW							1.5789*
							(0.8592)
_cons	109.55**	110.84**	119.32***	111.88**	112.82**	109.84**	114.95**
	(45.028)	(44.804)	(45.306)	(45.148)	(45.543)	(45.015)	(45.214)
N	221	221	221	221	221	221	221
R^2							
adj. R^2							
F							
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A5: Random Effects for time period changed to 1996-2005

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	INDU	INDU	INDU	INDU	INDU	INDU	INDU
FDI	-0.02958*	-0.02815	-0.02916*	-0.02976*	-0.03186*	-0.02934*	-0.02839
	(0.01745)	(0.01749)	(0.01748)	(0.01759)	(0.01745)	(0.01753)	(0.01751)
INSTU	1.6720*						
	(0.9979)						
GDPCAP	-19.818***	-18.905***	-19.076***	-18.276***	-18.889***	-18.400***	-19.650***
	(6.3577)	(6.3215)	(6.3256)	(6.3502)	(6.2944)	(6.3542)	(6.4432)
$(GDPCAP)^2$	1.0389***	1.0057***	1.0101***	0.9819**	0.9918**	0.9831**	1.0395***
	(0.3889)	(0.3885)	(0.3882)	(0.3888)	(0.3870)	(0.3895)	(0.3928)
AGRI	-0.08137***	-0.07966***	-0.08416***	-0.08106***	-0.07711***	-0.07969***	-0.08050***
	(0.02896)	(0.02898)	(0.02918)	(0.02910)	(0.02888)	(0.02934)	(0.02905)
INV	-0.04961**	-0.05287**	-0.05166**	-0.05460**	-0.04606**	-0.05350**	-0.05179**
	(0.02310)	(0.02302)	(0.02307)	(0.02315)	(0.02321)	(0.02313)	(0.02310)
EXP	-0.04960**	-0.05250***	-0.05151***	-0.05392***	-0.05156***	-0.05361***	-0.05112***
	(0.01943)	(0.01931)	(0.01937)	(0.01945)	(0.01924)	(0.01957)	(0.01949)
IMP	0.04620***	0.04529***	0.04560***	0.04704***	0.04822***	0.04657***	0.04571***
	(0.01304)	(0.01310)	(0.01309)	(0.01313)	(0.01304)	(0.01312)	(0.01310)
CCOR		0.9217					
		(0.6924)					
VACC			1.0820				
			(0.7843)				
REGQ				0.02730			
				(0.7232)			
PSAV					0.8117**		
					(0.4016)		
GEFF						0.08263	
						(0.8283)	
RLAW							0.8450
							(0.8318)
_cons	104.56***	99.157***	100.36***	95.228***	99.373***	96.121***	102.83***
	(26.029)	(25.661)	(25.746)	(25.912)	(25.516)	(25.938)	(26.482)
N	340	340	340	340	340	340	340
R^2							
adj. R^2							
F							
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A6: Random Effects for time period changed to 2006 to 2015