**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

**FACULTY OF COMMERCE**

**DEPARTMENT OF ECONOMICS**

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**THE CONTRIBUTION OF FOREIGN DIRECT INVESTMENT ON THE MANUFACTURING SECTOR OUTPUT GROWTH IN ZIMBABWE (1980-2012)**

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**REGISTRATION NUMBER: B1748539**

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## DEDICATION

I dedicate this dissertation to my mother, friends and family who were always supportive. And to my mum thank you for believing in me.

## ABSTRACT

Zimbabwe has been attracting foreign direct investment since gaining independence in an effort to enhance employment rates, output growth, GDP, and poverty reduction in the economy. The major purpose of this study is to determine the contribution of foreign direct investment on the manufacturing sector output in Zimbabwe from 1980 to 2012, and to determine whether this FDI has contributed positively or negatively on the manufacturing sector output growth. Inflation, trade openness, external debt, exports, and FDI were used as explanatory factors. The study was conducted using secondary sources, and time series data was obtained from 1980 to 2012. To study the nature of the link between the fore mentioned variables, the research approach was created with the use of a carefully constructed linear regression model using the Ordinary Least Squares (OLS) multiple regression method. The regression model's conclusion demonstrates that there is a negative link between manufacturing output growth and foreign direct investment, which is consistent with the findings of the authors Maliwa and Nyambe (2015) for the country of Zambia.

This study also highlighted that there are many factors which may enhance or detract the potential of FDI to promote growth in many nations which was explained with the theories in chapter 2. The locational variables of the eclectic theory by Dunning (2001) asserts that social, political and economic factors possessed by the host country are the main factors which allow or limit the inflows of FDI in to the host country. Therefore the study suggested that the host country should have push factors which attract foreign investors .

This study also concluded that, exports and trade openness have a positive relationship with manufacturing sector output growth. As a result this study suggested in Chapter 5 that the government of Zimbabwe create policies that are consistent and obvious in order to make Zimbabwe a safe investment destination. It was also suggested that the government consider the constantly repeating external debt problem, as well as advocate measures that preserve low inflation rates in order to stimulate manufacturing sector output growth. The study recommends that the government reconsider its current trade and investment policies in an effort to attract more foreign direct investment into the country and as well as controlling spill over channels to boost the nation’s absorptive capacity, capital formation and productivity so as to achieve higher levels of industrial growth and manufacturing sector output.

## ACKNOWLEDGMENTS

It is within the human nature to be thankful for the exceptionally good deeds done unto them and in that light I would like to take this opportunity to extend my gratitude to the Almighty God for the strength and endurance he gave upon me when the road seemed to get tough .Iam thankful rather indebted to my supervisor Dr T. KAIRIZA for his personal interest, invaluable guidance, constructive criticism, patronizing concern, encouragement and continuous support during the whole span of my research work. My greatest appreciation goes to my family for the support they have given me. My mother have always encouraged me to pursue my dreams to the end and I have always hoped to make her proud of me as she have always made me proud ,may God extent your territories and grant your wishes.

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## LIST OF ACRONYMS

**ADF**: Augmented Dickey Fuller

**CGI**: Capital Goods Imports

**ESAP**: Economic Structural Adjustment Program

**FDI**: Foreign Direct Investment

**GDP**: Gross Domestic Product

**GMM :** Generalized Methods of Moments

**IEEA**: Indigenisation and Economic Empowerment Act

**IMF**: International Monetary Fund

**MNC**: Multi National Company

**MOF**: Ministry of Finance

**OLI** : Ownership, Location and Internalization

**OLS** : Ordinary List Squares R & D: Research and Development

**RBZ**: Reserve Bank of Zimbabwe

**TFP**: Total Factor Productivity

**UNCTAD**: United Nations Conference on Trade and Development

**WB**: World Bank

**ZIA**: Zimbabwe Investment Authority

**ZIMSTATS**: Zimbabwe National Statistics Agency

## CHAPTER ONE

## INTRODUCTION AND BACKGROUND

## Introduction

Achieving economic growth and development is a vital purpose or goal that all developing nations, including those in Africa, strive. However, if there are no significant economic investments, achieving growth and development in these nations would remain a pipe dream. According to the World Bank (2004), Africa has been struggling with low savings, which are expected to represent 18% of Sub-Saharan Africa's GDP, including Zimbabwe. Low incomes, which frequently leave investing money short, could be to blame for this. Therefore, to close the investment-savings gap and guarantee sustainable growth and development in their economies, all areas of Africa substantially rely on foreign capital. A country's socioeconomic difficulties are typically concentrated on a lack of investment. Therefore African economies need to ensure suitable socio-economic environments that lure foreign mobile capital across their borders.

In Zimbabwe, the manufacturing sector industry is critical to the country's general economic development as well as attempts to create jobs and poverty alleviation. This is a large industry that employs both skilled and unskilled workers. When operating at full capacity, the manufacturing sector contributes more to a country's gross domestic product (GDP). This industry is especially essential since it serves as a link between the producers of raw materials and the consumers of finished goods. The manufacturing sector in Zimbabwe is also the path by which a country can change itself from a producer and exporter of primary agricultural and mining commodities to a producer and exporter of high-value finished goods. In Zimbabwe, the industrial industry is extremely important.

This industry has a significant impact on the world economy. According to (Unido,2009), the sector composition in world value added for both the services and industrial sectors declined from 2000 to 2008. (due to the effect of the global economic crisis). Services maintained their dominance, with a share of 67.3 percent declining to 65.9%, while manufacturing's share declined from 19.2 percent to 18.1 percent. The contribution is large when compared to agriculture, which increased from 3.6 percent to just 4%, the mining and utilities industry (from 4.5 percent to 6.2 percent), and the construction sector, which increased from 4.5 percent to 6.2 percent.

According to Onowor et al. (2013), the current economic push toward globalization supports cross-border investments, notably by multinational corporations and businesses (MNC). A significant part of the economic growth and development strategies of many developing nations, including Zimbabwe, is to draw in foreign direct investment (FDI). FDI has drastically increased in the global economy since the turn of the twenty-first century, drawing the attention of numerous critics. This is because some policymakers considered FDI to be a significant stimulator of economic growth in both rich and developing countries (Muhammad, 2012).

FDI refers to a direct investment made by a multinational firm that has control over or a significant amount of influence over the management of a business created abroad (World Bank 2015). It has the ability to overcome significant obstacles such a lack of funding, money, technology, marketing expertise, and resources in order to establish partnerships with neighborhood businesses that can help kick-start the economy (Anshu, 2013). The United Nations Conference on Trade and Development (UNCTAD) reports that the amount of FDI flowing into African nations increased dramatically from $9.68 billion in 2000 to $1.33 trillion in 2006, showing that Africa is quickly emerging as a top FDI destination. It has consequently become a focus for policymakers in developing nations, particularly Zimbabwe.

The United Nations Conference on Trade and Development (UNCTAD 2015) defines FDI as an investment made with the intention of receiving a long-term return and a stake in management decisions in a foreign company. As previously indicated, foreign direct investment offers important benefits and drawbacks for Zimbabwe's domestic sector output and economic development. However, foreign businesses from other countries have access to domestic areas of Zimbabwe's economy. Therefore, the primary goal of this study is to determine if FDI has a good or negative impact on Zimbabwe's manufacturing sector's output growth.

.

## 1.1 Background of the study

## 1.1.1 Zimbabwe gross domestic product and FDI

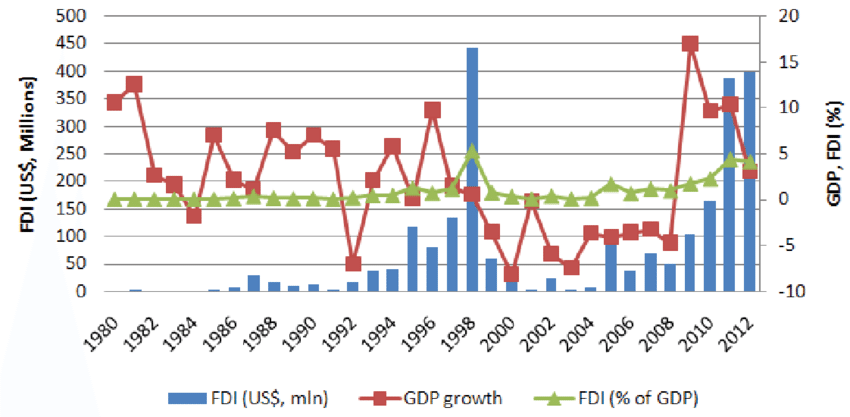
(Gwenhamo, 2009) stated that, in comparison to other African economies, Zimbabwe's manufacturing sector was one of the largest and most diversified sub-sectors from 1980 to early 2000, based on years of high and stable industrial capacity utilization of over 60% combined with import substitution policies that, on the other hand, increased the efficiency and effectiveness of domestic industries. Food and beverage processing, metals, and leather products, wood and furniture, clothes and textiles, chemicals, paper, and plastic are just a few of Zimbabwe's key sectors. As a result, from 2000 to 2002, the percentage of output growth fell to an average of less than 10% as a result of the economic downturn.

All enterprises that engaged in exporting activities saw a considerable drop in business. Many of them left the market, while others survived by selling on domestic markets, but they still require additional capital to increase their production capacity and remain competitive both locally and internationally (UNCTAD, 2006). FDI inflows had dropped to $5.4 million by 2001. (World Bank, 2012).

After gaining independence in 1980, Zimbabwe formed a new government that implemented a highly controlled and regulated inward-looking economy that relied heavily on FDI to promote economic growth (Clarke 1980).According to Gwenhamo (2009), ownership requirements in several sectors demanded a minimum of 30% local participation in a company. Since then, many measures have been implemented to discourage profit repatriation in the post-independence era, reducing the flow of much-needed FDI into the Zimbabwean economy. Ibid claims that in the late 1980s, a new investment guideline was drafted that permitted MNCs to repatriate 50% to 100% of profits as a result of country national experts noticing this trend .As a result, since a new government was established in Zimbabwe in 1980 (the year of independence), the country's Gross Domestic Product growth has been gradually falling into the negative region. The economy of Zimbabwe reacted quickly to the formation of the Government of National Unity in 2009 and the policies of the new administration, as shown in Figure 1, below, where GDP increased from a negative 4.74 percent in 2008 to a positive 7.21 percent in 2009. FDI averaged US$37 million annually between 2000 and 2008, while Zimbabwe was experiencing an economic crisis. The GNU, on the other hand, brought about some political and economic stability. As a result, FDI net inflows increased by almost eightfold in just four years, from US$51.6 million in 2008 to US$387 million in 2011. 2011 (UNCTAD). Zimbabwe has attracted FDI in the fields of mining, manufacturing, financial services, and banking (World Bank, 2012)

## 1.1.2.Trend between FDI and GDP

## Figure 1

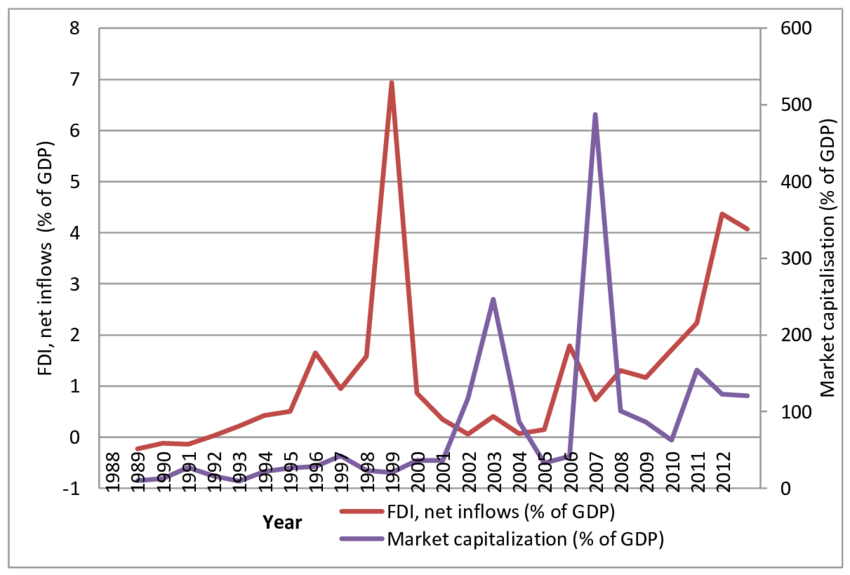


***Source: IMF working paper January 2013***

With a rising number of developing countries succeeding in drawing considerable and growing values of inward foreign direct investment, its relevance in the world is expanding, particularly in the developing world. The government implemented the Economic Structural Adjustment Program (ESAP) in 1990 with the goal of removing economic constraints. As a result of the ESAP, the Zimbabwe Investment Centre (ZIC) was founded in 1992 with the goal of organizing and administering investment approvals (IMF 1992). The World Bank and the International Monetary Fund (IMF) backed the Economic Structural Adjustment Program (ESAP), and the implementation of market reforms resulted in a slew of incentives to entice FDI, such as tax holidays and tariff exemptions targeted at foreign capital investments and technology transfer.

Export-oriented foreign enterprises also profited from export processing zone incentives such as tax vacations and zero tariffs (IMF, 1992). After 1992, the level of foreign direct investment began to rise dramatically, which might be attributed to the implementation of the ESAP. However, it has been steadily increasing since 2004, indicating a higher share of foreign direct investment (FDI) pouring into the country as a percentage of GDP (GDP). According to the UNCTAD's World Investment Report 2010, Zimbabwe's chronic economic troubles drove FDI inflows from US$103 million in 2005 to US$40 million in 2006. (2010)

**Figure 2 Foreign Direct Investment Trend In Zimbabwe**

***.***

***Stock market development and FDI trends in Zimbabwe Source: World Bank (2012)***

The stock market and foreign direct investment (FDI) patterns in Zimbabwe are depicted in Figure 2 above . As illustrated in the graph, the link between stock market development and FDI in Zimbabwe has been characterized by ups and downs from 1980 to 2012. (Figure 2). According to the World Bank (2012), FDI net inflows into Zimbabwe climbed by 0.11 percentage points from -0.23 percent in 1988 to -0.12 percent in 1989, while stock market capitalization increased from 9.90 percent to 12.91 percent during the same time period, as seen in the graph. Net FDI inflows increased by 1.79 percentage points from 1990 to 1995, from -0.14 percent to 1.66 percent. During the same time period, stock market capitalization, which is also a proportion of GDP, increased by 1.34 percentage points.

The Zimbabwe Stock Exchange was founded in 1896 it exposed the country to foreign direct investment and it was the second best in the stock exchange market since 1999 which was push forwad by inflation rate that reach 300% in 2003 (World Bank, 2012). In the year 2004 , foreign investors were now allowed to invest on the Zimbabwe Stock Exchange up to 40% per counter as a group and 10% as individuals. This situation further worsens the will to invest in Zimbabwe leading to the fall in FDI. The Indigenization and Economic Empowerment Policy which was adopted in 2007, advocated foreign owned companies up to 51% (UNCTAD, 2006). The implementation of these policies resulted in a decrease in FDI since it was no longer profitable for investors to continue investing in Zimbabwe, thus lower exports as investors withdraw from the market.

Zimbabwe inherited a substantial external debt after independence, which contributed to a decline in economic growth and development. These increased external obligations, including debt servicing payments, have hindered Zimbabwe from undertaking larger volumes of domestic investment and diverted major resources intended for important areas like as health and education, which would have boosted growth and development in the long run. Since independence, the external debt has been steadily increasing. Zimbabwe inherited $785,6 million in external debt in 1980, and the debt has been steadily increasing since then. The overall external debt of Zimbabwe was $8,396 billion in 2014, according to the Reserve Bank of Zimbabwe. Since its inception, Zimbabwe's external debt has resulted in a decline in FDI inflows since it was no longer a good environment to invest in .

## 1.2 Statement of the problem

Over the years, foreign direct investment has been poured into Zimbabwe, the capital and resources obtained have been put to various uses. These resources have had an impact on a variety of sectors of the Zimbabwean economy, notably the manufacturing sector industry. After decades of implementing macroeconomic stability policies, trade liberalization policies, and regional integration policies in an attempt to attract investment inflows into Zimbabwe, the manufacturing sector's performance in terms of output capacity utilization and sector contribution to GDP has remained unimpressive. Before 2004, capacity utilization was above 50%, but it has been steadily dropping since then, reaching a low of 10% in 2004 and a high of 8 36.3 percent in 2014. (Confederation of Zimbabwe Industries, 2014). Foreign direct investment is very crucial since it enhance growth but despite that still remains a concern on how some of the actions of foreign subsidiaries may crowd out domestic investment, Gardiner (2000). Foreign direct investment is said to equally ‘crowd out’ domestic firms and this might end up resulting in a contraction of total industry size and/or employment as explained by Cobham (2001) It is possible that domestic companies become oligopolies as a result of their inability to effectively compete with international companies due to their lack of marketing and advertising expertise. However, because it comes in resources and financial backing, foreign direct investment can help our domestic industries thrive. According to Aaron, it also creates employment possibilities and increases government revenue, which may be used to finance extensive social development programs (1999). Although foreign direct investment plays a significant role in Zimbabwe's economy, there are still clear signs of low per capita incomes, a high unemployment rate, and slowing industrial sector production growth. Consequently, this study aims to examine whether FDI inflows has positively contributed to the changes on output growth in the manufacturing sector in Zimbabwe.

1.3RESEARCH QUESTIONSThe study endeavored to answer questions, which will be underpinned at the end of the study by economic theory and empirical findings

* What is the contribution of FDI on the manufacturing sector output growth in Zimbabwe
* What is the effect of inflation, exchange rate, external debt ,trade openness and exports on the manufacturing sector output growth in Zimbabwe
* To determine the policies that the government of Zimbabwe can implement to control and increase the FDI inflows
* What are the other factors important in attracting FDI in Zimbabwe

## 1.4 OBJECTIVES OF THE STUDY

* To investigate the contribution of FDI on the manufacturing sector output growth
* To examine the effect of inflation, exchange rate, external debt ,trade openness and exports on the manufacturing sector output growth in Zimbabwe
* To examine policy recommendations the government of Zimbabwe can implement to control and increase the inflow of FDI
* To determine the other factors important in attracting FDI in Zimbabwe

## 1.5 RESEARCH HYPOTHESIS

The following research hypothesis is going to be tested:

H0: FDI contributes positively to the manufacturing sector output growth in Zimbabwe.

H1: FDI contributes negatively to the manufacturing sector output growth in Zimbabwe

1.6 ASSUMPTIONSThe researcher makes the following assumptions

* Data collected is accurate and reliable
* Cooperation from respondents when carrying out the research
* Economic performance is not influenced by the current political situation in the country.

## 1.7 SIGNIFICANCE OF THE STUDY

The domestic industry is one crucial sector and under the prevailing economic conditions, it requires extra assistance. Foreign direct investment helps in the regard because it brings in resources from abroad. Therefore, this study helps to figure out exactly how and this study helps different stakeholders who include participants of the domestic industry, foreign investors and the Zimbabwean economy at large. These stakeholders will be benefited in the following ways:

## To the domestic industry

* Keys players in the domestic industry will get information on how of foreign direct investment basically affects them positively or negatively.
* help the firms and individuals in the domestic industry in knowing how far beneficial and detrimental foreign direct investment is.

## To foreign investors

* This research is important since it will benefit investors by sending them information whether to invest in Zimbabwe and it will give investors the true reflection of how their funds and assets impacts the growth of the domestic industries in Africa.

## To Bindura University of Science Education

* This research may serve as a guideline to students in the same line of study who may want to partake in a synonymous research. It may also be used for other educational purposes by the institution.

## To the Zimbabwean economy at large

* This research will help the Zimbabwean economy through the provision of reliable information. This research will help the economy of Zimbabwe by providing information on policies to make which attract FDI.To the researcherThe significance of this research is primarily to widen the knowledge base of the researcher and to satisfy his personal curiosities in the field concerned. It is also set to build and modify the research skills possessed by the researcher.

1.8 Delimitation of the studyThe research will dwell mainly on trends of foreign direct investment and its contribution on the growth of the manufacturing sector output growth during the period 1980 to 2012.

**1.9 LIMITATIONS OF THE STUDY**

The process of sourcing information from different stakeholders was the huge obstacle encountered by the researcher as various institutions were sceptical to giving information. From the secondary data obtained, the major practical problem was data inadequacy which extended to inconsistency in published figures. . However, some data collected was to a certain extent irrelevant since it did not hit the core of this research. The researcher conducted an intensive research of various data publications from various institutions like Zimbabwe National Statistics Agency (ZIMSTATS), Zimbabwe Investment Authority (ZIA), Ministry of Finance (MOF), International Monetary Fund (IMF) and Reserve Bank of Zimbabwe (RBZ) so as to increase data accuracy and reliability. More economic data should be made available to scholars and people alike who wish to partake in similar researches.

## 1.10 JUSTIFICATION FOR THE STUDY

Judging from the African context, most study work which have been done on FDI has been emphasizing on the macroeconomic factors and incentives for FDI inflows into developing nations. On the same note, the empirical literature between FDI and the manufacturing sector output growth in developing countries is unclear, (Mohammed, 2012) and no study has been taken in the context of Zimbabwean economy on the contribution of FDI on the manufacturing sector output growth thought there is a lot of FDI inflows being directed to this sector; making the study more interesting to undertake. This study will add to the body of knowledge, and it will differ slightly from other previous studies. Finally, by offering current empirical evidence supporting the FDI led growth theory within the manufacturing sector, this study will add to the body of literature already in existence. Given everything that has been said so far about FDI, it is crucial to start a study of how FDI has contributed to the Zimbabwe's manufacturing sector's output growth.

## 1.11 DEFINITION OF TERMS

## Capital Goods Imports (CGI)

According to this study, Capital Goods Imports (CGI) is the total value of capital equi1pment entering the country from the outside world and is then used for production process by companies.

## Domestic industry

Refers to a group of firms that produce similar goods and services within their country of residence. Domestic industry products are sold in the country in which they are produced but can also be exported according to The World Trade Organization.

## Economic growth

It is the total increase in the value of goods and services produced by the economy measured from one period to another (Todaro and Smith, 2003). Economy The large set of inter-related economic production and consumption activities which aid in determining how scarce resources are allocated, according to [www.investopedia.com](http://www.investopedia.com).

## Foreign Direct Investment (FDI)

Foreign direct investment is the investment made by a company outside its home country and it is the flow of long-term capital based on long term profit consideration involved in international production, Caves, (1996).

## Gross Domestic Product (GDP)

This is the total market value of all final goods and services produced domestically in a specific time period and are the most important measure of macroeconomic performance. It is the one of the primary indicators used to gauge the health of a country’s economy and to determine the size of the economy; this is according to Piragoff, (2000) National Income Total value a country’s final output of all new goods and services produced in one year or a specified period of time, representing the sum of wages, profits, rents, interest and pensions made to residents of the nation

## Exports

Are those goods and services which are traded to abroad from Zimbabwe and bring foreign currency in the country hence increase government revenue

## Economic policies

These are policies which are formulated by government with the aim of stimulating exports; FDI and other economic variables.

**Inflation**

it is continuous rising of prices which depreciate local currency and lowers export

## 1.12 SUMMARY

This section has highlighted the background of the study, statement of the problem, objectives, limitations and delimitations. Chapter two will focus on literature review, which comprises of theoretical and empirical literature review. Chapter three comprises of the methodology which was used to collect data. Data presentation and research findings are carried out in chapter four while chapter five looks at summary, conclusion and policy recommendations.

## Chapter 2

## THEORETICAL FRAMEWORK

## 2.0 Introduction

At both the national and international levels, and particularly in emerging nations, the problem of foreign direct investment is receiving increased attention. Numerous researchers have attempted to explain the existence of FDI by taking into account the motivations for FDI, but no theory has been regarded as being able to do so (Vintila, 2010). Coase, Dunning, Hymer, and Vernon created certain FDI theories because they thought FDI was crucial to the economic growth of many developing countries. Important publications on how foreign direct investment (FDI) affects economic growth have their roots in theoretical literature that dates back to the classicists. The rationale is that nations with underdeveloped economies have limited national savings and capital. Saving because it determines the the accessibility of investment capital. As a result, there is little domestic investment due to a lack of capital, which raises the cost of investment capital as a result of the lack of capital and results in a slow rate of economic growth and development. In order to complement domestic investment and accelerate economic growth, which will hasten the process of economic development, foreign investment is necessary (Akrami 2008).

Many academics have demonstrated that the presence of a variety of factors in the host country is necessary for the positive spillover resulting from FDIs. These variables include the industries in which investments are made, the host nation's economic policies in this case, those of Zimbabwe the nation's political stability, the presence of sophisticated financial markets, and the accessibility of capital ,the availability of human resources (Miller & Upadhyay, 2000). Uncertainty in policymaking or an unstable government could have a negative impact on FDI flow, which would therefore have an impact on export growth. According to Miller and Upadhyay (2000), nations with trade policies that encourage openness gain from FDI since raw commodities can be freely exported from recipient nations. This policy fosters the best conditions for exports, which ultimately quickens the nation's economic expansion. The amount of natural resource endowments on the continent is one of the factors of FDI, which is supported by theoretical data as well. According to (Abdulai, 2007), monetary and fiscal policies have reduced macroeconomic imbalances and created conditions that encourage FDI, such as the elimination of trade barriers.removing domestic price controls, establishing interest rates that are set by the market, and liberalizing exchange rates FDI flows can be attracted by good infrastructure and an effective legal environment. Many developing and developed nations look to FDI to help them achieve their development objectives, thus they set up a variety of policies to encourage and attract FDI.

The main growth theories and the theories explaining why businesses engage in FDI are examined in this chapter's first section. The relationship between FDI and the expansion of the manufacturing sector's production is discussed theoretically and empirically in the second section. In general, this chapter is a thorough review of the literature and body of data used to assess how FDI affects the expansion of the manufacturing sector's output. It presents a conversation in particular.

In broad, this chapter is an intense analysis of literature and set of evidence used in analyzing the impact of FDI on the manufacturing sector output growth. Specifically, it provides a discussion of evidence from past researches targeting the same research perimeter, indicates theories and relationships among the theories that are relevant to the research; also the inclusion of a wrap-up summary at the end of the chapter is inevitable

## 2.1 Theories on Output Growth

## 2.1.1.Neo-classical Growth Model

This model was created by an economist called Frank Ramsey (1928) and in his theory he anticipated that production side of country is represented by a firm which produce according to the Cobb Douglass function

Yt= At K tα Lt1-α

Where Y is aggregated output, K is the aggregated capital stock, L is the aggregated labour supply and A is the total efficiency of production and the subscript t denotes the time period. As the variable A captures the total factor productivity (TFP) effect on growth in output and it is assumed that the effect of FDI on growth operates through variable A.

In the literature on neo-classical growth, FDI is seen as having a positive impact on output growth because it either boosts investment volume or productivity, which helps an economy move toward higher long-term growth. In light of this, Jochumzen argues that FDI will only advance growth if it has a positive and long-lasting impact on technology. Neoclassical models of sectorial growth as measured by economic growth do not agree (2010). According to this paradigm, FDI is a significant source of technical diffusion and human capital. The productivity or effectiveness with which natural resources, capital, and labor are employed is thereby increased by technology. As a result, the researcher came to the conclusion that technical change is brought about by inventions and innovations that are the result of research and development activities carried out in laboratories and institutes. Therefore, technology has a Therefore the researcher concluded that technological change takes place through inventions and innovations attained through research and development carried out in laboratories and institutes. As a result technology has a positive impact on growth.

## 2.1.2.New Theory of Growth

The New Theory of Growth, in contrast, contends that FDI may influence both the level of output per capita and the accompanying growth rate. This hypothesis has given rise to a number of justifications for why foreign direct investment might accelerate the pace of increase in per capita income in a particular sector. Higher capital accumulation in the recipient nation, technological advancements, the development of human capital, and increased exports are some of the clearly identified mechanisms that promote industrial expansion. The quality of the environment, as well as the economic and social factors, determines how much FDI contributes to growth. The degree of openness, level of technology, and rate of saving in the host nation are all related to environmental quality.. As a result, host countries with high rate of savings, open trade and high technological product would benefit from increased FDI to their industries and economy at large, according to Ronald (2000).

## 2.2 Modern theories on foreign direct investment

## 2.2.1 The market imperfections theory

This model of FDI was modelled as capital or as a moving production factor between two countries .The old investment theory which dealt with disparities in expected rates of return on capital was extended to the market imperfections theory.This theory anssumed that capital is supposed to move from capital rich countries with poor returns to capital scarce countries but have high returns (Mundell 1957 and MacDougall 1960).So this theory expected FDI to move from developed countries for example United states of America to developing countries like Zimbabwe .Therefore the developind countries are supposed to implement policies that ensure them that capital invested within borders earns more than capital invested elsewhere. Regional development, according to Holland and Vann (1998), is also important.

According to the market imperfections theory, corporations seek market opportunities, and their decision to invest overseas is described as a plan to capitalize on capabilities not shared by foreign competitors (Hymer 1976). Market imperfections for products and factors of production explain enterprises' advantages. In other words, perfect competition theory mandates that firms produce homogeneous products and have equal access to production factors. However, imperfect competition, as expressed in industrial organization theory (Porter 2003), dictates that firms earn many forms of competitive advantages, each to differing degrees. The idea of market imperfections does not explain why offshore production is regarded as the most desired method of leveraging a firm's advantage. However, the major advantage would be exploring new markets and resources.The market imperfections theory suggests that the bulk of FDI flows originates in and is directed to developed economies, which should be capital abundant [Navaretti & Venables2004, chapter 1; Markusen 2002; United Nations Conference on Trade and Development (UNCTAD)]. Recent investment trends from UNCTAD show that increases in the share of investment are going to developing countries as other countries such as China increase their presence in the developing world adding to the traditional sources of FDI United States (US) and United Kingdom (UK) in developing economies (Van der Lugt & Hamblin 2011).

## 2.2.2 Theory of International Production

The international production hypothesis, proposed by Buckley and Casson (1976), posits that a firm's willingness to start global production is influenced by the distinctive attractions of its home country vs. the resource implications and advantages of locating in another country. Not only do resource differentials and the firm's advantages play a role in determining overseas investment activities, but foreign government actions in the host nation can also influence the attractiveness and entrance conditions for enterprises, according to this idea.

This idea has been used to influence policy change in Africa in favor of FDI attractiveness incentives. Internalization is a term that has been thoroughly researched as part of this foreign investment paradigm.This idea is based on the assertion that corporations strive to build their own internal markets if transactions within the organization may be completed at a cheaper cost. As a result, internalisation entails a vertical integration that places new operations and activities that were previously carried out by intermediaries under the ownership and supervision of the firm. Because "the vertically integrated business internalises a market for an intermediate product, just as the horizontal MNE internalises markets for proprietary assets," this comprehensive approach of vertical and horizontal FDI is achievable (Caves 1996:13). When MNEs internalize, the benefits, particularly those associated with hurdles to new entrants, are not overshadowed by the costs of communication, coordination, and control, as well as the 'foreignness' that always results.

Rugman (1980, 1986) claims that internalization have become the general theory of FDI. Perishable agricultural items, intermediary products in capital-intensive manufacturing processes, and geographically concentrated raw resources are among the markets where internalization is quite likely, according to Buckley and Casson (1976). These, however, have a little role in the analysis. The primary flaw of the international production theory, according to Dunning (1988), who employs it in his five-stage theory, is that it only explains a portion of FDI flows. Casson (1976) list several markets where internalisation is very likely to happen such as perishable agricultural products, intermediate products in capital-intensive manufacturing processes, and geographically concentrated raw materials. However, these are secondary in the analysis. According to Dunning (1988) who uses the internationalization theory in his five stage theory, the major shortcoming of the international production theory is that it explains only part of FDI flows.

## 2.2.3 The eclectic paradigm

According to Dunning, the internalization theory and the product cycle theory, two widely accepted theories of global production, were the inspiration for this thesis (1979). The three were thought to only be able to account for a small part of global production. He consequently proposed an alternate path for growth that attempted to meld modern ideas into a broad and "eclectic" paradigm, where "the subject to be explained is the breadth and pattern of worldwide production." (Dunning, 1979, p. 124) According to Dunning (1979), a company engages in FDI if three conditions are met: first, it has a net ownership advantage over businesses from other countries; second, it internalizes its advantages rather than transfers them to foreign businesses; and it uses the market to internalize its advantages.

The company has three advantages over international companies: first, a net ownership advantage; second, internalization advantages rather than using the market to transfer them to foreign companies; and third, geographical advantages in utilizing its ownership. According to the OLI paradigm, organizational specific ownership advantage (O), host market internal locational advantages (L), and internalization (I) benefits all have a significant impact on MNE investment decisions. From this diverse framework, Dunning (1993) develops the four strategic reasons TNCs consider when starting operations abroad. foreign operations from this eclectic framework. The four reasons are resource-seeking FDI, market-seeking FDI, efficiency-seeking FDI, and strategic-asset or capability-seeking FDI. Resource-seeking FDI, in the opinion of Dunning (1980), looks for the natural resources of the host nation. These investors favor investing in nations with a wealth of natural resources. As a result, certain types of FDI are attracted to resource-rich nations. International businesses looking for markets scout out prospects in neighboring local or regional markets. The main reason for this is that more of this kind of investment is attracted to highly populated areas.

In order to maximize the usage of economies of scale, scope, and specialization, efficiency-seeking FDI refers to an organization's rationalization and expansion of economic activity. This form of investment is advantageous for businesses that specialize in particular products or processes or are technologically advanced. Capability-seeking FDI seeks to maximize organizational assets created in international markets. Among the strategic assets are the business networks created by acquiring assets abroad, including technology and organizational capabilities (Dunning 1996).

Numerous factors, including the market's characteristics, economic growth rates, market size, industrialization, and reach, as well as the investor's operating industry, influence the benefits of OLI, according to Dunning (1988). He also contends that a company's organizational culture affects its growth. Research and development (R&D), product promotion, the product development stage, and brand development are all involved in this. In essence, this is the reason that many governments offer financial incentives to promote R&D. The eclectic paradigm is frequently criticized for having so many variables that it loses its usefulness (Dadzie 2012). Partially acknowledging it, Dunning (1991) views it as an inevitable outcome of attempting to include the various incentives FDI into a single comprehensive theory.

## 2.2.4 Monopolistic Advantage (Ownership advantage theory)

It is usually referred to as the "monopolistic advantage theory" and was developed as a theory which was criticizing the neoclassical theory. Hymer (1960) and Kindleberger were the first to propose that a foreign company needed a competitive advantage to enter a foreign market (1969). In addition to intangible assets like marketing, creative and management abilities, or well-known trademarks and brands, these authors also identified concrete assets like economies of scale, product differentiation, technology, and financing. In order to compete with local companies that benefit from their market expertise and superior networks, international enterprises would require these monopolistic advantages, according to Caves (1996).

They consequently concluded that monopolistic market systems required attention in order to make neoclassical theory more useful. According to Hymer, MNEs go for sectors or industries where they have stronger competitive advantages, such as technological know-how, that aren't available to other running businesses in a host country (1960). "Competitive advantages" are firm-specific (sometimes referred to as ownership-specific) advantages (Shenkar 2007). By examining oligopolistic market structures and postulating that foreign MNE investments favor regions with imperfect competition, Knickerbocker (1973) builds on Hymer's argument. Most MNEs aim to increase their revenue as much as possible.

This viewpoint contends that attracting FDI depends on government initiatives to guarantee the preservation of a firm's ownership advantage. Industrial Organization Theory The idea, which Mason (1939) pioneered, has been actively used to explain where manufacturing businesses are located. According to the theory, a company seeking maximum profitability must look for ways to increase its market share. It also emphasizes the significance of managerial skills. According to Williamson (1996), managerial choices have a significant impact on how much market share and power a company gains. They need a solid awareness of the objectives, corporate culture, and resource constraints in order to make the best decisions. British philosopher Penrose stated in 1959 that the amount of expansion a corporation may pursue is unavoidably constrained by the services offered by inherited managerial resources, which restrict the number of additional managerial resources that may be absorbed.

The Penrose effect makes a huge company's managerial advantage make it more competitive in the global market. Therefore, according to the Penrose effect, "if a firm deliberately or unintentionally expands its organization more rapidly than the workers in the organization, it cannot obtain the experience within the firm that is necessary for the effective operation of the group, the efficiency of the firm will suffer, and a period of stagnation may follow" (1959:47-8). A fundamental and unavoidable restriction to the amount of expansion a firm can undertake at any given time is imposed by the services provided by inherited management resources, which regulate the quantity of new managerial resources that can be absorbed. The Penrose effect therefore shows that the “if a firm deliberately or inadvertently expands its organisation more rapidly than the workers in the organisation, it cannot obtain the experience within the firm that is necessary for the effective operation of the group, the efficiency of the firm will suffer and a period of stagnation may follow” Penrose (1959:47-8). Since the services from inherited managerial resources control the amount of new managerial resources that can be absorbed, they create a fundamental and inescapable limit to the amount of expansion a firm can undertake at any time. Therefore, the Penrose effect suggests that the managerial advantage of a large firm makes it more competitive in the international market.

## 2.2.5 Theory of Ownership, Internalization, and Special Advantages (OLI framework)

This theory was postulated by Dunning 2001. All of Hymer and Coase's theories are incorporated by Dunning (2001) into the eclectic theory, also known as the OLI framework. This theory or concept combines country-specific, ownership-specific, and internalization characteristics to describe the advantages of global production. The key tenet of the eclectic theory was that when transaction costs are low and the production environment is good, firms prefer investing in working capital to exporting. According to Dunning, three significant criteria that control the pattern, quantity, and shape of FDI are ownership, location, and internalization benefits (2001). Ownership benefits are assets that generate money and motivate businesses to produce outside of their home country, according to Dunning (2001).

Ownership advantages are assets that provide money and motivate businesses to create outside of their home country, according to Dunning (2001). According to Hymer's (1960) monopolistic advantages, the ownership benefits vary according to the features of the company, the production goods, and the markets in which it operates (Ardiyanto, 2012). The ability to exclude competing local businesses from the product, transferability, and the power to develop and promote products through internal subsidiaries should all be advantages of foreign enterprises' ownership. Because of this, ownership advantages have unique advantages, such as monopoly advantages via brands and trademarks, technology, and large-scale economies. International labor and capital market flaws are the root cause of regional variations in manufacturing costs.

This is due to the fact that FDI inflows are generally encouraged by developing countries' cheap labor costs, but FDI is frequently discouraged by growing labor prices (Kongruang, 2002). This serves as an example of how trade markets and patents give enterprises with ownership advantages a competitive edge over domestic markets. Site-specific benefits are endowments such as governmental regulations, market structures, and all contexts where FDI is conducted. The possibility to increase revenues by exploiting the unique advantages of the company determines whether or not to invest, therefore. In other words, the social, political, and economic aspects of the nation are thought to be obstacles to luring FDI inflows (Anyanwu, 2011).This is because labor costs in most developing nations are cheap, which stimulates FDI inflows, whereas increasing labor costs tend to inhibit FDI (Kongruang, 2002). This clearly demonstrates how, through trade markets and patents, ownership advantages give enterprises with market power and a competitive edge over domestic markets. The factors endowments such as government policies, market structures, and all contexts in which FDI is performed are referred to as site specific advantages. As a result, the decision to invest or not invest is based on the ability to increase earnings by leveraging the firm's unique advantages. In other words, the country's social, political, and economic factors are seen as deterrents to attracting FDI inflows (Anyanwu, 2011).

This theory explained the macroeconomic characteristics that may attract or deter direct investment in the host country include market size, macroeconomic stability, economic growth, production costs, and the stage in the development phase. If trade obstacles exist in the receiving country, market considerations play a role in determining whether or not investment is permitted (Chorell and Nilsson, 2005).FDI occurs only when MNEs have both ownership and internalization advantages, according to Dunning (2001), but when internalization benefits are lacking, manufacturing is licensed to local enterprises in the foreign market. The motivations for FDI, such as resource, efficiency, market, and strategic seeking , also contribute to explain the geographical benefits (Zbida, 2010). As a result, the higher the desire to take advantage of these ownership and internalization advantages, the greater the likelihood of FDI.Internalization benefits result from the benefits a firm gains from its value added activities, according to Dunning (2009), and firms desire to eliminate search and negotiating expenses. The benefits are critical in determining whether MNEs opt to use their ownership advantages to produce their own goods or license their products to other companies. Despite the fact that the theory provides a comprehensive picture of FDI and its contribution to growth, it does not address how MNE ownership advantages should be established and leveraged in international production (Shenkor, 2007). Because FDI is a dynamic process in which resource commitment, production scale, and investment approaches change over time, the theory does not explicitly identify the continuing, evolving processes of international production. Therefore this theory explained about the factors which may attract foreign direct investment in a country in this case Zimbabwe ..

## 2.3 REVIEW OF EMPIRICAL LITERATURE

According to empirical research, depending on the host country's capability for absorption, there is a favorable correlation between FDI and the growth of the manufacturing sector output in the majority of developing countries, especially in Africa. This indicates that FDJ contributes to the manufacturing sector to a higher extent in accordance with empirical data. The researchers also found that in many nations, FDI success depends on characteristics including trade liberalization and market imperfections. According to theoretical and empirical literature, FDI inflows into the host country result in the introduction of new knowledge and capital investments, the creation of jobs, an improvement in market competitiveness, and a rise in total factor productivity (output in the manufacturing sector).

## 2.3.1.FDI and Industrial Growth in Zimbabwe ( country empirical literature review)

Recent research has looked into how national factors may influence host countries' ability to gain from FDI. According to some studies, the size of spillovers from foreign firms is determined by how well domestic firms can absorb them, i.e., their ability to respond successfully to new entrants, new technology, and new competition. Alfaro and Charlton (2007). Local variables such as the domestic level of human capital, Boreinsztein et al (1998), Blomström and Kokko (2003), and the development of local financial markets are sometimes determinants of domestic enterprises' success.Weaknesses in these areas could limit domestic industries' ability to absorb new technologies and respond to foreign entrants' challenges and opportunities. Variation in absorptive capabilities between countries (and industries within countries) is a promising avenue of research that could provide an appealing synthesis of the literature's contradictory findings. The previous section illustrates that FDI has a substantial complementary effect on investment, leading to greater domestic investment and therefore, yet contribute positively to industrial progress by creating additional employment, through boosting technological know-how and labour productivity.

Property rights, education, and GDP all have positive effects on investment, but trade openness and capital intensity can have both positive and negative effects, according to a 2009 study by Gwenhamo on the institutional drivers of FDI in Zimbabwe. Foreign direct investment may suffer as a result of external debt. Z $1,216 million was spent annually in cooperative ventures with foreign capital, according to UNCTAD (1999). By giving local capital opportunities to work, this capital helped to mobilize local investment. Through job creation, FDI's impact on industrial development in Zimbabwe is quantified.

## 2.3.2 Review of the global empirical literature

Jayawickrama and Thangavelu (2010) used a panel data sample of 14 manufacturing industries to examine the effect of FDI on the expansion of Singapore's manufacturing industry during a 30-year period, from 1975 to 2008. After adjusting for unseen industry features and temporal effects, the authors of this article found that FDI has a favorable impact on the output growth of Singapore's manufacturing industries. An increase in FDI of 1% tends to boost industrial output growth by over 0.4%. They discovered that FDI had a positive 16 influence on the increase in manufacturing production using the Arellano-Bond GMM estimator. They used this GMM to handle the estimation problems brought on by endogeneity. Masron et al. (2012) undertook yet another study to answer the age-old query of whether FDI causes spillover effects from 1999 to 2004.

This study calculated the impact of FDI in one sector on the production of another within the manufacturing sector and discovered that FDI inflows in one area are likely to have a negative impact on both its own and other sectors. In their, this GMM was utilized to control endogeneity difficulties in estimation. Masron et al. published another study.

The quantity of FDI inflows' spillover impact on Malaysia's manufacturing sector was quantified in this study using correlation analysis. Iram and Muhammad (2009) examined the effect of FDI on economic development in the face of macroeconomic uncertainty and privatization from 1972 to 2008. ADF and Philip Peron unit root tests, as well as the Autoregressive distributed lag model, were employed to examine the robustness of the long-run relationship between the variables (ARDL). They found that FDI in manufacturing and FDI in services both have a sizable impact on economic growth over the long term, but neither had a sizable impact in the short term. Additionally, they found that FDI in the services sector is higher than that in the manufacturing sector.

The relationship between FDI and the expansion of the Nigerian manufacturing sector from 1975 to 2008 was established by David et al. (2012) using the Vector Auto Regression (VAR), cointegration, and error correction methods. The results of this study showed that industrial productivity was negatively impacted by foreign direct investment. When Gee et al. used the Autoregressive Distributed Lag (ARDL) model to look at the impact of FDI inflows from European Union countries Japan, China, and the United States on growth of the manufacturing sector in Malaysia from 1991 to 2006, they discovered that there is both a short-run and long-run relationship between FDI inflows from European Union countries and growth of the manufacturing sector in Malaysia. In Patience (2011), the influence or outcome of foreign direct investment on Africa's industrial output growth and foreign direct investment. One of the most well-known regional organizations in Africa, the Economic Community of West African States (ECOWAS), was the focus of the investigation. It has been demonstrated that foreign direct investment helps West Africa's industrial sector grow. Annual bank assessments were used to collect data. by looking at how foreign direct investment affected Lithuanian industry productivity between 1996 and 2000. The biggest gains are produced through upstream or vertical links as a result of interactions between multinational corporations and local firms, according to a paper by Javorcik (2004). However, some of these advantageous spillovers originate from businesses that get some foreign funding.

Between 1965 and 1982, Blomstrom and Wolf (1994) looked at whether FDI in the Mexican manufacturing sector was high enough to help local businesses trend toward a level of productivity equivalent to that of American businesses. They found that the rate of local productivity growth in this study was positively impacted by international relevance. Aitken and Harrison (1999) assessed the effect of FDI on more than 4000 local companies in Venezuela between 1976 and 1988. They found that there was a positive correlation between foreign equity participation and productivity in enterprises with fewer than 50 employees. The productivity of locally owned enterprises was negatively impacted by FDI. Chakraborty and Nunnenkamp (2008) looked at how FDI affected global economic growth for the entire country and for each sector in India using time series data.They found a high correlation between FDI stock and manufacturing sector output, but no causal relationship in the primary sector. They verified that the impact of FDI on economic growth depends not only on the volume of FDI but also on its composition and its kind. The impact of FDI on Malaysia's manufacturing sector from 1999 to 2008 was studied, according to Masron and Hassan (2016). No beneficial spillover from FDI inflows to various industrial industries was discovered by the study.

In a paper by Timoty and Chigozie (2015) they used manufacturing value added for the performance of manufacturing companies and time series to analyze the effect of foreign direct investment flow on the performance of manufacturing sector output growth firms in Nigeria compiled from World Bank and Central Bank of Nigeria Statistical Bulletin spanning 40 years. In order to identify both the long and short run causalities that run from the explanatory variables to the dependent variable, this study used an OLS estimate with FDI modeled as a quadratic function to account for its turning point. They discovered that FDI inflows had a long-term beneficial impact on manufacturing value addition, but a short-term negative impact. Although a positive effect won't be felt until FDI flows are gradually raised to a fair level, a unit increase in FDI offers short-term benefits that reduce MVA (Manufacturing value added) by about 87.34 percent. According to their research, a lack of FDI will negatively affect the operations of manufacturing firms by possibly making them overly dependent on foreign firms for technology transfer, the importation of raw materials, and the transfer of the necessary skill in terms of efficient human resource because human capital is unable to have an impact on the operations of manufacturing firms in Nigeria. Additionally, Onowor et al. (2013) employed an economic method to look Examine the effects of foreign direct investment on the expansion of Nigeria's manufacturing sector using annual time series data for the chosen variables from 1970 to 2011.

The study discovered a negative relationship between foreign direct investment and the expansion of the manufacturing sector. The empirical data showed that the output of the manufacturing sector declines by 0.06 percent for every 1 percent increase in foreign direct investment (FDI) (MANFQ). This translates to a short-term decrease in manufacturing sector output (MANFQ) when foreign direct investment increases. Juma (2012) examined the effect of FDI inflows on growth in Sub-Saharan Africa using data from 43 countries between 1980 and 2009.

He employed ordinary least squares regressions with nation fixed effects to address his research topic, using real GDP growth as the dependent variable and gross FDI inflows as a percentage of GDP as the main explanatory factor. He ultimately came to the conclusion that FDI has positively impacted Sub-Saharan Africa's GDP and that governments on that continent are justified in pursuing FDI in the future to spur development. Using a dynamic vector error correction model that takes into account dynamic, endogeneity, and causality concerns, Fauzel et al. (2015) evaluated whether FDI spillovers in the manufacturing sector boost the industry's productivity in Mauritius. Based on time series data from 1980 to 2010, their research results showed that, over time, FDI in the manufacturing sector has raised both total factor productivity and labor productivity.

They found that, although the effect is small, FDI in the manufacturing sector does have an effect on productivity when they looked at the short-term outcomes. This finding is explained by the significant exodus of foreign businesses from Mauritius to regions with cheap labor. The results also demonstrate that the FDI-productivity link is subject to bi-causality and feedback effects. Additionally, it shows that FDI and domestic investment are positively correlated, suggesting the existence of a "crowding in" effect. These results were corroborated by Fernandez and Paunov (2011). The majority of these research have demonstrated how FDI supports the expansion of industrial output on a worldwide scale. Therefore, this study aims to determine whether FDI contributes positively to the manufacturing sector output growth in Zimbabwe.

## 2:4.Summary

This chapter was mainly emphasizing on the need and importance of making use of relevant literature in the study. Empirical evidence from past researches shows that there is a positive correlation between FDI and manufacturing sector output growth in many countries. Although some studies pose unique views about the relationship and give possible assumptions for FDI to positively impact the manufacturing sector growth, they all support the theories that FDI comes in as a correction of market failure and production cost reduction strategy. The theories of FDI highlighted that there are many factors which may enhance or detract the potential of FDI to promote growth in many nations. The locational variables of the eclectic theory by Dunning (2001) asserts that social, political and economic factors possessed by the host country are the main factors which allow or limit the inflows of FDI in to the host country. The research will follow a deductive approach which derives conclusions from general to particular .The next chapter looks at the methodology of the study, possible model specification and justification of variables

## Chapter 3

## Research Methodology

## 3.0. Introduction

Several research conducted by neo-classical, classical, and modern economists have produced several growth models utilizing various methodologies such as the Solow growth models and endogenous growth models to explain growth in an economy. This chapter describes the procedures used to gather, alter, and analyze data in order to produce findings that indicate how foreign direct investment influences manufacturing sector output growth in Zimbabwe from 1980 to 2012. As a result, it primarily comprises of the theoretical framework, model formulation, data analysis presentation, and applicable diagnostic tests. According to Denzin and Lincoln (2015), the nature of the research question and the issue under investigation determines the research approach or strategy. This chapter end with a summary

## 3.1. MODEL SPECIFICATION

According to neo-classical and endogenous growth models, FDI can spur economic growth by increasing investment returns, which in turn boosts production output. In these models, FDI was described as a source of accumulating human capital. This study used Frank Ramsey's neoclassical model, which holds that a firm representing the production side of an economy produces output in accordance with the Cobb Douglas production function: According to neo-classical and endogenous growth models, FDI can spur economic growth by increasing investment returns, which in turn boosts production output. In these models, FDI was described as a source of the development of human capital in these models. The neoclassical method was applied in this research in accordance to the Cobb Douglas production function stated below:

Yt= At  Kt α Lt 1-α

where α and 1-α represents the output elasticity of labour and capital respectively , K is the capital input, L is the level of labour input , t represents the time frame and A is the state of technology or total factor productivity

The variable A captures total factor productivity (TFP) effect on growth in output and it is assumed that the effect of FDI on growth operates through variable A.In neo-classical growth literature, FDI is associated positively with output growth because it either increases the volume of investment and /or its productivity, thus enhancing an economy on a path of higher longer term growth. Thus, according to neoclassical models of sectorial growth as measured by economic growth, FDI will only be growth-advancing if it affects technology positively and permanently, Jochumzen (2011).

To determine the contribution of FDI on manufacturing sector output growth in Zimbabwe and to achieve the study's goals, the researchers used the neoclassical production function, which includes FDI as a source of capital as well as technical change. The model of this study excluded local investment to meet the environment of the country under investigation in order to create good outcomes. Additional variables such as inflation, exchange rate, foreign debt, trade openness, and exports were substituted for domestic investment to capture the efficiency of economic activity and to analyze output growth . To estimate the model provided as, in accordance to the Cobb Douglas production function stated below:

Yt= At  Kt α Lt 1-α ,FDI

**Yt= f (FDI, INF, EXR, DEB, EXP,TOP** )

The model used in the analysis is given by a typical formulation postulated by economic theory for growth function in its log-log form as

***Yt = β0+β1 logFDI+β 2 logINF+β 3logEXR+ β4logDEB+ β 5logEXP+β6 logTOP +µt***

Where:

Yt - manufacturing sector output growth as a percentage

FDI – foreign direct investment inflows into the manufacturing sector

INF – inflation rate

EXCR – exchange rate

DEB – external debt

EXP – exports value (% of GDP)

TOP - Trade openness

µt – random error term

β1, β2, β3, β4 β5, β5 are the parameters to be estimated or elasticities of growth or coefficients to the Independent variables

## 3.2 JUSTIFICATION OF VARIABLES

## 3.2.1 Dependent variable

Is that variable which is being measured or tested therefore in this study the dependent variable is manufacturing output growth(Yt)

## 3.2.1.1 Manufacturing Sector Output Growth (Yt)

The goal of this research is to determine the contribution of foreign direct investment on manufacturing sector output growth.Output growth will be the dependent variable .Output growth is a process by which the manufacturing industry's capacity for production increases over time, leading to higher levels of output and wealth in that industry. Industrial growth rates which are output minus intermediate consumption are widely employed to illustrate increases in manufacturing value added (MVA). An rise in productivity, or the ability to produce more products and services, is one of the primary drivers of economic growth. In this study, the following factors were used to calculate the amount of growth: inflation, foreign direct investment, currency rate, exports, trade openness, and external debt. The data is a time series that varies from 1980 to 2012, and that shift in time reflects the variations in the manufacturing sector's output growth between 1980 and 2012.

## 3.2.2 Explanatory variables

## 3.2.2.1 Foreign Direct Investment in the manufacturing sector (FDI)

Foreign direct investment, according to Taylor (2012), is a type of investment that can originate from outside the country, such as when a foreign company invests in a company in another country. The Zimbabwean economy has been lucky enough to obtain this type of investment in this regard. This is evidenced by the large amount of foreign direct investment it has received from a variety of countries. For example, Russia invested $3 billion in 2014 to start a platinum mine, and foreign firms such as Pick n' Pay supermarkets from South Africa have also invested in TM supermarkets, according to www.businessdaily.co.zw (2015). The literature on the relationship between FDI and growth has been inconclusive, with mixed results, and the impact of FDI on sector-specific growth has been restricted.

However, when FDI is combined with export performance, domestic investment, and the currency rate, Woerz (2006) discovered a strong positive relationship on growth. Foreign direct investment, in general, is stated to bring in the required money to allow for expansion, which will boost growth in many areas of the economy. If FDI inflows result in significant reverse flows in the form of profit remittances and dividends, or if multinational businesses receive significant tax concessions from the host country, negative economic prospects may result. Because OLS believes that errors estimated by residuals are normally distributed when they are favorably skewed, the FDI used the log form. Therefore the expected sign here is negative, that is β1 is less than zero.

## 3.2.2.2. Inflation GDP deflator (INF)

Inflation leads to a lot of problems in an economy, and as manufacturing is an important component of the economy, it is unavoidable that it will suffer as well. Abel, 2008) defines inflation as the rate at which the average level of prices for goods and services increases, which is followed by a decrease in purchasing power or a continuous loss of the overall purchasing power of the monetary unit. It establishes the degree of macroeconomic stability in the host nation. It is calculated using the consumer price index, which shows the annual percentage change in the cost for the typical consumer to purchase a collection of products and services. Between 2000 and 2008, inflation fluctuated and did not follow a pattern.

A rise in the relative price causes inflation in the home country to increase. The home country's exchange rate in relation to the global exchange rate has decreased as a result of the rise in inflation anticipated to be detrimental. The high rate of inflation in the domestic markets has led to an increase in the price of household products. As a result, manufacturing input costs have increased, which will eventually cause growth to slow. The demand for manufacturing exports declines, however, as manufactured goods and services appear to overseas consumers to be excessively expensive. A decline in growth will be caused by keeping inventory no longer being profitable. Growth will slow as keeping inventories on hand is not profitable. Growth is delayed as a result of the combined effects of declining demand, expensive inputs, and an expensive manufacturing sector. Therefore, we anticipate that inflation will negatively affect on manufacturing sector production growth. Inflation is predicted to be negative, The expected sign of inflation is negative, that is β2 is less than zero

## 3.2.2.3. Exchange rate (ER)

Exports become cheaper in international markets when domestic prices fall due to exchange rate depreciation, resulting in greater demand for exports.The phrase "price of one currency in terms of another" defines exchange rate. The exchange rate's importance arises from the fact that it links the price systems of different countries.Export demand increases when domestic prices fall as a result of an exchange rate depreciation because exports are more competitive in international markets. This study predicts a negative impact of the exchange rate because an increase in price brought on by an appreciation in the exchange rate makes exports more expensive and causes an increase in export supply. Majeed and Ahmad have published research on this subject. The exchange rate and export have a poor link, claims Ahmad (2006).

The notional exchange rate is used to replace the real exchange rate. Masunda (2011) defined the exchange rate as "the price of one currency in terms of another." The relevance of the exchange rate originates from the fact that it connects the price systems of two various nations, enabling direct product comparisons in international trade. In other words, it links local and international prices. Oladipupo & Onotaniyohuwo (2011) assert that fluctuations in exchange rates have a cascading impact on the money supply, unemployment rate, inflation rate, and interest rate. These figures demonstrate how important the exchange rate is to the economic well-being of every nation that welcomes visitors and hence to the economic health of every country that opens its doors opens the door to international trade in products and services, and thus is an important variable to consider in this research. As a result, exchange rate variations are guaranteed to have a positive or negative impact on manufacturing sector growth, which is relevant to this study. Because exchange rates have not been stable since Zimbabwe's independence in 1980 until dollarization, they are projected to have a negative impact, giving us the indicator that β3 is less than zero.

## 3.2.2.4 External Debt (DET)

Large external debt in a country means that the crucial influx of foreign resources required for investment stimulation, growth, and employment in the manufacturing sector, as well as the general economy, would be hampered. It also means that a country will have to spend funds that were intended to be used to expand production or invest in order to repay these loans with compounded interest rates. The empirical section of the research on the relationship between government external debt and manufacturing sector growth is fairly limited. The impacts of debt on growth in certain sectors are frequently inferred from the overall economy's growth. External government debt, according to Rogolf (2013), has a detrimental influence on the economy. The expected sign is positive, that is β 4 is less than zero

## 3.2.2.5 Trade openness (TOP)

The degree to which an economy is open to trade with other countries is known as trade openness or trade liberalization. The amount of trade openness in the host nation enhances FDI inflows, which raises the country's capital stock, which has a major impact on growth (Yeboah, Naanwaab, Saleem, and Akufo, 2012), (Baldwin, 2003), and (Yeboah, Naanwaab, Saleem, and Akufo, 2012). (Tekere, 2001). The study is likely to show a positive association between growth and trade openness. The manufacturing sector, like open commerce, has the potential to determine the country's long-term growth rate. Because trade openness determines a country's economic growth, the predicted sign is positive. A positive relationship between the level of growth and trade openness is expected from the study. Therefore the expected sign is positive β 5 is greater than zero, since trade oppeness stipulate the country s economic growth.

## 3.2.2.6 Exports

Exports, which are goods and services produced in one nation and distributed abroad, are a measure of how open an economy is. It is clear that exports are important to the manufacturing industry and the overall economy. There are many possible perspectives on a theoretical level. For instance, the traditional neoclassical trade argument would state that better resource allocation brought about by trade and exports has a major positive impact on economic performance. An improvement in manufacturing export performance reflects both the economy's level of trade openness and a better market for manufactured goods abroad. Those who support the endogenous growth theory, such Barro (1990) and others, contend that governmental initiatives, such as allowing for free trade, which entails exports exports, can determine the country's long-term development rate, as can the manufacturing sector. As a result, the predicted sign is positive, i.e. β 6>0.

## 3.2.2.7 The error term or "disturbance term"

This variable captures the effects of all other variables not included in the model, such as non-quantifiable variables that affect manufacturing sector output growth. It also records any problems that may have occurred throughout the data collection process.

## 3.3 Estimation procedure

The estimation of this model was made using data for the Zimbabwe economy for the period 1980 to 2012. The effect of FDI is estimated using the OLS .The OLS is a method for estimating the unknown parameters in a linear regression model. The estimators by OLS method are assumed to be (BLUE) meaning to say they are Best Linear Unbiased Estimators.The advantage of the OLS methodology is that it produces efficient, steady and unbiased estimates of the parameters. In another dimension, the OLS method can be used to estimate the unknown parameters .The model estimates the parameters and their signs, which are used in the interpretation where the significance is tested using probability values (pvalues) and the t-test. The study looked at the measure of the "Goodness of Fit" that is the coefficient of determination R² and the adjusted R² in order to find out how well the sample regression fits the data. All estimations shall be carried using a software package called EVIEWS. To check the validity of the CLRM assumptions, model diagnostic tests have been carried out.

## 3.4 . Diagnostic Tests

These are econometric testing procedures that are relevant to the study and are in sync with the OLS method. These tests are relevant as they serve as a platform for observing the econometric feasibility of this research and they are to be discussed below

## 3.4.1. Unit Root Tests (stationary tests)

Gujarati (2004) postulated that that unit root test is used to check for stationarity that is whether the variables are integrated of order (1) or otherwise before estimation procedure. It has been noted that if we regress a non-stationary time series on another non-stationary time series we may produce a spurious or nonsensical regression (Andren, 2007). If the variables are cointegrated of different levels, the OLS estimates of those variables may give super consistent results with the sense of collapsing the true values than if they were stationary. The Augmented Dickey-Fuller (ADF) test is used to test the existence of a relationship between current and past values of variables. The ADF test is preferred because it is robust to handle both first order and higher autoregressive processes and it avoids spurious regression which is synonymous when estimating data with a time trend. This is tested on the null hypothesis that there is no unit root or stationarity in the variables and an alternative hypothesis that there is stationarity in the variables

## 3.4.2 Multicollinearity

Multicollinearity is a regression phenomenon whereby two or more independent variables in a linear relationship are correlated. This research will make use of the correlation matrix to test for multicollinearity. It is the rule of thumb that the value of the correlation between any two variables should be less than 0.8. A value greater than 0.8 means there is perfect multicollinearity. It is a result of the stochastic nature of many independent variables which makes relationships exist amongst the variables, thereby making multicollinearity inherent in most econometric models. In order to deal with multicollinearity, only the inclusion of those variables not in exact or similar linear functions with each other is relevant according to Gujarati (1995).

The method used to acquire the data, such as sampling across a fixed range of the population's explanatory variable magnitudes, can also contribute to multicollinearity. It may also result from situations where one independent variable influences another, as in the regression of kids from group A schools, where there may be a relationship between the place they live, the income of their parents, and their consumption habits. Another source of multicollinearity is when an econometric model contains more explanatory variables than there are data. A situation like this is known as a "overdetermined model," and a good example is when one has to regress a model and needs to know how value added tax (VAT) affects, say, (3) The financial habits of the schools. A model is more likely to experience multicollinearity if it has more than three explanatory variables. The inherent characteristic of time series data, which was employed in this study, is that the parameters tend to increase or decrease at almost similar rates over a given length of time. Such a model is probably going to experience multicollinearity, according to Gujarati (1995).

## 3.4.3 Heteroskedasticity

One of the key tests that must be performed before findings can be evaluated is the heteroscedasticity test. When there is heteroskedasticity, the error variance no longer remains constant and is dependent on the explanatory variables. The unbiasedness and consistency qualities are not affected by heteroskedasticity, but variance will no longer be minimum, which will have an impact on the testing of hypotheses and the confidence interval. This will produce inaccurate results for critical econometric tests like F tests and confidence intervals. Heteroscedasticity is identified using the Breusch-Pagan test. The test pits the alternative hypothesis, that heteroskedasticity is present, against the null hypothesis, that there is no heteroskedasticity. Therefore, whenever the p-value of is less than, the null hypothesis will be rejected (5 percent in this study).

The autocorrelation test aims to determine whether errors from one period are not transferred over to the next.Breusch-Godfrey test is used to identify autocorrelation with the same effects as heteroscedasticity. Using the null hypothesis that there is no autocorrelation and the alternative hypothesis that there is autocorrelation, Durbin's alternative test is used to determine whether autocorrelation is present. Additionally, a normality test is performed before data are interpreted. The F test and t test are based on the normality assumption, which also allows probabilities to be derived. Shapiro-Wilk W test is used to check for normality. The error terms are regularly distributed if the p-value is higher than the level of significance.

## 3.4.4 Autocorrelation

When the error components are connected with one another in the same sample, Andren (2007) found that autocorrelation exists. The number of incorrect phrases should be zero. The coefficient of determination and common estimators of error variance will no longer be viable in the presence of autocorrelation, which will result in ineffective forecasts. The estimated parameters in dynamic models are biased and inconsistent if the error terms are serially associated (Qadri, 2011). Due to its ability to detect first order serial correlation, the Durbin-Watson (DW) test will be used to check for autocorrelation. Formally speaking, the DW statistic assesses the linear relationship between neighboring regression model residuals. Since it enables testing of higher order moving average processes of the residuals, the Breusch-Godfrey (BG) or Lagrangian Multiplier (LM) test is also employed to test for serial correlation.

The number of incorrect phrases should be zero. The coefficient of determination and common estimators of error variance will no longer be viable in the presence of autocorrelation, which will result in ineffective forecasts. The estimated parameters in dynamic models are biased and inconsistent if the error terms are serially associated (Qadri, 2011). Due to its ability to detect first order serial correlation, the Durbin-Watson (DW) test will be used to check for autocorrelation. Formally speaking, the DW statistic assesses the linear relationship between neighboring regression model residuals. Since it enables testing of higher order moving average processes of the residuals, the Breusch-Godfrey (BG) or Lagrangian Multiplier (LM) test is also employed to test for serial correlation. It allows for more than one variable to be tested at a time. The assumption of autocorrelation is tested on the null hypothesis that there is no autocorrelation among the error terms.

## 3.4.5 Normality

According to Greene, a normal distribution function is typically preferred for the distribution of data in statistics (2000). Therefore, a test for normality is crucial in this study to determine whether the data set and the error terms have a normal distribution. Standard Test The Jarque-Bera test is frequently used for normality testing to determine whether the variables used in the model are normally distributed. The Jarque-Bera test uses the mean-based Skewness and Kurtosis coefficients to determine if the variables are normally distributed. The degree of asymmetry is measured by skewness and values between -3 and 3 while a value of 0 indicates a symmetrical distribution. The weight of the distribution tails is assessed using kurtosis. The alternative hypothesis of no normality is evaluated against the null hypothesis of normality. We reject the null hypothesis of normalcy if the probability value exceeds the Jarque-Bera chi-square value at the 5% level of significance.

## 3.5 Data Sources, Type and Period

Secondary data are used in the study. The time series annual data was gathered from 1980 to 2012 during a 32-year span. Because the research project's analysis is more quantitative, secondary data sources are the ones that are better suited to this study. Zimbabwe Statistics Agency provided the data on trade openness that was used in this study(ZIMSTATS), foreign direct investment figures were collected from Zimbabwe Investment Authority (ZIA)., Data for exports, exchange rate and inflation statistics used in this study will be drawn from Reserve Bank of Zimbabwe and Ministry of Finance (MoF), while statistical data for industry capacity utilization, FDI and national income will be drawn from Confederation of Zimbabwe Industries and ZIMSTAT.

## 3. 6 Summary

This chapter highlighted the basis for model selection and specification, the variables included in the model and the data collection procedures. Justification of variables highlighted what is expected in the relationship between the variable and the dependent variable from economic theory. Diagnostic tests on the variables and residuals where presented and conditions whether to reject or accept stated. The next chapter presents the results from the model estimation and tests on the estimates and residuals that were obtained using Eviews statistical package.

## Chapter 4

## Data Analysis

**4.0 Introduction**

This chapter illustrates in detail the methods described in the last chapter. It gives an explanation of the data simulations and provides an interpretation of the results.

**4.1 Descriptive Statistics**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Statistics** | | | | | | | | |
|  | | manufacturing output growth | foreign direct investment(FDI) | Inflation GDP deflator (INF) | Exchange rate(ER) | External Debt(DET) | Trade openness(TOP) | Exports |
| N | Valid | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 1517577217.042119700000000 | .156737737136722 | 2.825651746700161 | 203729288.700844000000000 | 4219470542.6969695000000 | 12.991389993878368 | 5998569159.165762000000000 |
| Median | | 1505254823.341060000000000 | .131233345121490 | 2.130890200557450 | .008160799059513 | 4315417518.0000000000000 | 14.241884590527903 | 6044670138.973760000000000 |
| Std. Deviation | | 384224214.307862760000000 | .126027409123702 | 2.368364184134122 | 1170333067.168677600000000 | 2026279024.21667390000000 | 3.108372328484489 | 1544220557.618239600000000 |
| Variance | | 147628246860494432.000 | .016 | 5.609 | 1369679488108444160.000 | 4105806683980475900.000 | 9.662 | 2384617130570787300.000 |
| Skewness | | .224 | 1.314 | 1.092 | 5.745 | .254 | -.515 | -.183 |
| Std. Error of Skewness | | .409 | .409 | .409 | .409 | .409 | .409 | .409 |

The table above shows that there were no missing values in the data used. Mean is the average of set of values. Manufacturing output growth had a mean of 1517577217, foreign direct investment (FDI) had a mean of .1567, Inflation GDP deflator (INF) had a mean of 2.82565, Exchange rate (ER) had a mean of 203729288.7, External Debt (DET) had a mean of 4219470542.6, Trade openness (TOP) had a mean of 12.99, while Exports had a mean of 5998569159.2. Median is a statistical measure that determines the middle value of a data set listed in ascending order. For manufacturing output growth, the median is 1505254823.3 and is less than the mean meaning the data is skewed to the right. For, foreign direct investment (FDI) the median is 0.1312 and is less than the mean meaning the data is skewed to the right.

For, Inflation GDP deflator (INF) the median is 2.13 and is less than the mean meaning the data is skewed to the right. For, Exchange rate (ER) the median is 0.008 and is less than the mean meaning the data is skewed to the right. For External Debt (DET), the median is 4315417518 and is greater than the mean meaning the data is skewed to the left. For Trade openness (TOP), the median is 14.24 and is greater than the mean meaning the data is skewed to the left. For Exports, the median is 6044670138.97and is greater than the mean meaning the data is skewed to the left.

Standard deviation is a measure of how disperse the data is in relation to the mean. For manufacturing output growth, the standard deviation (384224214.3) is quite high which indicates that the data is more spread out. Foreign direct investment (FDI) has a low standard deviation of 0.126 which means the data is clustered around the mean. For Inflation GDP deflator (INF), the standard deviation (2.368) is quite low which indicates that the data is clustered around the mean. Exchange rate (ER) has a high standard deviation of 1170333067.2 meaning the data is more spread out from the mean. External Debt (DET) has a high standard deviation of 2026279024.2 meaning the data is more spread out from the mean. Trade openness (TOP), the standard deviation (3.1) is quite low which indicates that the data is clustered around the mean. Exports has a high standard deviation of 1544220557.6 meaning the data is more spread out from the mean.

Variance is the statistical measurement of the spread between numbers in the data set. More specifically, variance measures how far each number in the set is from every other number in the set. It is the square of the standard deviation. Generally, it can be drawn from the table that manufacturing output growth, Exchange rate (ER), External Debt (DET) and Exports have high variance meaning they are unstable. Foreign direct investment (FDI), Inflation GDP deflator (INF) and Trade openness (TOP) have low variance meaning they are more stable. Skewness measures the distribution of values (a frequency of values). A skewness greater than 1 and less than -1 indicates highly skewed distribution. A value between o.5 and 1or -0.5 and -1 is moderately skewed. A value between -0.5 and 0.5 indicates that the distribution is fairly symmetric. Manufacturing output growth is fairly symmetric, foreign direct investment (FDI) is highly positively skewed, Inflation GDP deflator (INF) is highly positively skewed, Exchange rate (ER) is highly positively skewed, External Debt (DET) is fairly symmetric. Trade openness (TOP) is negative moderately skewed and Exports is fairly symmetric.

**Model Building**

There are 3 steps in the Box-Jenkins procedure, each of which may be used several times:

1. model specification.

2. model fitting.

3. model diagnostics.

**4.2 Model Specification**

In model specification (or identification) we select classes of time series models that may be

appropriate for a given observed series. in this step, we look at the time plot of the series,

compute many different statistics from the data, and also apply knowledge from the subject

area in which the data arise, such as economics, physics, chemistry or biology.

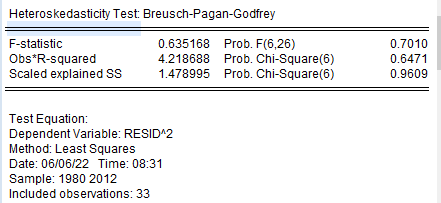
The Cobb-Douglas function has been (and is still used) abundantly used by economist because it has the advantage of algebraic tractability and of providing a fairly good approximation of the production process. Its main limitation is to impose an arbitrary level for substitution possibilities between inputs. The data has to be unbiased and accurate. The data produces better and more accurate results if the data is homoskedastic i.e. constant variance of errors and there is no serial correlation or auto-correlation.

**4.2.1 Heteroskedasticity**

The assumption that variance of the errors is constant is known as homoscedasticity, i.e. Var(µt) = σ 2t. Heteroskedasticity is a scenario where the error terms do not have equal variances.

H0: There is no heteroskedasticity

H1: There is heteroskedastic effect

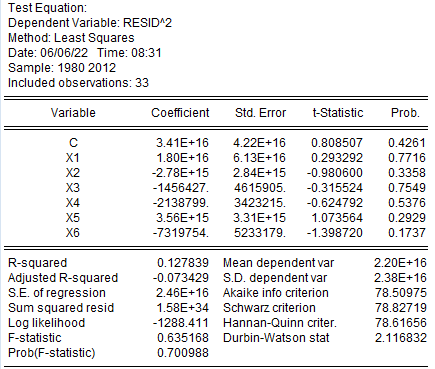


Since the chi-squared probability is greater than 0.05 we fail to reject the null hypothesis and conclude that there is no heteroskedasticity.

**4.2.2 Serial Correlation Test\ Auto-correlation**

When error terms from different (usually adjacent) time periods are correlated, we say that the error term is serially correlated. Serial correlation occurs in time series studies when the errors associated with a given time period carry over into future time periods. Serial correlation will not affect the unbiasedness or consistency of OLS estimators, but it does their efficiency. If there is no serial correlation, the DW statistic will be around 2.

The DW statistic will fall below 2 if there is positive serial correlation (in the worst case, it will be near zero). If there is negative correlation, the statistic will lie somewhere between 2 and 4.



Since the DW statistic is 1.622 and its below 2 we can conclude that there is a no serial correlation.

The probabilities of variables in the diagram above are greater than 5% which shows that there is no auto-correlation in the data used.

**4.2.3 Multicollinearity Test**

In a regression the presence of multicollinearity implies that is using redundant information in the model, which can easily lead to unstable regression coefficient estimates.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | |
|  | | | manufacturing output growth | foreign direct investment(FDI) | Inflation GDP deflator (INF) | Exchange rate(ER) | External Debt(DET) | Trade openness(TOP) | Exports |
| Spearman's rho | manufacturing output growth | Correlation Coefficient | 1.000 | -.729\*\* | -.777\*\* | .576\*\* | .465\*\* | .777\*\* | .519\*\* |
| Sig. (2-tailed) | . | .000 | .000 | .000 | .006 | .000 | .002 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| foreign direct investment(FDI) | Correlation Coefficient | -.729\*\* | 1.000 | .365\* | -.802\*\* | -.551\*\* | -.587\*\* | -.285 |
| Sig. (2-tailed) | .000 | . | .037 | .000 | .001 | .000 | .108 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Inflation GDP deflator (INF) | Correlation Coefficient | -.777\*\* | .365\* | 1.000 | -.286 | -.228 | -.625\*\* | -.585\*\* |
| Sig. (2-tailed) | .000 | .037 | . | .106 | .202 | .000 | .000 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Exchange rate(ER) | Correlation Coefficient | .576\*\* | -.802\*\* | -.286 | 1.000 | .731\*\* | .592\*\* | .332 |
| Sig. (2-tailed) | .000 | .000 | .106 | . | .000 | .000 | .059 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| External Debt(DET) | Correlation Coefficient | .465\*\* | -.551\*\* | -.228 | .731\*\* | 1.000 | .545\*\* | .111 |
| Sig. (2-tailed) | .006 | .001 | .202 | .000 | . | .001 | .540 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Trade openness(TOP) | Correlation Coefficient | .777\*\* | -.587\*\* | -.625\*\* | .592\*\* | .545\*\* | 1.000 | .730\*\* |
| Sig. (2-tailed) | .000 | .000 | .000 | .000 | .001 | . | .000 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Exports | Correlation Coefficient | .519\*\* | -.285 | -.585\*\* | .332 | .111 | .730\*\* | 1.000 |
| Sig. (2-tailed) | .002 | .108 | .000 | .059 | .540 | .000 | . |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | | | |
| \*. Correlation is significant at the 0.05 level (2-tailed). | | | | | | | | | |

From the results we can see that there is the presence of multicollinearity amongst variables which is indicated by high significant correlation values between variables. Therefore, in this case regression analysis is not advisable to create a model.

**4.3 Model Estimation(regression model)**

The Cobb Douglas is used to estimate the model given as

Yt= At Kt α Lt 1-α

**Yt= f (FDI, INF, EXR, DEB, EXP, TOP**)

The model used in the analysis is given by a typical formulation postulated by economic theory for growth function in its log-log form as

***Yt = C+β1 logX1+β 2 logX2+β 3logX3+ β4logX4+ β 5logX5+β6 logX6 +µt***

Where:

**Yt** - manufacturing sector output growth as a percentage

**X1** - foreign direct investment inflows into the manufacturing sector

**X2**  - inflation rate

**X3** -exchange rate

**X4** - external debt

**X5** - Trade openness

**X6** -exports value (% of GDP)

**µt** - random error term

Where; β1, β2, β3, β4 β5, β5 are the parameters to be estimated or elasticities of growth or coefficients to the Independent variables. The diagram below shows the model estimated on E-views.

The table below shows the regression results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 24.88965 | 3.434653 | 7.246628 | 0.0000 |
| LNX1 | -0.029308 | 0.013287 | -2.205703 | 0.0364 |
| LNX2 | -0.005586 | 0.007480 | -0.746793 | 0.4619 |
| LNX3 | -0.010407 | 0.004835 | -2.152410 | 0.0408 |
| LNX4 | -0.004110 | 0.045864 | -0.089612 | 0.9293 |
| LNX5 | 0.958733 | 0.159497 | 6.010974 | 0.0000 |
| LNX6 | 0.276718 | 0.148138 | -1.867978 | 0.0731 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.810289 | Mean dependent var | | 21.10847 |
| Adjusted R-squared | 0.766510 | S.D. dependent var | | 0.258847 |
| S.E. of regression | 0.125077 | Akaike info criterion | | -1.133941 |
| Sum squared resid | 0.406751 | Schwarz criterion | | -0.816500 |
| Log likelihood | 25.71003 | Hannan-Quinn criter. | | -1.027132 |
| F-statistic | 18.50846 | Durbin-Watson stat | | 1.180397 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Hence the model estimated is:

***Yt = 24.88965-0.029308logX1-0.005586logX2-0.010407logX3-0.004110logX4+0.958733logX5-0.276718logX6 +µt***

The R-squared measures how well the regression model explains observed data. The R-squared of this model is 81% which shows that the model is a good fit to show how the explanatory variables affect the dependent variable. The F-value is the ratio of the mean squares’ treatment to the mean squares error hence the higher the F-value the better the model. 18.5 is high hence the model is good. The Durbin-Watson statistic is less than 2 hence there is a positive serial correlation. The prob(F-statistic<0.05) hence the residuals are not correlated.

* **Foreign Direct Investment in the manufacturing sector (FDI)**

The results show that FDI has a negative impact on the manufacturing sector. Its coefficient is -0.029308. Though various researchers concluded that foreign direct investment in the manufacturing sector has a positive impact on economic growth Kastrait (2013), argued that the effects of FDI on a host country can be both positive and negative. With regards to the effect of FDI on employment, the new jobs created through foreign investment may not necessarily be new jobs created. He stated that the working conditions in firms sponsored by FDI have also been a concern Low absorptive capacity in local industries, a lack of technical know-how, and trade restrictions may all contribute to this. Additionally, Sandalcinar and Altiner (2012) explained that the inability to utilize technological advancements along with poor human capital, an inadequate capital stock, and low savings do not create an environment that is conducive to foreign direct investment having a positive impact on growth in any economy. This further supports the reason why the study's researcher discovered a negative association. Additionally, the Neo-classical growth models outlined how a rise in FDI has both short-term and long-term effects on an economy, with the latter being permanent due to the expectation of rising savings and an increase in FDI that is more production-oriented. The presence of sweatshops in some countries, coupled with child laborers, dangerous, sub-human working conditions with minimal wage.

* **Inflation GDP deflator (INF)**

The results show that INF has a negative impact on the manufacturing sector. Its coefficient is -0.005586. According to Raynond Runganga (2020), using the Dynamic Ordinary least squares, inflation has a negative impact on economic growth. High rate of inflation in the domestic markets makes domestic goods expensive. This means that inputs for the manufacturing sector became costly and this will ultimately retards growth. On the same note manufacturing produce or services become very expensive in the eyes of foreigners and therefore the demand for manufacturing exports falls, keeping piling inventory will not be worthwhile hence growth falls. The combined effects of falling demand, costly inputs and expensive manufacturing sector produce, thereby tumbles growth

* **Exchange Rate (ER**)

The results show a negative impact of exchange rate on manufacturing sector. Its coefficient is -0.010407. From 1980 when Zimbabwe got independence the exchange rates have not been stable up to dollarization. The country has suffered an economic depression due to our unstable currency.

* **External Debt (DET)­­­**

it has a negative impact on the manufacturing growth output. Its coefficient is -0.004110. Amos Munzara (2020) says that the country should not rely on foreign borrowing to finance economic growth but should rather create a conducive environment for alternative sources of foreign funds like project finance and foreign direct investment. His study showed a negative relationship between DET and manufacturing growth using ordinary least squares regression.

* **Trade openness (TOP)**

The results show that the trade openness has a positive impact on manufacturing growth output. Its coefficient is 0.958733. The level of trade openness in the host country increases the inflows of FDI which will increase the capital stock in the country which has a significant effect in deciding the level of growth (Yeboah, Naanwaab, Saleem and Akufo, 2012)

* **Export**

it has a positive impact on the manufacturing growth output. Its coefficient is 0.276718. Looking at the manufacturing sector increased export performance signifies a better market of manufacturing produce outside the economy as well evidence the degree of openness to trade in the economy. Barro (1990) and others, who advocate the endogenous growth theory, assert that the government policies, such as open trade, which implies exports, could stipulate the country’s long-term growth rate, so is the manufacturing sector.

**4.4 Model Diagnostic Tests**

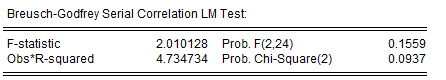
In diagnose checking step, the residuals from the fitted model shall be examined against adequacy. This was done by the serial correlation test using Breusch-Godfrey LM Test and white noise using the Ljung-Box Q statistic. If the residuals are correlated, then the model should be refined. Otherwise, the autocorrelations are white noise and the model is adequate to represent our time series. Hence, the model developed incorporates the basic statistical properties of the time series data into its parameters. The normality test is also carried out using the histogram and Jarque-Bera Test. Finally carried out Breusch-Pagan-Godfrey to test for heteroskedasticity.

**4.4.1 Serial Correlation Test**

The LM test is conducted to test for serial correlation withing the residuals.

H0: There is no serial correlation.

H1: There is serial correlation.



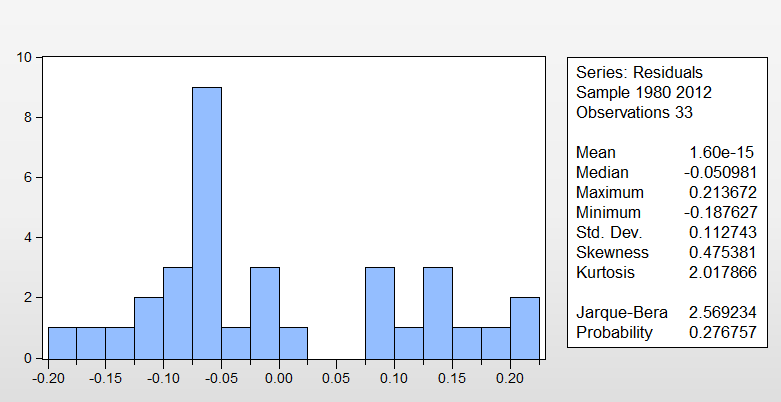
Since the p − value > 0.05 we fail to reject H0 and conclude that there is no serial correlation within the residuals.

**4.4.2 Normality Test**

The residuals must be normally distributed.

H0: Residuals are multivariate normal

H1: Residuals are not multivariate normal.



The Histogram shows a bell-shaped shape which indicates that the residuals are normally distributed. Also, the p − value > 0.05 hence we fail to reject the null hypothesis and conclude that the residuals are multivariate normally distributed.

**4.4.3 Heteroskedasticity Tests**

H0: There is no heteroskedastic effect

H1: There is heteroskedastic effect

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.220680 | Prob. F (6,26) | | 0.3276 |
| Obs\*R-squared | 7.252854 | Prob. Chi-Square (6) | | 0.2981 |
| Scaled explained SS | 2.291334 | Prob. Chi- Square (6) | | 0.8911 |
|  |  |  |  |  |
|  |  |  |  |  |

We fail to reject H0 since for both chi-square the p − value > 0.05 and conclude that the residuals are homoskedastic.

This shows that this is a good model and the results can be trusted to predict future values.

**4.5 CONCLUSION**

The findings revealed that FDI, inflation, exchange rate, and external debt all contribute negatively on the manufacturing sector output growth in Zimbabwe from 1980 to 2012, whereas trade openness and exports contributes positively. Several studies have been done before including Borensztein et al (1998), and Ahmed and Mayowa (2003),These studies have found that FDI increases industrial and manufacturing sector production growth. This means these studies supported that FDI contributes positively to the manufacturing sector output growth in Zimbabwe This research contradicts this belief, as it discovered a negative association between FDI and manufacturing sector output growth. A study which have been done by Demirel (2006) suggested that FDI has a favorable effect on the growth of industries in situations where human capital, the level of income as well as the prevailing situations of both the financial system and the trade policies are sound. This study go hand in hand with the study which have been done by Maliwa and Nyambe (2015), for the country of Zambia and this country had similar conditions to Zimbabwe, and also found a negative relationship between foreign direct investment and growth as well. Therefore the study by Maliwa and Nyambe (2015)also found a negative impact of FDI on the manufacturing sector output growth .Low absorptive capacity in local industries, a lack of technical know-how, and trade restrictions may all contribute to this. Additionally, Sandalcinar and Altiner (2012) explained that the inability to utilize technological advancements along with poor human capital, an inadequate capital stock, and low savings do not create an environment that is conducive to foreign direct investment having a positive impact on growth in any economy. This further supports the reason why the study's researcher discovered a negative association.

## Chapter 5

## 5.0 Introduction

This chapter contains a detailed summary of the study and some conclusion drawn from the empirical results of the previous chapter. The conclusion is then followed by policy recommendations to the government of Zimbabwe in line with the research findings. It anticipates relating the research findings to the objectives of the study.

## 5.1 Summary of the study

Using data from 1980 to 2012, the study conducted an empirical analysis of FDI's contribution to the manufacturing sector output growth in Zimbabwe .The major finding of this research is that there is a negative relationship between FDI and the manufacturing sector output growth in Zimbabwe which was computed in Eviews from chapter 4.This also means the FDI is contributing to the manufacturing sector output growth to a lesser extend as they tend to deprive domestic industries. This observation is important as it answered the main objective of the study which was to investigate whether FDI contributes positively to the manufacturing sector output growth. Therefore we accept the null hypothesis that foreign direct investment contributes negatively to the manufacturing sector output growth in Zimbabwe from 1980 to 2012.

This research also revealed that trade openness and exports contributes to a greater extend on the manufacturing sector output growth which means there is a positive relationship. This was the second objective of the study therefore the observation is also important since it answered the second question of the research.

The other specific objective was to determine other factors which attract foreign direct investment in the host country, which was discussed in chapter two .The theories of FDI highlighted that there are many factors which may enhance or detract the potential of FDI to promote growth in many nations. The locational variables of the eclectic theory by Dunning (2001) asserts that social, political and economic factors possessed by the host country are the main factors which allow or limit the inflows of FDI in to the host country.This was also explained by a theory by Dunning John. Dunning John (1977) pioneered the central theory in international capital locational decisions by combining firm-specific and locational advantages variables that support foreign capital locational decisions. Dunning John (1977) is credited with creating the core idea of FDI inflows in developing nations. According to the hypothesis, ownership, locational, and internalization variables influence enterprises' decisions to invest abroad. Ownership and internalisation variables are firm-specific, whereas locational factors concentrate on host market characteristics that attract investment. Therefore a country is supposed to have pull factors which will attract foreign investors to invest in Zimbabwe. The level of human capital is the other factor can be considered by foreign investors as explained by Boreinsztein et al (1998). Blomström and Kokko (2003) also expllained that the development of local financial markets are sometimes determinants of this foreign investment. The study take note of different theories which backup the model used developed in chapter three and success of chapter four.

## The study's conclusion

This study reveals a negative link between foreign direct investment and manufacturing sector output growth. If FDI inflows result in significant reversal flows in the form of profit remittances and dividends, or if multinational corporations receive significant tax concessions from the host country, FDI may imply negative growth prospects. FDI also deprives domestic industries when they come to invest .Additionally, the Neo-classical growth models outlined how a rise in FDI has both short-term and long-term effects on an economy, with the latter being permanent due to the expectation of rising savings and an increase in FDI that is more production-oriented.

The study also discovered that manufacturing sector production growth and inflation had a negative relationship. This result is expected due to the high rate of inflation in domestic markets, which makes domestic goods more expensive. This means that manufacturing inputs have become more expensive, which will slow growth in the long run. High inflation rates are known to generate macroeconomic instability in a country's economy, and the Zimbabwean economy is no exception.

It also showed that exports and the expansion of the manufacturing sector's output go hand in hand. These outcomes were anticipated because improved manufacturing export performance suggests a larger market for produced goods outside of the economy and a higher level of trade openness within the economy. The chapter before also demonstrated a favorable relationship between trade openness and output growth. The degree of trade openness in the host nation encourages FDI inflows, boosting the capital stock and significantly influencing the rate of growth. Additionally, it was discovered that there is a negative correlation between the rise in manufacturing sector production and the exchange rate. It was also observed that there is also a negative relationship between exchange rate and manufacturing sector output growth. This was also expected since 1980 when Zimbabwe got independence the exchange rates have not been stable up to dollarization. Therefore this means fluctuations in exchange rates lead to decrease in output growth .It was also found out that external debts have a negative relationship with output growth.

Large external debt in a country therefore implies that the vital needed inflow of foreign resources for investment stimulation, growth and employment in the manufacturing sector of the economy as well as the overall economy as a whole will be hindered. This observation is essential because it answers this study’s second objective which inquires on the effect of trade openness ,exports , inflation , external debts and exchange rate on the manufacturing sector output growth .

The study also concluded that that there are many factors which may enhance or detract the potential of FDI to promote growth in many nations as explained by the theories in chapter 2. The locational variables of the eclectic theory by Dunning (2001) asserts that social, political and economic factors possessed by the host country are the main factors which allow or limit the inflows of FDI in to the host country.

Lastly, this research is mainly set out to find out the contribution of foreign direct investment on manufacturing sector output growth and the result obtained will answer the core objective of this research. Foreign direct investment is found that it contributed negatively to this sector and this is possibly due to a weak financial system, stringent trade and investment policies as well as low capital. Policies should be put in place so that foreign direct investment can bring in the desired effect in the Zimbabwean economy and it is the duty of the next subsection to focus on that.

## 5.3 Policy recommendations

In line with the requirements of the research, recommendations need to be put in place that yield a better and conducive environment for foreign direct investment to increase and award better results in Zimbabwe. Since many economies are driven by policies, the government as the center of policy formulation therefore it is burdened with the responsibility of creating policies that will affect positively on the economy. FDI in many nations has been the savior of many countries since it is considered a cutting edge of underdevelopment particularly in this era of globalization . Research organized by Blomstrom and Kokko (2003) urged that the government should prepare policies which target FDI. Focusing on this, conjusive macroeconomic policy environments is also a sine qua non for attracting FDI inflows into the host country.

The study's findings revealed that FDI has a tiny positive influence on growth, implying that low levels of FDI in a country generate a little shift in growth. To put it another way, it suggests that manufacturing sector growth is mostly achieved with minimum external assistance. By enacting sound macroeconomic policies to boost FDI, the public's spending power should rise, allowing FDI to deliver the desired effects while also increasing investment .

The role of FDI in enhancing the manufacturing sector production in Zimbabwe has been investigated. The study's empirical analysis revealed that FDI plays a significant impact in boosting manufacturing growth. Though contributions in the Zimbabwe's output was not large, it could be a reflection of the country's poor business climate, which is exacerbated by rising levels of corruption and inconsistency in investment policy, as well as a lack of infrastructure to facilitate investment. As a result, it is critical that the government recognizes the significant role of FDI and works to improve the business environment by fostering an investment-friendly atmosphere. This would not only boost FDI's contribution to the manufacturing sector's growth, but it will also attract more FDI.

Economic blueprints should also be created in a way that capitalizes on the advantages of FDI. Priority should be given to human capital strategies, productivity enhancements, and industry-specific innovation talents. The Zimbabwean government needs to update its trade and investment strategy similarly to the Indigenisation and Economic Empowerment Act (2007). Reviewing these laws might enhance the quantity of capital entering the nation as well as the importation of more capital goods, ultimately leading to increased industrial growth. The manufacturing sector and output growth will eventually increase, along with this FDI, which is known as a growth and development engine.

Local governments should speed up the ongoing process of formalizing part of the informal sector in order to boost manufacturing output growth. As is well known, a sizable portion of Zimbabwe's economy consists of the informal sector, and the capital goods used in it are pricey. will lead to a bigger proportion of GDP and higher increase in output for the manufacturing sector as a result. Currently, Zimbabwe's economy has incredibly low inflation, which enables the government to issue debt at a lower cost. The high costs of debt payment may be reduced with lower nominal interest rates. By combining low real interest rates with a consistent dosage of inflation, it might be able to aid in the liquidation of the enormous debt. A technological policy with the objective of developing a local engineering sector is recommended. As a result, a connection between manufacturing and agriculture will be established.This would result in a larger export base, attracting more foreign exchange into the country and boosting the manufacturing sector's growth. Similarly, measures that have resulted in In the same vein, export subsidization policies should be restored, as this study suggests, because they have a favorable relationship with industrial growth.

To boost capacity utilization to more than 10%, the government must assure long-term macroeconomic stability across all sectors, particularly manufacturing and agriculture. Through foreign direct investment, the government should also develop an investment-friendly corporate environment. Government initiatives that encourage the flow of foreign direct investment into the nation should be prioritized so that Zimbabwean exports can benefit from new ideas and technical innovation.

## 5.4 Recommendation of the study

The findings of this study should not be regarded as conclusive, but rather as a catalyst for more research, and so there are prospects for more research into the manufacturing sector's production growth.Other econometric models and methodologies can also be used to explore the topic at hand explicitly. Finally, as economic conditions change, there will be a demand for new research in the same area.

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## APPENDICES

**APPENDIX 1 : DATA**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **manufacturing output growth** | **foreign direct investment(FDI)** | **Inflation GDP deflator (INF)** | **Exchange rate(ER)** | **External Debt(DET)** | **Trade openness(TOP)** | **Exports** |
| 1980 | 914698669.4 | 0.5 | 8.801275563 | 0.000645291 | 785615492 | 8.429605416 | 3914343097 |
| 1981 | 1004799967 | 0.45 | 7.611524353 | 0.000690976 | 1259851748 | 8.354226873 | 4404631206 |
| 1982 | 1000237849 | 0.4 | 5.136601077 | 0.000759946 | 1874292580 | 7.239331008 | 4520662303 |
| 1983 | 1058784674 | 0.4 | 3.9 | 0.001014234 | 2199842233 | 7.410096213 | 4592328654 |
| 1984 | 1101554264 | 0.299112459 | 3.038538292 | 0.001258937 | 2190620422 | 7.814444826 | 4504736429 |
| 1985 | 1144323853 | 0.248347632 | 3.801275563 | 0.001615516 | 2431157608 | 10.42753178 | 4817589331 |
| 1986 | 1187093443 | 0.160835736 | 2.130890201 | 0.001668476 | 2646160828 | 10.79264519 | 5819886255 |
| 1987 | 1229863032 | 0.14420568 | 2.712950297 | 0.001663462 | 2920723550 | 11.62318952 | 5698291391 |
| 1988 | 1272632622 | 0.128314465 | 3.038538292 | 0.001807734 | 2730954475 | 11.68525377 | 6044670139 |
| 1989 | 1315402211 | 0.12 | 3.038538292 | 0.00212134 | 2854423612 | 11.42528129 | 6118804114 |
| 1990 | 1358171801 | 0.19 | 2.1 | 0.002454518 | 3317308092 | 11.63974122 | 6115882233 |
| 1991 | 1400941390 | 0.165506566 | 2.3 | 0.003625489 | 3515456198 | 10.41341143 | 5848009200 |
| 1992 | 1443710980 | 0.165170971 | 2.04 | 0.005104267 | 4170530120 | 14.29195111 | 5536745900 |
| 1993 | 1486480570 | 0.120748107 | 3.038538292 | 0.006490494 | 4315417518 | 14.24188459 | 6797614200 |
| 1994 | 1529250159 | 0.185923094 | 0.05 | 0.008160799 | 4565913284 | 15.96125284 | 7435905400 |
| 1995 | 1572019749 | 0.188433271 | 3.038538292 | 0.008675219 | 5080454836 | 15.50004534 | 7472128100 |
| 1996 | 1614789338 | 0.159627179 | 1.984383325 | 0.010013713 | 5077477646 | 16.69873222 | 8080206800 |
| 1997 | 1657558928 | 0.133061449 | 0.0002 | 0.012125047 | 4965116239 | 16.08877667 | 8526050000 |
| 1998 | 1700328517 | 0.134333688 | 0.0000001 | 0.023706013 | 4686000248 | 15.96125284 | 8468158900 |
| 1999 | 1743098107 | 0.131233345 | 2.006813278 | 0.03834471 | 4423358560 | 15.50004534 | 8157984100 |
| 2000 | 1785867696 | 0.112108334 | 0.627900034 | 0.044468376 | 3923046654 | 14.29195111 | 7527183700 |
| 2001 | 1828637286 | 0.060495312 | 0.12 | 0.05511466 | 4055708537 | 13.45678889 | 7773790300 |
| 2002 | 1871406876 | 0.050456343 | 1.712950297 | 0.055098291 | 4685272109 | 16.76654379 | 6454981000 |
| 2003 | 1914176465 | 0.003491869 | 1.801275563 | 0.698216071 | 5035876352 | 16.4568899 | 6835760100 |
| 2004 | 1956946055 | 1.72248E-05 | 1.611524353 | 5.074419415 | 4544119122 | 15.65854332 | 6930150600 |
| 2005 | 1999715644 | 0.019113099 | 1.660107678 | 22.3890396 | 513525453 | 15.45887521 | 6960850700 |
| 2006 | 1842485234 | 0.000183692 | 4.1 | 164.5473565 | 6424849920 | 16 | 7244056600 |
| 2007 | 1505254823 | 0.05857954 | 4.894886848 | 9686.77167 | 7826376505 | 15.65475522 | 5828718100 |
| 2008 | 1000024413 | 0.081171613 | 7.692224742 | 6723052073 | 8162850336 | 9.89875557 | 3021458000 |
| 2009 | 1070794002 | 0.123448562 | 7.675280284 | 4563.555 | 8005565879 | 9.1928554 | 2905913000 |
| 2010 | 2013563592 | 0.095851175 | 0.57 | 10.4555 | 6768623752 | 13.68487148 | 4236197900 |
| 2011 | 2256333182 | 0.079564124 | 0.58317575 | 0.0054322 | 7393336601 | 15.32937395 | 4452441400 |
| 2012 | 2299102771 | 0.063010794 | 0.428576874 | 0.006490494 | 5892701400 | 15.36696648 | 4906653100 |
|  |  |  |  |  |  |  |  |

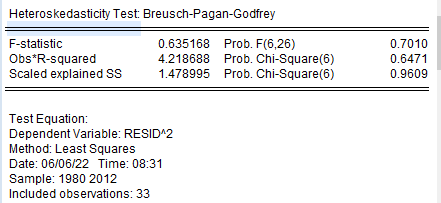
**APPENDIX 2**

**DESCRIPTIVE STATISTICS**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | manufacturing output growth | foreign direct investment(FDI) | Inflation GDP deflator (INF) | Exchange rate(ER) | External Debt(DET) | Trade openness(TOP) | Exports |
| N | Valid | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 1517577217.042119700000000 | .156737737136722 | 2.825651746700161 | 203729288.700844000000000 | 4219470542.6969695000000 | 12.991389993878368 | 5998569159.165762000000000 |
| Median | | 1505254823.341060000000000 | .131233345121490 | 2.130890200557450 | .008160799059513 | 4315417518.0000000000000 | 14.241884590527903 | 6044670138.973760000000000 |
| Std. Deviation | | 384224214.307862760000000 | .126027409123702 | 2.368364184134122 | 1170333067.168677600000000 | 2026279024.21667390000000 | 3.108372328484489 | 1544220557.618239600000000 |
| Variance | | 147628246860494432.000 | .016 | 5.609 | 1369679488108444160.000 | 4105806683980475900.000 | 9.662 | 2384617130570787300.000 |
| Skewness | | .224 | 1.314 | 1.092 | 5.745 | .254 | -.515 | -.183 |
| Std. Error of Skewness | | .409 | .409 | .409 | .409 | .409 | .409 | .409 |

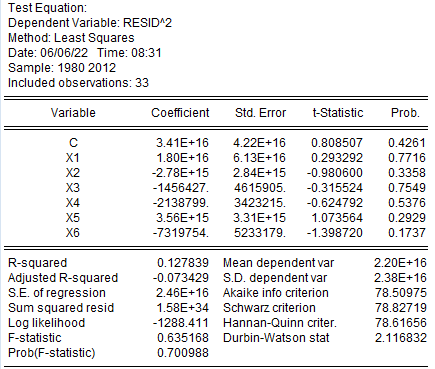
**APPENDIX 3**

**TEST FOR HETEROSCEDASTICITY**



**APPENDIX 4**

**TEST FOR AUTOCORRELATION**



**APPENDIX 5**

**MULTICOLLINIEARITY TEST**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Correlations** | | | | | | | | | |
|  | | | manufacturing output growth | foreign direct investment(FDI) | Inflation GDP deflator (INF) | Exchange rate(ER) | External Debt(DET) | Trade openness(TOP) | Exports |
| Spearman's rho | manufacturing output growth | Correlation Coefficient | 1.000 | -.729\*\* | -.777\*\* | .576\*\* | .465\*\* | .777\*\* | .519\*\* |
| Sig. (2-tailed) | . | .000 | .000 | .000 | .006 | .000 | .002 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| foreign direct investment(FDI) | Correlation Coefficient | -.729\*\* | 1.000 | .365\* | -.802\*\* | -.551\*\* | -.587\*\* | -.285 |
| Sig. (2-tailed) | .000 | . | .037 | .000 | .001 | .000 | .108 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Inflation GDP deflator (INF) | Correlation Coefficient | -.777\*\* | .365\* | 1.000 | -.286 | -.228 | -.625\*\* | -.585\*\* |
| Sig. (2-tailed) | .000 | .037 | . | .106 | .202 | .000 | .000 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Exchange rate(ER) | Correlation Coefficient | .576\*\* | -.802\*\* | -.286 | 1.000 | .731\*\* | .592\*\* | .332 |
| Sig. (2-tailed) | .000 | .000 | .106 | . | .000 | .000 | .059 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| External Debt(DET) | Correlation Coefficient | .465\*\* | -.551\*\* | -.228 | .731\*\* | 1.000 | .545\*\* | .111 |
| Sig. (2-tailed) | .006 | .001 | .202 | .000 | . | .001 | .540 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Trade openness(TOP) | Correlation Coefficient | .777\*\* | -.587\*\* | -.625\*\* | .592\*\* | .545\*\* | 1.000 | .730\*\* |
| Sig. (2-tailed) | .000 | .000 | .000 | .000 | .001 | . | .000 |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Expo  Rts | Correlation Coefficient | .519\*\* | -.285 | -.585\*\* | .332 | .111 | .730\*\* | 1.000 |
| Sig. (2-tailed) | .002 | .108 | .000 | .059 | .540 | .000 | . |
| N | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | | | |
| \*. Correlation is significant at the 0.05 level (2-tailed). | | | | | | | | | |

**APPENDIX 6**

**Serial Correlation test**

## 

**APPENDIX 7**

**Normality Test**

