M,

Collage of Business and Economics

Addis Ababa University

Determinants of Foreign Direct investment in Ethiopia:

An Autoregressive Distributed Lag Approach

By:

Amanuel Tesfaye

Presented in Partial Fulfillment of the Requirements for the

Degree of Masters of Science in Economics (International Economics)

Addis Ababa, Ethiopia

2019

Addis Ababa University

School of Graduate Studies

This is to certify that the thesis prepared by Amanuel Tesfaye, entitled: *Determinants of forign direct investment in Ethiopia*submitted in partial fulfillment of the requirements for theDegree of Master of Science in Economics (International Economics) complies with regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Examiner: ________________________Signature _______________Date ______________

Examiner: ________________________Signature _______________Date ______________

Advisor: ________________________Signature _______________Date ______________

ACRONYMS

ADF: Augmented Dickey Fuller

EEA: Ethiopian Economic Associations

EIA: Ethiopian Investment Authority

EPA: Ethiopian privatization Agency

FDI: Foreign direct investment

GDP: Gross Domestic Product

INF : Inflation Rate

IMF: International Monetary Fund

MNE: Multinational Companies.

NBE: National Bank of Ethiopia

UNCTAD: United Nations Conference on Trade and Development

WB: World Bank

WTO: World Trade Organization

TABLE OF CONTENT

LIST OF TABLE

ABSTRACT

This paper attempts to study the determinant of FDI in Ethiopia for the time period from 1980-2015. To this end, the study has reviewed theoretical explanations relating to the determinants of foreign direct investment and the study has also reviewed relevant empirical literatures focusing on the determinants of FDI in the context of developing countries. Using Data on foreign direct investment and number of telephone users that is obtained from United Nations Conference on Trade and Development (UNCTAD). Real effective exchange rate, inflation rate, export and import data were obtained from National Bank of Ethiopia (NBE), and Ethiopia Real GDP from Ministry of Finance and Economic Development (MoFED). By adopting model that was used by Erdal Demirhan etal (2008) this paper examine prominent determinants of FDI and finds that economic growth, macroeconomic stability, openness to trade are important determinants of foreign direct investment. The results suggest policy makers should give due attention to promoting liberalization and implementing sound economic policies that can ensure macroeconomic stability in the country.

Key words: Foreign Direct Investment, Economic Growth, ARDL

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Investment is one of the primary engines of development in all economies. However, its effectiveness rests on strong complementary with other elements in the growth process, most notably technological progress, skill acquisition and development of innovative capability(Mossa and Cardik,2006).These elements make investment natural point of departure to governments seeking to formulate a robust development strategy. The link between investment and these other determinants of growth however is not an automatic process. It requires a favourable macroeconomic policy environment and specific policies and institutions aimed at encouraging saving and attracting and directing investment to key sectors in the economy there by enhancing the contribution of investment to skill formations and technological change, competitiveness and economic growth. A clear understanding of how such synergy between investment policies on the one hand and technological progress on the other hand can be created as an essential pre-requisite for designing an effective national investment policy and investment promotion strategy (UNCTAD, 2008).

Sustainable economic growth is highly determined by the rate of investment which in turn is mainly determined by the national savings level. The national savings level of countries in Africa is quite low. Foreign direct investment (FDI) is an alternative source of capital to bridge the gap between savings and the required investment level. Nevertheless, the developmental role of FDI is highly debated. Consequently, most developing countries were skeptical about the virtues of FDI.(Habtamu L,2018 and Asiedu E,2002)

The Benefits and Costs of FDI

Understanding the merits and demerits of FDI is imperative to formulate a sound economic policy. Even if in recent times the policy that favour FDI dominates there are two opposing views as to the role of FDI in developing economies.

Pro –FDI view

The proponents of foreign direct investment point out that FDI fills savings, foreign exchange and local revenue gaps of developing economies. FDI can also provide managerial, entrepreneurial and technological skills and increases export and integrate the country's economy into global economic network. (Solomon,2008)

Anti-FDI views

Conversely, the other group argues that the benefits that can be derived from FDI inflows are quite small compared to the adverse effect .The major "costs" of FDI include stifling of infant domestic industries, loss of political sovereignty and deterioration of balance of payment due to the foreign investors'excessive capital good importation and repatriation of profit.(OECD,2008)

Foreign direct investment is exceedingly growing in taking the lion share for the major fluctuations of the global economy, in its effects of both in the developing and developed countries by making means over which investments and domestic savings can go together also by producing a means to acquire up to date technological knowhow for the developing countries allowing a faster economic growth. (Hermes and Lensink,2003).Were as creating opportunities to invest and expand business in a wider ranges for developed countries, even if in previous times it were only advantageous to invest in developed countries than the developing but recently there has been a tremendous change on this perspective. Foreign direct investment (FDI) can play an important role in achieving rapid economic growth in developing countries. (Getinet and Hirut,2006)

Hence most empirical studies recently are implying that FDI enhances factor productivity, the efficiency of resources use and national income of the host country. As a result of this, in the present globalized world, many countries spend enormous resources and time to design policies that encourage the inflows of FDI, as appropriately designed policy plays important role in promoting FDI inflows. Besides, the 1990s official development assistance sharp decline would have forced developing countries to open their economy to foreign investors (Solomon, 2008).

Ethiopia with the total population of over 80 million in 2007, is the third populous country in Africa It is now close to three decades since Ethiopia started to build a market economy after 17 years (1974-1991) of a state centered and controlled economy Numerous macroeconomic reforms have been implemented with the objective of achieving macroeconomic stabilization and growth since 1991. The macroeconomic reforms include privatization of state owned enterprises, liberalization of trade policy, reduction of import tariff rates, elimination of non-tariff barriers, devaluation and deregulation of price & exchange rate controls (UNCTAD, 2002).

Ethiopia is endowed with many natural resources. The livestock population of Ethiopia, for instance, is the largest in Africa and the tenth largest in the world (UNCTAD, 2002). This shows that the country has great potential to attract foreign investors involved in the leather goods/ garment manufacturing, footwear manufacturing, livestock farming and tanneries. The country also has massive arable land, immense potential for cultivation of large variety of cash crops, substantial hydro-power potential and small reserve of gold, copper, platinum, potash & natural gas. (UNCTAD, 2004).

In Ethiopia, the gap between domestic investment and savings has remained wide due to the low levels of income and domestic savings. The share of gross domestic investment in GDP is found to be 18.4% while the minimum being 10.7% and a maximum was 25.5%(2004), the resource gap is about 9.8 % and reached a maximum of 22.7% in 2006. Hence FDI as a source of capital and other business know-how is therefore desperately essential to finance growth and development. This saving gap can be filled by loans and development assistance from multilateral agencies such as the World Bank or by private foreign investment. However, the former sources of official finance have been declining. It has been reported that development assistance to Sub-Saharan Africa declined from $17 billion in 1990 to $ 10 billion (Asiedu. E ,2002). Given this, FDI is the most important alternative source of foreign capital for these countries (Haile and Assefa,2006). In view of this important role of FDI, it is essential to understand the principal determinants of FDI in Ethiopia.

1.2 Statement of the problem

Foreign direct investment is one of the most striking features of the global economy today. The effect of FDI can be wide ranging since FDI typically encompasses packages of capital as well as technical, managerial and organizational knowhow (Getinet and hirut, 2006).

Developing countries have not been considered as favorable destinations for foreign direct investment (FDI) as developed countries. Addressing identified obstacles could help Ethiopia to take better advantage of foreign investors in order to accelerate the shift from a predominantly low productivity agriculture-based economy towards a higher-productivity manufacturing and export-based economy. Experiences in successful countries around the world, and especially East Asia show that foreign investment is instrumental to facilitate such a structural transformation and to maintain sustained and broad-based economic development.

As per the journals and studies made in the area previously because of the reason that the scope and the extent lacks to cover the current tremendous growth and prevalence of FDI and the different analytical ,descriptional natures of it that comes along arises the need to study this further. And this paper strives to identify the factors that determine foreign direct investment (FDI) inflow to Ethiopia ,in the light of previous studies and journal's this paper tries to pin point the main determinants that are motive for FDI decisions.

Hence, understanding the main determinants of foreign direct investment can be vital in furthering our knowledge of how changes in these variables will impact growth in developing countries, specifically in Ethiopia. Some of the studies, as for example, ErdalDemirhan etal. (2008), reviewed statistically significant positive relationship between growth rate of per capita, telephone main lines and degree of openness with foreign direct investment. Inflation and tax rate present negative sign and are statistically significant. Whereas (Haile, G. A etal. 2006) reviews growth rate of per capita, inflation rate and tax rate present a negative sign and are statistically significant. Labour cost has a positive sign and risk have a negative sign .However both are not significant. Much work has been done to effectively determine determinants of FDI and their effect all over the world. Despite the numerous changes that have taken place in recent years in Ethiopia and the anticipated changes in future, not much has been done for Ethiopia. In nut shell, this study contributes to the existing literature on FDI by investigating the determinants of FDI using recent data and including key determinants based on theoretical framework in the area. In light of the aforementioned studies and many more this paper tries to bridging the gap between theoretical explanations and recent empirical evidence on the determinants of FDI using a data set from 1980-2015.

1.3. Objective of the study

The general objective of this paper will be to study and identify the prominent determinants of foreign direct investment in Ethiopia, specifically this paper aims:

- To identify and examine the basic determinants of FDI.
- To examine the trend of FDI performance in Ethiopia Throughout the Years
- Is there exists a long run relationship between FDI and Economic growth?

1.4. Scope and limitation of the study

This study focuses on the determinants of FDI inflow to Ethiopia from 1980 to 2015.Due to lack of data the study couldn't find a significant relation of infrastructure

The study is limited to the case of Ethiopia. Due to this the policies recommended at the end of the paper might not fit other developing countries.

1.5. Significance of the study

There are a number of researches undertaken regarding the determinants of FDI. However, there is still a debate concerning these factors due to the different results found from different regions of the world. Hence, this paper contributes to the debate by providing evidence from Ethiopia. In addition, as stated above most of these studies are regional and are not specific for individual economies. But, because countries differ with regards to their social, economic and political conditions and it is essential to conduct an investigation regarding a single country in order to observe precise relationships between the different variables. Furthermore this paper, by looking at the effects the different variables have on FDI, is presumed to benefit policy makers by suggesting appropriate policies that will work best in the conditions of the country according to the results.

CHAPTER 2

LITERATURE REVIEW

As depicted in the introduction lack of differentiating which determinants of FDI needs a wider scope and extent brings about theoretical and empirical literature that aimed to identify what parts of the determining factors of FDI needs an emphasized concern so as developing countries as the likes of ETHIOPIA can benefit the most by presenting a resolute method to put forth a better prospect to boost economic advantages obtained from being the favorite destination of FDI.

2.1. Definitions of FDI

Foreign Direct investment can be defined as a category of cross-border investment made by a resident in one economy with the objective of establishing a lasting interest in an enterprise that is resident in an economy other than that of the direct investor The motivation of the direct investor is a strategic long-term relationship with the direct investment enterprise to ensure a significant degree of influence by the direct investor in the management of the direct investment enterprise. The lasting interest is evidenced when the direct investor owns at least 10% of the voting power of the direct investment enterprise (OECD, 2008).

The foreign direct investor could be an individual, a group of related individuals, an incorporated or unincorporated enterprise, a public or private enterprise, a group of related enterprises, a government body, an estate, trust or other societal organization.

According to the OECD benchmark definition of FDI the main financial instrument components of FDI are equity and debt instruments. Equity includes common and preferred shares, reserves, capital contributions and reinvestment of earnings. All cross-border positions and transactions in equity between FDI related enterprises are included in FDI. Dividends, distributed branch earnings, reinvested earnings and undistributed branch earnings are components of FDI income on equity.

The companies that make FDI are Multi-National Companies (MNE). They produce value added in more than one country and own this process. These companies may prefer to produce where the product will be marketed instead of producing in the home country and export it. If this preference is analyzed at country or the source of investment points of view instead of firm viewpoint, one encounters with the subject of FDI (Muratet al. 2005). In .other words it is referred to as multi-national company on the micro level and FDI on the macro level.

2.2. History of FDI

According to Wilkins (1988) the initial era of the modern multinational enterprise was from 1870 to 1914. Flows of financial capital in the form of British portfolio investments still dominated but in 1914 international production and MNEs were firmly established as parts of the global economy. The United Kingdom was the most important source country of FDI, being responsible for around 45 per cent of the global stock of FDI in 1914 while USA, France and Germany also were important direct investors (Dunning, 1983). Sweden had also emerged as an international investor by the turn of the century. Accordingly, almost all of the flows of FDI originated in industrialized economies whereas the industrializing economies generated large flows of FDI among themselves during the second half of the nineteenth century, as time passed an increasing share of FDI flowed to the non-industrialized economies.

The most important motive for FDI during this period was resource seeking through MNE employment of natural resources or agricultural production (Dunning, 1983). However, as argued by Wilkins (1988), the United States was the single most important host country for FDI in 1994 due to its large market, high tariffs and abundance of natural resources. The First World War severed many of the interconnections in the global economy and destroyed large amounts of real capital including a substantial share of the European stock of FDI. However, during the inter-war period there was an increase in the global stock of FDI as well as an increase in the number of MNC subsidiaries. Still, the pre-war value of the global stock of FDI was not surpassed until the 1930s (Dunning, 1983).

In the mid-1940s several important institutions such as the IMF, the World Bank, GATT and the Bretton Woods system were created, resulting in a favorable economic environment where stable currencies helped to encourage international trade and production. The United States then replaced the United Kingdom as the most important source country of FDI. In the 1960s a process had started where developing economies became less important as host countries for

FDI. Whereas in 1938 close to two thirds of FDI flowed to the developing economies, in 1960 two thirds of global FDI flowed to the developed economies (Dunning et al., 1986).

After the end of the Second World War the volume of FDI flows as well as trade flows increased strongly. During the 1960's the primary sector became less important as a destination for international investment and the decreasing importance of the developing economies as host countries for FDI continued. Instead, FDI increasingly tended to flow between the developed economies with increasing diversity Dunning (1979). The first small outward flows of FDI from the developing economies also started to appear during the early 1970s.

Changes in the distribution of FDI inflows among host industries were also observed among host industries. There were also changes in the distribution of FDI inflows among host industries. As the significance of the primary sector declined, the manufacturing industry emerged as the dominant host industry for FDI inflows. The growing importance of production of services also affected the destination of FDI and in the middle of the 1970s the share of FDI going to the service sector started to increase relative to manufacturing. This development has continued during the 1980s and 1990s (Dicken, 2003).

In the second half of the 1980s growth in FDI took off, growing at an average annual rate of 28 per cent. These increases in flows of FDI and trade came hand in hand with a period of intensified globalization and a growing importance of MNEs, Dicken (2003).

2.3 Types of FDI

According to Protsenko (2003) FDI can be divided in to two based on the reasons for firms to go multinational or the motives behind the investment. These reasons are either to serve a foreign market or to get lower cost inputs. Based on these reasons FDI is divided into: horizontal and vertical.

Horizontal FDI- refers to the foreign manufacturing of products and services roughly similar to those the firm produces in its home market where each plant serves the local market from the local production. This type of FDI is called horizontal because the multinational duplicates the same activities in different countries. This type of FDI is also known as market-seeking and the motive behind the investment is to serve the local and regional markets or to avoid transportation costs. Here market size and market growth of the host economy play important roles. The horizontal models predict that multinational activities can arise between similar countries.

Vertical FDI- refers to those multinationals that fragment production process geographically in order to exploit differences in relative factor costs. It is called vertical because MNE separates the production chain vertically by outsourcing some production stages abroad (Chryssochoidis, 1997). The modeling of this type of FDI is based on the idea, that different parts of the production process have different input requirements. Since the input prices vary across countries it becomes profitable to split production, conducting for example labor intensive production stages in countries with low labor costs (Protsenko 2003). In contrast to horizontal FDI vertical or export-oriented FDI involves relocating parts of the production chain to the host country (Dunning, 1993).

In an attempt to combine the approaches of vertical and horizontal FDI, Markusen (1997) develops the Knowledge Capital model. It nests in one model factor costs and market access as the driving forces for vertical and horizontal FDI. Therefore both types of FDI can arise endogenously within a single model depending of the country's characteristics. It is called Knowledge Capital (KC) model because knowledge is geographically mobile and serves as a joint input to multiple production plants, independent of the type of FDI. The type of FDI prevailing in Ethiopia will be visible through the factors that attact FDI into the country in the first place. This issue will be observed in this study.

2.4 Benefits and costs of FDI

In order to formulate sound policies it is important to understand the benefits and costs of FDI. There are contradicting views regarding the use of FDI to the host country. Although FDI is usually considered a desirable capital inflow there are opposing views regarding the use of FDI. On the one hand, it is argued that FDI has a positive role in the development of countries on the other it is said that the cost of FDI outweighs its benefits.

Pro-FDI views argue that foreign investments directly add to the host countries' capital stock. According to OECD (2005) FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps created a more competitive business environment and enhances development.

Anti-FDI views allege many evils caused by FDI. Some of these arguments are for the home country- they depress wages and employment at home by moving production abroad (Lipsey, 2004). And others are for the host country- they depress wages by exploiting helpless workers in developing countries, they stifle the country's growth by displacing local firms and obstructing their technological progress (Johnson, 2005).

There is also the risk that foreign-owned enterprises could use FDI to export production no longer approved in their home countries. In this case, and especially where host-country authorities are keen to attract FDI, there would be a risk of a lowering or a freezing of regulatory standards. In fact, there is little empirical evidence to support the risk scenario (OECD, 2005) Overall, the costs are best mitigated when appropriate practices are pursued toward flexibility, coupled with macroeconomic stability and the implementation of adequate legal and regulatory frameworks. While the responsibility for this lies largely with host-country authorities, home countries, MNEs and international forums also have important roles to play.

2.5 Theories on determinants of FDI

Due to its growing effect of FDI on host and home countries it has started to be vastly analyzed throughout the years and multiple theories have been raised.

Some of these theories are from the point of view of the firms (MNCs) while others are from the host country's point of view (FDIs). The former try to provide answer the questions why multinational companies prefer opening subsidiaries in foreign countries rather than exporting or licensing their products, how MNCs choose their investment locations and why they invest where they do. While the latter deal with the host countries situations that determine the inflow of FDI.

2.5.1 Theories of MNCs

According to Murat et.al (2005) the most significant theories on MNCs are the location and internationalization theories.

Location Theory- states that the location of the production is determined by the resources. The determining factors of the location choice are the cost of transportation and trade barriers. If the transportation cost is high then the production is located in the country or region where the product will be marketed. Another reason of such relocation is the high tariff rates that the host country applies.

Internationalization theory- claims that the reason why production is done by only one company instead of many in various locations is that it is more profitable to produce with one company. For instance, it is difficult for a potential buyer to appraise the actual value of knowledge. Besides knowledge cannot be packed and sold. The intellectual property rights are also difficult to secure. Therefore for a MNC the establishment of a new enterprise in a foreign country is more profitable than the sale of technology to another company. In addition a dispute may exist between the two companies if the price of input used in the first company and produced by the second company is tried to be lowered and increased by the first and second respectively. Hence, this problem can be avoided by investing in another location.

In addition to the above Muran et al. (2005) states that main stream of the FDI theories with imperfect competition encompasses product life cycle theory, internationalization theory and eclectic paradigm. Although product life cycle theory is sometimes considered as a micro-level determinant (determinant of MNC) the ideas that lie behind the theory described in many studies is similar.

The Product Life Cycle Theory -"First developed by Vernon in 1966. He argued that FDI was the reaction to the threat of losing markets as products matured as well as the need for cheaper factor costs in the face of competition (Latorre, 2008). This theory provides an explanation of how factors such as the availability of larger and cheaper capital, superior management, discovery of new processes, product differentiations etc. interact over time to determine production, export and foreign investment patterns of oligopolistic enterprises

(Lall, 1976). In other words increased production affects the choice of production location (Latorre, 2008). As the product standardizes the production also standardize and the need for elasticity decreases while the cost of production becomes important. Increased importance of cost connotes the question of whether to move the production into low-cost locations or not. This choice is done through the comparison of the costs in the host country and home country together with the transportation cost to the host country (Murat et.al, 2005). Consequently production shifts from ".he high-cost home country to the relatively low-cost developing country.

Therefore, FDI is the stage in the product lifecycle that follows the maturity stage (Dunning, 1993). Vernon's product life cycle theory is a dynamic theory because it deals with changes overtime. However, the theory is not confirmed by empirical evidence, as some multinational companies start their operations at home and abroad simultaneously (Chen, 1983). According to

Shenkar (2007) this could be because Vernon's theory is more relevant to manufacturers' initial entries into foreign markets that to MNEs that have FDI already in place.

Internalization Theory- Initially, the theory was launched by Coase in 1937 in a national context and Hymer in 1976 in an international context. Hymer identified two major determinants of FDI. One was the removal of competition. The other was the advantages which some firms possess in a particular activity (Hymer, 1976). Similarly Buckley and Casson (1976) state that according to the theory, firms maximize their profits in an imperfect competition environment. They state that one of the reasons of internalization is market imperfection. Mostly, technologies or knowhow can be sold and licensed. However, there are technologies that are not possible to write or sale to other parties. This difficulty of marketing and pricing know how forces multinational companies to open a subsidiary in a foreign country instead of selling the technology (Solomon, 2008).

Therefore, the firm tends to produces an internal market through investment in multiple countries and thus creates the needed market to achieve its objective. In other words, there are transactions that should be "internalized" to reduce transaction costs and hence increase profitability. This theory explains why production is carried out by the same firm in different locations Shenkar,2007). Shankar also states that the major advantages of internalization include: lower search and negotiating costs, avoid costs of moral hazard, avoid costs of violated contracts and ensuing litigation, to capture economies of interdependent activities, to avoid government intervention etc.

The Eclectic Theory- also known as the OLI paradigm was developed by. John Dunning in 1973. This paradigm includes three variables O, L and I which refer to ownership advantage, location advantage and internalization conditions, respectively.

It stands at the intersection of a macroeconomic theory of international trade (L) and a microeconomic theory of the firm (O and I). The essential feature in the eclectic theory is that all three types of conditions must be satisfied before FDI occurs (Nayak et.al, 2014).

Operating a business in a foreign country market has many costs. These may include a failure of knowledge about local market conditions, cultural, legal and many other costs. Therefore, foreign firms should have some advantages that can offset these costs. Ownership advantage is a firm specific advantage that gives power to firms over their competitors. This includes advantage in technology, in management techniques, easy access to finance, economies of scale and capacity to coordinate activities. Unlike ownership advantages, location advantages are country specific advantages. Transnational Companies in order to fully reap the benefit of firm specific advantages they should consider the location advantage of the host country. This includes accessibility and low cost of natural resource, adequate infrastructure, political and macroeconomic stability. As a consequence, the location advantage of the host country is one essential factor that determines the investment decision of TNCs. Internalization is multinational companies' ability to internalize some activities to protect their exclusive right on tangible and intangible assets, and defend their competitive advantage from rival firms Accordingly, all the three conditions must be met before transnational companies open a subsidiary in a foreign country Soderstein (1992).

The theory has the most extensive scope among FDI theories. Dunning has created the theory by combining many former studies (eclectic).

Although the theory is much broader than the others, it is also criticized. First criticism is the decreased significance of the variables as they are immense. The variables are correlated with others. Another criticism is that the theory is static and cannot explain the paths and processes of firms in the internalization process. Some blame the theory as entirely micro economic and even claim that it has no difference with the theory of internalization (Murat et al., 2005).

Overall, the eclectic paradigm provides a more comprehensive view explaining FDI than do the product life-cycle theory, the monopolistic advantage theory, or the internalization theory because it combines and integrates country specific, ownership-specific, and internalization factors in articulating the logic and benefits of international production (Shenkar, 2007).

Other theories include:

The Early Neoclassical and Portfolio Investment Approaches- state that interest rate differentials are the main reason for the firms to become a multinational company. In this line of arguments, capital moves from a country where return on capital is low to a place where return on capital is high. This approach is based on perfect competition and capital movement free of risk assumptions (Harrison et al, 2000).

Monopolization theory- suggests that the MNC possesses monopolistic advantages, enabling it to operate subsidiaries abroad more profitably than local competing firms can. Monopolistic advantages the benefit accrued to a firm that maintains a monopolistic power in the market. Such advantages are specific to the investing firm rather than to the location of its production. According to this theory, monopolistic advantages come from two sources: superior knowledge and economies of scale (Shenkar, 2007).

2.6 Host country determinants of FDI

Many theories have been suggested to explain the possible determinants of FDI in the host country. But due to lack of accepted theoretical framework researchers are led to rely on empirical evidence for explaining the emergence of FDI.

According to Dunning (1993) FDI takes place when three sets of determining factors exist simultaneously: the presence of locational advantages in a host country, and the presence of superior commercial benefits in and intra-firm as against an arm's-length relationship between investor and recipient.

According to this study the ownership-specific advantages of a firm can compensate for the additional cost of establishing production facilities in a foreign environment and can overcome the firm's disadvantages through local firms. Locational advantages of host countries are characters of the host country such as large markets or lower costs of resources or superior infrastructure. In the case of Ethiopia the low labor costs, high population and increasing infrastructure development could be some of the advantages gained by foreign investors. Finally, by exploiting both the above advantages the firm finds greater benefits by internalization or through FDI rather than arm's-length transaction.

UNCTAD (1998) states that the determinants of FDI in the host country can be divided into three categories: Policy factors, business facilitation measures and economic determinants.
The economic determinants listed by this paper are similar to the ones stated by Dunning (1993). The study states that the most important host country determinant of FDI has been the availability of natural resources for a long time. But recently there has been a decline in the importance of natural resources as an FDI determinant.

The role of national policies especially the liberalization of policies is a key factor in globalization and its role in affecting FDI is not negligible. The study states that policy factors :hat determine FDI may include economic, political and social stability, rules regarding entry and operations, standards of treatment of foreign affiliates, policies on functioning and structure of markets, international agreements on FDI privatization policy, trade policy and tax policy.

Business facilitation measures play a role in attracting FDI because as the world economy becomes more open to international business transactions, countries compete increasingly for FDI not only by improving their policy and economic determinants but also by implementing pro-active facilitation measures that go beyond policy liberalization. Under this category

UNCTAD (1998) lists: investment promotion, investment incentives, hassle cost, social amenities and after-investment services as factors that determine FDI.

Evidence for the determinants of FDI is one striking feature of the world economy in recent decades has been the growth of foreign direct investment (FDI), or investment by transnational corporations or multinational enterprises in foreign countries in order to control assets and manage production activities in those countries. Growth of FDI Since the early 1980s, world FDI flows, now attributable to almost 54,000 transnational corporations, have grown rapidly—faster than either world trade or world output During 1980–97, global FDI outflows increased at an average rate of about 13 percent a year, compared with average rates of 7 percent both for world exports of goods and nonfactor services and for world GDP (at current prices) during 1980–96. In 1998, global FDI inflows increased for the seventh consecutive year, and outflows for the third consecutive year, to reach some $430–440 billion. (In principle, world FDI flows measured in terms of annual inflows should be equal to those measured in terms of annual outflows.(Anyanwu, J. C. 2011).

Primary source of FDI, but direct investment originating in developing countries has more than doubled since the mid-1980s. Industrial countries as a group also attract the greater proportion of such investment, but their share is eroding as developing countries become increasingly attractive destinations for investment.. It is different from other major types of external private capital flows in that it is motivated largely by the investor's long-term prospects for making profits in production activities that they directly control. Foreign bank lending and portfolio investment, in contrast, are not invested in activities controlled by banks or portfolio investors, which are often motivated by short-term profit considerations that can be influenced by a variety of factors (interest rates, for example) and are prone to herd behavior. These differences are highlighted, for instance, by the pattern of bank lending and portfolio equity investment, on the one hand, and FDI, on the other, to the Asian countries stricken by financial turmoil in 1997: FDI flows in 1997 to the five most affected countries remained positive in all cases and declined only slightly for the group, whereas bank

Lending and portfolio equity investment flows declined sharply and even turned negative in 1997. (World Bank,2009)

While FDI represents investment in production facilities, its significance for developing countries is much greater. Not only can FDI add to investible resources and capital formation, but, perhaps more important, it is also a means of transferring production technology, skills, innovative capacity, and organizational and managerial practices between locations, as well as of accessing international marketing networks. Trends in developing countries given the potential role FDI can play in accelerating growth and economic transformation, developing countries are strongly interested in attracting it. They are taking steps to improve the principal determinants influencing the locational choices of foreign direct investors.(UNCTAD,2007)
Developing countries have, during the past decade or so, begun liberalizing their national policies to establish a hospitable regulatory framework for FDI by relaxing rules regarding market entry and foreign ownership, improving the standards of treatment accorded to foreign firms, and improving the functioning of markets. These "core" policies are important because FDI will simply not take place where it is forbidden or strongly impeded. However, changes in policies have an asymmetric effect on the location of FDI: changes in the direction of greater openness Allow firms to establish themselves in a particular location, but do not guarantee that they will do so. In contrast, changes in the direction of less openness (for example, nationalization or closure to entry) will ensure a reduction in FDI. FDI policy frameworks are only one determinant of the location of investment among host countries. Countries must also pay attention to other factors that influence investors' locational decisions. For example, they are emphasizing coherence between the various policies that can affect FDI—in particular, between core FDI policies and trade policies. In addition, they have negotiated an increasing number of bilateral investment treaties and double- taxation treaties. At the end of 1997, 1,513 bilateral investment treaties and 1,794 double taxation treaties were in effect; 153 of the former and 108 of the latter were concluded in 1997 alone. Both types of treaty reflect the growing role of FDI in the world economy and countries' desire to facilitate it. Equally important, with FDI policy frameworks becoming more similar, countries interested in encouraging investment inflows are focusing on measures that facilitate business. These include investment promotion, investment incentives, after- investment services, improvements in amenities, and measures that reduce the "hassle" costs of doing business. While by no means new, these measures have proliferated and are becoming more sophisticated, targeting individual investors and

investments in particular industries. After-investment services are noteworthy because they can encourage reinvestment by existing investors, who, if satisfied, provide publicity for the host country, sparking further investment. Financial or fiscal incentives are also used to attract investors, even though they typically figure into investors' location decisions only when the economic determinants are in place. Economic determinants. The most important determinants for the location of FDI are economic considerations, which come into full play once an enabling FDI policy framework is in place.(UNTACD,2007)

Those related to the availability of location-bound resources or assets; those related to the size of markets for goods and services; and those related to cost advantages in production. Although many of the factors that attract investment to particular locations—such as abundant natural resources; large host country markets; or low-cost, flexible labor—remain important, their relative importance is changing as transnational corporations, within the context of a globalizing and liberalizing world economy, increasingly pursue new strategies to enhance their competitiveness. Trade liberalization and FDI and technology flows, combined with deregulation and privatization, have not only improved firms' access to markets for goods and services and to immobile factors of production but also increased competitive pressures in previously protected markets, forcing firms to seek new markets, resources, and assets abroad. At the same time, technological advances have enhanced firms' ability to coordinate international production networks. More and more, firms are developing portfolios of locational assets—human resources, infrastructure, and market access—to complement their own strengths in order to improve their overall competitiveness. While traditional motives related to FDI (market- seeking, resource-seeking, and efficiency-seeking) have not disappeared, they are being incorporated into firms' broader competitive-enhancing strategies. These have evolved from the traditional stand-alone strategies based on largely autonomous production by foreign affiliates, to simple integration strategies based on a limited number of strong links at the production level, to complex integration strategies that involve, where profitable, splitting the production process into specific activities or functions and performing each of them in the most cost- effective location from the viewpoint of the corporate system as a whole. (UNTCAD,2004)

Transnational corporations looking to invest not only take for granted the presence of state-of-the-art FDI policy frameworks and a range business facilitation measures but also seek a combination of cost reduction, larger markets, an "created" assets that can help them maintain a competitive edge. Created assets include communications infrastructure, marketing networks, technology, and innovative capacity and are critical for enabling firms to maintain their competitiveness in rapidly changing world. The rising importance of such assets is probably the single most important shift that has occurred among the economic determinants of FDI in a Liberalizing and globalizing world economy. The new configuration also pays more attention to "agglomeration" economies arising from the clustering of economic activity, availability of infrastructure facilities, access to regional markets, and competitive pricing of relevant Resources and facilities. The challenge for developing countries is to develop a well-calibrated and, preferably, unique combination of factors determining FDI location and to match those determinants with corporations' strategies. Policies intended to strengthen national innovation systems and encourage the spread of technology are central because they underpin the ability to create assets.(UNCTAD,2004)

2.7. Empirical Review

On this part we will try to see some of related empirical literatures. Paper byErdalDemirhanetal (2008) by using a cross-sectional econometric model estimates the determining factors of foreign direct investment (FDI) inflows in developing countries over the period of 2000-2004. The study is based on a sample of cross-sectional data on 38 developing countries. According to the econometric results, in the main model, growth rate of *per capita*, telephone main lines and degree of openness have positive sign and are statistically significant. Inflation rate and tax rate present negative sign and are statistically significant. Labour cost has positive sign and risk has negative sign. However, both are not significant.

Asiedu (2002) conducted a study on 32 sub-Saharan African countries and 39 non-sub-Saharan African countries over a period of 10 years (1988-1987). She argues that FDI inflows into Sub-Saharan African countries are market seeking. Aseidu (2004) argues that natural resources and market size are the chief determinants of FDI in Africa. She also said that FDI inflow to Africa can be promoted by political and macroeconomic stability, by educated labor force, less corruption and an efficient legal system. UNCTAD (1999) indicates that the bad image of Africa has deterred the FDI inflow in to the continent.

Khondokeretal (2010) Using panel data from 68 low-income and lower-middle income developing countries, this paper identify the factors that determine FDI inflow to the developing countries. Based on a comparative discussion focusing on why some countries are successful in attracting FDI while others are not, the paper demonstrates that countries with larger GDP and high GDP growth rate, higher proportion of international trade and with more business friendly environment are more successful in attracting FDI.

Paper by James P. Walsh et al. (2010) using a dataset which breaks down FDI flows into primary, secondary and tertiary sector investments and a GMM dynamic approach to address concerns about endogeneity, the paper analyzes various macroeconomic, developmental, and institutional/qualitative determinants of FDI in a sample of emerging market and developed economies. While FDI flows into the primary sector show little dependence on any of these variables, secondary and tertiary sector investments are affected in different ways by countries' income levels and exchange rate valuation, as well as development indicators such as financial depth and school enrolment, and institutional factors such as judicial independence and labour market flexibility. And find that the effect of these factors often differs between advanced and emerging economies.

2.7.1. Determinants of FDI in Ethiopia

There have been a number of researches done regarding FDI in Ethiopia with different objectives and various ways of achieving them. A study by Solomon (2008), focuses on determinants of foreign direct investment in Ethiopia and to identify the determinants of FDI in Ethiopia, the determinants to Africa are first studied. The least developed African countries performance in attracting FDI is highly related to their natural resource endowments. That is, natural resource-rich countries, mainly the petroleum-rich countries attracted sizeable FDI, regardless of their political and economic environment. For the middleincome African countries, economic development, the political environment, and the business environment are the major determinants of FDI. The author argues that, a host country receives a diversified FDI or non-resource-seeking FDI when it has reached a certain minimum level of development. The implication of this for Ethiopia, resource poor least developed country, is that a certain minimum level of development is a necessary condition to attract FDI.

Similarly, Awel et al. (2012), using annual data ranging from 1974-2010 and employing the Toda-Yamamoto (1995) bivariate causality test, was not able to find any causality running from FDI to growth or vice versa. However, there was an evidence of cointegration between FDI and growth. The implications of the results are: first, the flow of the aggregate level of FDI is too small to translate in to growth. Second, perhaps FDI flow has gone in to sectors that could not create linkages and fuel economic growth. Thus, developing countries like Ethiopia should formulate policies attracting FDI in to economic sectors that could harness the benefits of the FDI outweighing the costs of hosting FDI (like profit repatriation to FDI sending economy).

The above studies, while they give a good explanation of FDI determinants in Ethiopia as well as other African countries, lack a through empirical investigation of the variables of interest.

A study by Miteku (2013) on FDI and the Ethiopian economy he includes three basic channels through which FDI in Ethiopia and through which it can affect the Ethiopian economy. These infrastructure and political stability affect FDI favorably. On the otherhand he concludes that human capital macroeconomic instability and market size are unfavorable to attract FDI.

Amanuel (2015) empirically, investigates the factors affecting FDI in Ethiopia using data of 21 years. Using multiple regression models the study finds that trade openness and inflation rate are the only variables that show a significant impact on FDI and no clear relationship was obtained from market size, infrastructure and human capital. The strong conclusions and policy implications of both of these papers contribute a great addition to existing literature. That being said the study uses data of only twenty years period and due to this the analysis does not include the performance of FDI before the power transition of 1991. A study by Getinet et al. (2005) on the determinants of FDI in Ethiopia investigates the nature and determinants of FDI in Ethiopia over the period of 26 years and finds that in the short run GDP export orientation and liberalization are the main factors that show a positive and significant impact on FDI. Similarly, Asmelash (2015) studies the performance of FDI in Ethiopia using co-integrated VAR approach and finds in addition the above factors domestic investment and inflation have negative effect on FDI, while human capital and openness are not significant in attracting FDI.

To sum up, there have been various studies conducted regarding the determinants of FDI using different methodologies. However, there is no specific conclusion or agreement as to the specific factors that affect FDI. This may be because of the difference in variables taken in to account during the analysis and because of the difference economic, institutional and technological conditions in the recipient countries. In addition, as opposed to the few studies that were conducted regarding the determinants of FDI Ethiopia this study uses a more recent and a larger data of thirty-five years in order to make the analysis more accurate. The study also explores the different policy reforms that were made regarding FDI as well as exports and compares the performance of FDI before and after trade was liberalized by the residing government. In conclusion, this study contributes to the existing literature on FDI by investigating the determinants of FDI using the available recent data and including key determinants based on theoretical framework in the area.

CHAPTER 3

OVERVIEW OF ETHIOPIA'S FDI PERFORMANCE AND POLICIES

3.1 Overview of Ethiopia's recent economy

The Ethiopian economy is highly dependent on agriculture, which accounts for 45 percent of GDP. Around 80 percent of the population derives its livelihood directly or indirectly from agricultural production. Various studies indicate that agricultural exports, mainly coffee and processed and semi-processed hides and skins, account for over 80 percent of all exports, with coffee alone accounting for over 64 percent of foreign exchange earnings. Manufacturing, mining, trade, tourism, construction, services, and other sectors make up the remaining 55 percent of GDP.

The Ethiopian economic and FDI performance over the study period 1980-2015 can be reviewed on the basis of the two regimes that have been in place in the country. The first period, the pre-1991 period relates to the period when policies that were in place were more or less in line with the command system of economic Management.

The second period, the post-1991 period, signify some move away from the command system and commenced with the stabilization and adjustment programs (SAP) of the World Bank (WB) and the International Monetary Fund (IMF).

3.1.1 The pre-1991 period

This period marked the introduction of the command system of economic management in 1974. The mainly liberal policies of the pre-1974 Imperial/feudal era were replaced with centralized policies that discouraged market economy and private property. The land reform measure that was undertaken in 1975 was one of the major policy reforms that took place immediately. Land was nationalized and private ownership of land ceased. Medium-size and large enterprises were also nationalized. The government also nationalized and subsequently reorganized private banks and insurance companies. In general, the economic performance of the pre-1991 period was characterized by three phases.

During the first phase of the regime 1974-78, economic performance was poor due to the emerging new policies and the nationalization measures. Average annual growth rate of GDP was 0.3 percent while per capita growth was negative.

During the second phase of the regime, 1978-80, the economy began to recover and the growth rate increased to 4.6 percent. This period was characterized by stability and it also benefited from good weather. Agricultural production increased at an average annual rate of 3.6 percent.

In the third phase 1980-1985, the economy performed badly again. The major reason for this was the severe drought that affected almost all regions of the country. After this period the economy continued to stagnate. To tackle the structural problems of the country the government eventually adopted a long-term plan (the Ten Year Perspective Plan). The aim of the plan was to reduce the share of agriculture in GDP, increase the share of industry, increasing foreign exchange earnings, diversification of the country's export sector and real GDP growth of 6.9 percent per annum during the target period. However, most of the targets were not realized. Growth remained at about 2 percent and GDP per capita was negative during the pre-1991 period (Geda and Degefe, 2002)

The investment climate in general and FDI in particular was not encouraging during this period. The problems of political instability, insecurity, and the nationalization of major industries severely discouraged foreign private investment. Realizing the importance of FDI, the government then attempted to revive FDI through the 1983 Joint Venture Proclamation. The proclamation offered incentives such as a five-year period of income tax relief, import and export duty relief, tariff protection and repatriation of profits and capital. However, the proclamation failed to attract foreign investors. In 1989, the government revised the 1983 proclamation by allowing majority foreign ownership in many sectors. It also attempted to provide more protection to investors.

However, the political instability and the prolonged civil war at the time further discouraged FDI. The political instability got worse and it consequently led to the overthrow of the regime in 1991.

3.1.2 The post-1991 period

The post-1991 period began with the coming to power of TPLF/EPRDF in 1991 and the adoption of the WB/IMF sponsored Structural Adjustment Program soon after. The government implemented a series of reform measures in order to change the command economic system that had been in place to a free market economy, to speed up the integration of the economy into the world economy and to encourage the wider participation of the private sector in the development process of the national economy (FDRE-MOFED, 2002). The specific measures taken to promote the export sector and participation of the private sector include the following:

- Deregulation of domestic prices
- Devaluation of the national currency by 141.55 percent, from 2.07 birr per dollar to 5 birr per dollar;
- Liberalization of the foreign exchange market
- Elimination of Export taxes except for coffee;
- Lowering of Maximum import duties from 230 percent to 60 percent;
- Simplification of Export licensing regulation and procedure;
- Provision of adequate incentives, strengthening and enhancing institutional support for the export sector.

Increasing the role of the private sector in the economy being one of the main objectives of the government, the privatization program was started in 1994. The Ethiopian Privatization Agency (EPA) which has the power and duties of transferring state-owned enterprises to private ownership was established. To date, the government had privatized 200 enterprises to domestic and foreign investors (AFDB/OECD, 2003). The government has also adopted "agriculture-led industrialization" as a central plan of its development program, with a focus on productivity growth on small farms and labour intensive industrialization" (Economic Commission for Africa, p.83, 2002). Except for the two year period of conflict with Eritrea

(1998-2000), the reform measures have brought about some positive changes. Economic growth during this period (1992-2001) has improved with an average rate of 5 percent. GDP per capita has also grown by 2.4 percent per annum and the rate of inflation declined from 21 percent in 1992 to less than 5 percent in 2001. By 2000/01 total investment accounted for 16 percent of GDP (Geda and Degefe, 2002; Economic Commission for Africa, 2002).

The overall GDP growth rate over this period (1991-2003) stands at 4 percent (Andrews, et al. 2005) faring moderately better to the pre1991 growth performance that stood at 2.8 percent.

Although domestic investments constitute the main component of capital formation in Ethiopia, accounting for about 64 percent of total investment, FDI has started to play some role in the country following the 1992 liberalization program. The reforms as well as the government introduction of investment guarantee schemes and incentives helped to raise the share of inward FDI in total investment form 0.04 percent in 1992 to 27 percent in 1997. However, the war with Eritrea in particular has disrupted the rising trend of FDI inflows.

According to Ethiopian Investment and Innovation Policy Review (UNCTAD, 2002), the Middle East accounted for the largest share of the post-1992 FDI projects in the country. This was followed by the European Union as the second largest source of FDI to Ethiopia over the period 1992 to1998.

3.2 Regulatory and institutional framework of FDI in Ethiopia

Implementing market oriented development strategies encourages the role of the private sector involvement in the development process. In order to encourage, promote and expand private investment in the country; the Ethiopian government has set out some private sector development initiatives. These initiatives are about enabling the enhanced utilization of the country’s resources through the growth of private businesses by providing predictable and enabling environment (FDREMOFED, 2002).

The program highlights the importance of competitiveness as a key to success for sustained economic development in the country. Some of the important factors mentioned as a basis for competitiveness include conducive investment climate, which focuses on macro-economic stability, sound policy and regulatory framework for the private investment sector and strong institutions that run and support the system.

3.2.1 The FDI regulatory framework

Under the current regulatory framework, foreign participation in investment may be carried out either through the establishment of branches or through locally incorporated enterprises. Foreign investors are encouraged to invest in all economic sectors, except those currently reserved for domestic private and state investment.

The piecemeal nature of the reform process and inefficiency associated with it, the growing culture of corruption, the expansion of parastatals and, particularly since 1998, the growing political uncertainty in the country are also to blame for the drop in FDI. According to recent reports, Ethiopia is one of the countries in Africa, the continent with the least attraction for FDI, that fares poorly in terms of its rank in 'Ease of doing business'.

There is also a continuous review of the investment code regarding the sectors excluded from FDI. For example, the revised investment proclamation No.116/1998 has opened up the hydropower generation to local and foreign investment. The 1998 investment code also allowed private-government joint investment in defense and telecommunication. The main business sectors which are open and in which the country is currently seeking foreign investment include:

- Manufacturing industries (including food, beverages, chemicals and pharmaceuticals, plastics, metallic and non-metallic products, paper products, leather and leather products, textiles and garments);
- Agriculture, including agribusiness and processing for exports;
- Real-estate development;
- Education and health services;
- Grade 1 construction contract;

• Mining and quarrying of gold, marble and granite; and

• Engineering and management consultancy.

Since 1996, with the objective of promoting private investment and the inflow of foreign investment, a series of investment proclamations have been issued. These proclamations impose some requirement and ownership limitation. There is a minimum entry capital for FDI for both wholly-owned operations and joint ventures with Ethiopian companies or individuals. In the case of joint venture the investment proclamation requires that domestic partners must hold a minimum of 27 percent equity ownership interest. Moreover both FDI and domestic investors are required to submit progress reports every six months. Apart from these requirements, investors are not required to meet specific goals like local content requirement or operational guidelines (UNCTAD-ICC, 2004).

The investment legislation has also attempted to provide a favorable investment climate by offering fiscal incentives and investment guarantees to foreign and domestic investors engaged in new enterprise development and expansion. The major investment incentives for FDI include: 100 percent exemption from payment of import duties and import taxes levied on all capital equipment’s; exemption from payment of export taxes (except for coffee); income tax holidays varying from one to five years; tax deductible research and development expenditure; no taxes on the remittance of capital; the carrying forward of initial operating losses and investor choice of depreciation model of capital assets.

The Ethiopian investment codes also provide guarantees to create a reassuring business environment for potential foreign investors. Specific investment guarantees that have been issued for FDI include: full repatriation of capital and profits including dividends and interest payment on foreign loans; payments for technology transfer and management agreements; full repatriation of proceeds from sale or transfer of shares or liquidation of enterprises. Moreover, the investment proclamation No.37/1996 provides investment guarantees against measures of expropriation and nationalization, except in major cases of public interest when full market value will be paid promptly (UNCTAD-ICC, 2000).

3.2.2 The FDI institutional framework

The government of Ethiopia has established the Ethiopian Investment Authority (EIA) to promote, coordinate and facilitate foreign investment in the country. According to the Investment Guide to Ethiopia (UNCTAD-ICC, 2000) the functions of the EIA, among others, include:

- Providing all the necessary information required by foreign investors;
- Approving foreign investment applications and issuing investment permits;
- Providing registration services to newly incorporated business organizations;
- Approving expatriate posts in approved investments and issuing work permits to foreign employees;
- Issuing trade and operating licenses for foreign investments;
- Monitoring the implantation of licensed investment projects;
- Approving and registering technology transfer agreements between local companies and foreign technology suppliers; and
- Facilitating the acquisition of land by foreign investors in accordance with the relevant federal and regional Government laws and regulations.

It has been reported that as of December 2003 the EIA has processed a total of 572 FDI projects, of which 77 projects have become operational while another 103 projects are under implementation. The rest 392 projects are approved foreign investment projects awaiting implementation. Out of the 392 FDI approved projects the manufacturing and processing sector accounted for the highest share, 46.57 percent, followed by trade, hotels and tourism 40.7 percent; and agriculture and mining 12.7 percent. (UNCTAD, 2004)

The establishment of the Ethiopian Privatization Agency (EPA) is also another significant step in the promotion of FDI. The government is keen to encourage the participation of foreign investors in the privatization program, particularly in large state owned companies. Other government departments that are involved in the attraction of FDI to Ethiopia include: the Ministry of Trade and Industry; the ministries and agencies associated with specific sectors such as mining and tourism; the ministry of Foreign Affairs and ministries dealing with taxation remits including customs. Moreover there are regional investment promotion agencies that encourage FDI into their region (UNCTAD, 2002).

The establishment of the EIA and other investment promotion and support institutions is also a step forward in the right direction. This, however, necessitates high coordination among the various institutions to raise the effectiveness of the present national effort to attract FDI. That the Ethiopian Investment Authority has recently restructured itself to improve the efficiency and effectiveness of the service delivery processes for investors is a measure that recognizes the need for effective co-ordination.

CHAPTER FOUR

DATA AND METHODOLOGY

In this chapter we discuss the data used for the study and the methodology employed to meet the objective of the study. The chapter basically focuses on how the entire study was done. Issues such as data sources, definitions of variables, model specification, and estimations procedures are covered in this chapter

4.1. Data Sources

The study relies on time series secondary source of data that are collected from various organizations. Data on foreign direct investment and number of telephone users are obtained from United Nations Conference on Trade and Development (UNCTAD). Real effective exchange rate, inflation rate, export and import data were obtained from National Bank of Ethiopia (NBE), and Ethiopia Real GDP from Ministry of Finance and Economic Development (MoFED). and

4.2. Method of Data Analysis

The paper use both descriptive as well as econometric techniques. The statistical software package used for the econometric analysis is STATA 15.

4.3. Model Specification

The selection of variables and empirical analysis is based on the theory developed by Dunning. The determinants of FDI speak to the motives behind FDI and according to Dunning (1993), FDI can be of three types. The first type of FDI is called market seeking or horizontal FDI, whose main driver of investment is to meet the needs of host markets. This type of FDI is mainly aimed at serving the local market by producing the goods and services in the local economy making the political and economic situation of the host country pertinent. Therefore, to be accurately capture the motives behind market seeing FDI, we include variables that can measure the stability of the local market, market size, and market growth of the host economy. The second type of FDI is resource seeking; these are multinational firms that invest in other countries to utilize resources not found in home countries. It is also referred as vertical FDI where firms use the resources obtained abroad to meet the needs of the local economy (the country they originate from). Some of the resources that allure FDI to other countries include: natural resources, raw materials, or low-cost labor. In Ethiopian context, not many multinational companies come to Ethiopia attracted by natural resources such as oil or gas. However, many multinationals in manufacturing firms commonly relocate to other countries looking for low-labor cost, which is also the case in Ethiopia. Nevertheless, the study does not include these factors due to lack of available time-series data for labour cost in Ethiopia. The third type of FDI is Efficiency-seeking FDI; whose main aim for coming in to a country is to benefit from factors that enable it to compete in international markets.

Based on the theory discussed above, this study adopts the empirical model developed by ErdalDemirhanetal.(2008) to investigate the determinants of foreign direct investment,.The general form of the model estimated has the following form:

FDI= F (RGDPg, RGDPC, REER, INF, TELE, LIBR, OPEN)

Where FDI= Foreign Direct Investment

RGDPg = Growth Rate of Real Gross Domestic Product

RGDPC = Real Gross Domestic Product per capita.

REER = Real Effective Exchange rate.

INF = Annual rate of inflation based on consumer price index.

TELE= Land telephone line per 1000 people

OPEN= openness of economy ((Export+ Import)/GDP)*100

LIB=Dummy variable from 1991 (1)/pre 1991(0)

4.3.1. Definition of Variables

Foreign direct investment (FDI) is defined by World Bank as the net amount invested or reinvested by non-residents to acquire a lasting interest in enterprises in which they exercise significant managerial control.

As is often the case in time series study, the type of independent variables used in this study was constrained by availability of data. For instance, data on some of the factors such as real wages and corruption index which are used in other studies in the literature are not available for Ethiopia over the study period. However, regardless of these constraints, this study included most of the variables that are identified as important determinants of foreign direct investment both in the theoretical frame work as well as pervious empirical studies. The definitions of the independent variables are given below.

Market Size: foreign investors are driven by profit and they go to countries with large market where they can obtain higher returns to utilize resources efficiently and exploit economies of scale (Chakrabarti, 2001). In this study, market size is proxied by real per capita GDP and growth rate of real GDP (as market growth potential). Investors look at trend of Real GDP growth rate as an important indicator of the growth potential of the market.

Export orientation: openness promotes FDI, and one indicator of openness is the relative size of the export sector (Singh and Jun, 1995). It is hypothesized that countries with a higher measure of openness are expected to attract more foreign direct investment and hence positively related.

Macroeconomic stability: As outlined in previous empirical studies such as Balasubramanyam (2001), macroeconomic stability of a country is a crucial ingredient or determinant of FDI. For investors, the strength of an economy as proxied by good macroeconomic stability provides a degree of certainty of being able to operate profitably (Balasubramanyam, 2001). In this paper, we use inflation rates and exchange rates as proxy variables for macroeconomic stability.

Infrastructure: infrastructure development is one the key determinants to bring and foster foreign direct investment. In general, infrastructure covers a variety of components ranging from roads, ports, railways and telecommunication systems to the level of institutional development. The existence of a well-developed infrastructure and creates an enabling environment for foreign investors by reducing the cost of doing business and allowing them to obtain the maximize the rate of return on their investment (Morriset, 2001). As a result, countries with good infrastructures are expected to attract more FDI. Following the standard practice in the literature, the number of telephone lines per 1000 people in a country is used as a measure of infrastructure. As Asiedu (2004) argues this measure has some caveat as it does not include mobile phones, but as mobile phone development is a recent phenomenon in Ethiopia, we resorted to using fixed telephone lines.

In addition to physical infrastructure, the empirical literature identifies soft infrastructure including human capital as an important factor determining foreign direct investment.

Nevertheless, due to lack good measure of human capital and unavailability of data for the entire study period, human capital measure is not included in this study.

Liberalization: Liberalization of trade and FDI regimes are assumed to have a positive influence on the inflow of FDI as they facilitate a freer trade and investment in conjunction with the repatriation of dividends and profits to home countries (Bendenabende, 2002). as discussed in the previous chapters, enabling policy framework such as liberalization of trade and promoting foreign direct investment are carried out since 1991. To capture these kinds of policy changes related to liberalization, we use a dummy variable that is assigned a value of 0 for the pre-liberalization period (i.e. up to 1990) and 1 for the post liberalization period (from 1991 onwards).

4.4. Econometric Analysis

In time series analysis, before estimating the empirical model given in section 4.3, one has to do a battery of tests to ensure that the regression is not spurious. A regression is said to be spurious when the test diagnostics show promising result while the regression analysis has no meaning (Gugarati, 2003). Therefore, before estimating the empirical model, we conduct stationary and cointegration tests.

4.4.1. Stationarity Test (Unit root test)

When dealing with time series data, it is necessary to assess whether the series is stationary or not. This is because the presence of unit roots has implications for model building, estimation strategy, and statistical inference. Regression of a non-stationary series on another non-stationary series leads to what is known as spurious regression. This occurs when the regression results reveal a high and significant relationship among variables that may appear to be significant when there exists no meaningful relationship between the dependent variable and the explanatory variables. Time series data are noted of carrying past memories. This implies past events do influence current and future events.

Most macroeconomic time series data are trended and in most cases are non-stationary. If the data series contains a unit root then the exogenous disturbances have permanent effects on the variable in question in the sense that the effects of the shocks do not disappear over time. That is, shocks to such a variable have permanent effects. On the other hand, if there is no unit root in the data series then exogenous disturbances only have transient effects in the sense that the effects of such disturbances die down over time and, in the long-run, the variable reverts back to its long-run path. Thus, statistical tests of the parameters resulting from unit root regression may be biased and inconsistent. Thus, to eliminate the possibility of these spurious regressions and erroneous inferences, the study determined the order of integration of these series through unit root tests both in the levels and in the first differences. Differencing is one way to remedy non-stationarity, though this would lead to loss of long run information. A series that is differenced *d* times to achieve stationarity is said to be integrated of order *d* that is I(d).A non-stationary series has a unit root or more, and is therefore differenced to make it stationary and hence it is integrated of order one, I(1) or higher. By contrast, a stationary series is time-independent, has short memory, constant mean, finite variance, transitory innovations and reverts to its mean or equilibrium value. A stationary series has no unit root and does not require differencing, hence it is integrated of order zero, that is I(0) and it does not have estimation problems. Several tests are employed to test for unit roots. The augmented Dickey-Fuller (ADF) and the Phillips-Peron are considered reliable and as such accepted by many in econometric analysis for the test for unit roots and are employed in the study.

The ADF tests the null hypothesis of the series $y_t$is integrated order one against it is integrated of order zero. The test is based on the estimation of a test regression which is stated below in a general form where an intercept and trend is included.

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \Phi y_{t-1} + \beta \Sigma_{j=1}^{p} \Delta y_{t-j} + \varepsilon_t \quad \text{.................................9}$$

Where: $y_t$is the variable in the model to be tested for stationarity,α_0, α_1 and β are parameters to be estimated, p refers to maximal lag length, Δ is the first difference operator and $\varepsilon_t$is the error term.

The null hypothesis is Φ=1 against an alternative hypothesis of Φ<0. A rejection of the null hypothesis means that the time series is stationary or it does not contain a unit root while accepting the null indicates that the time series is non-stationary. The computed value will be compared with critical values to determine whether the series are stationary or not.

Anadditional test employed in this study to examine the existence of unit-root in the variables is the Phillips-Perron Test, which is first suggested by Phillips and Perron (1988). The PP test differs from ADF test in that it does not take lagged difference terms into account for a potential serial correlation in the error terms; instead it uses non-parametric statistical method. PP test is robust with respect to unspecified autocorrelation and heterosckedasticity in the disturbance process of the test equation. Nevertheless, both PP and ADF have the same asymptotic assumptions and a caveat of these tests is that the tests have low power in cases where first-order autocorrelation coefficient is close to one under alternative hypothesis.

4.4.2. Cointegration Test

Most econometric literature provides different methodological procedures to empirically examine the long-run relationship and dynamic interactions between two or more time-series variables. The most commonly used methods include the two-step residual based procedure for testing the null hypothesis of no co-integration which is attributed to Engle and Granger (1987) and Phillips and Ouliaris (1990) and the full information maximum likelihood-based approach of Johansen (1988) and Johansen and Juselius (1990).There are also other procedures such as the variable addition approach of Park (1990), the residual-based procedure for testing the null of co-integration by Shin (1994) and the stochastic common trend (system) approach of Stock and Watson (1988) (Pesaran*et al.*,1999).

All these methods require that the variables under investigation should be integrated of order one. This normally involves a step of stationarity pre-testing, by introducing a certain degree of uncertainty into the analysis. Furthermore, these tests suffer from low power and do not have good small sample properties (Cheung and Lai, 1993). From the above problems, we make use of a newly developed approach to co-integration that has become popular in recent years. The Bound Test approach to co integration developed by Pesaran and Shin (1999) and further extended by Pesaran et al. (2001) is adopted for this study. The procedure is adopted for the following reasons.

Firstly, the bounds test procedure is simple. As opposed to other multivariate co integration techniques such as Johansen and Juselius (1990), it allows the co integration relationship to be estimated by OLS once the lag order of the model is identified. Secondly, the bounds testing procedure does not require the pre-testing of the variables included in the model for unit roots unlike other techniques such as the Johansen approach. It is applicable irrespective of whether the regressors in the model are purely I(0), purely I(1) or mutually co integrated. Besides, endogeneity and serial correlation problems, that exists in many empirical studies, and inability to test hypothesis on the estimated coefficients in the long run associated with Engle and Granger (1987) method is avoided (Pesaran and Shin, 1999).

Apart from this, the long run and short run parameters of the model under consideration are determined simultaneously. Thirdly, the test is relatively more efficient in small or finite sample data sizes. Estimates derived from Johansen-Juselius method of co-integration are not robust when subjected to small sample sizes as compared to bounds test. Fourth as the name suggests, this approach allows both the dependent and independent variables to enter the model with lags, thereby allowing the past values of variables to determine its present values. This flexibility in terms of the structure of lags of the regressors is particularly plausible because reactions to a change in each variable may be different depending on various factors and in some cases they may respond to the changes in underlying factors with a lag; thus there is usually no reason to assume that all regressors should have the same lags as suggested by the co-integration VAR models, where different lags for different variables are not permitted (Pesaran*et al.*, 2001).

The main reason we are interested in co-integration is to examine if there is along-run relationship between variables because making a variable stationary by differencing it only shows the short-run dynamics. Besides, conducting co-integration tests is crucial as one cannot estimate error correction model (ECM) when the variables do not have a long-run relationship.

The ARDL approach requires three steps. The first step is to check the existence of long run relationship among the variables of interest that is determined by F- test. The second step requires the estimation of long run relationship and to determine their values, thereafter the short run elasticity of the variables with error correction representation of the ARDL model. This application of error correction version of the ARDL model is mainly to determine the speed of adjustment to the equilibrium. Meaning that the ECM estimates the speed at which our dependent variable returns to the equilibrium given the change in the independent variable .The study proceeds to estimate the short run and long run relationship by following the Unrestricted Error Correction Model (UECM) which is unrestricted intercepts and no trends based on the assumption made by Pesaran et.al (2001).

The ARDL bounds test modeling involves estimating unrestricted error correction model (UECM) using OLS (Narayan.K.M and Smyth.R, 2004).

Let us define a vector of variables

z_t Where $z_t = (y_t, x_t)$ y_t is the dependent variable and x_t is a vector of regressors. The data generating process of z_t is a p-order vector auto regression. For co-integration analysis it is essential that ΔY be modeled as a conditional ECM:

$$\Delta Y_t = \beta_0 + \Pi_{xy} Y_{t-1} + \Pi_{yx,x} Y_{t-1} + \Sigma_{i=1}^{p} \theta i \Delta Y_{t-i} + \Sigma_{j=1}^{q} \Phi j \Delta X_{t-i} + \theta W_t + \mu_t \text{...........10}$$

Here, Π_{xy} and $\Pi_{yx,x}$ are long-run multipliers. β_0 is the drift and W_t is a vector of exogenous components e.g. dummy variables. Lagged values of ΔY_t and current and lagged values of ΔX_t model the short-run dynamic structure.

The model in this specific case can be stated as

$$\Delta lnFDI = \beta_0 + \beta_1 \sum_{i=1}^{p} \Delta lnFDI_{t-i} + \beta_2 \sum_{i=1}^{p} \Delta RGDPg_{t-i} + \beta_3 \sum_{i=1}^{p} \Delta lnRGDPc_{t-i} + \beta_4 \sum_{i=1}^{p} \Delta lnREER_{t-i} + \beta_5 \sum_{i=1}^{p} \Delta INF_{t-i} + \beta_6 \sum_{i=1}^{p} \Delta \ln OPEN_{t-i} + \beta_6 \sum_{i=1}^{p} \Delta LIBR_{t-i} + \beta_7 \sum_{i=1}^{p} \Delta TELE_{t-i} + \alpha_1 lnFDI_{t-1} + \alpha_2 lnRGDPg_{t-1} + \alpha_3 lnRGDPc_{t-1} + \alpha_4 lnREER_{t-1} + \alpha_5 INF_{t-1} + \alpha_6 lnOPEN_{t-1} + \alpha_7 LIBR_{t-1} + \varepsilon_t \text{ ....11}$$

Where β1, β2, β3, β4, β5, β6, and β7 characterize the coefficients of the short run dynamics of the model whereas, α_1, α_2, α_3, α_4, α_5, α_6, and α7coefficients show the long run relationship. To test the presence of long run relationship between the underlying variables, the above equations is estimated using OLS and to test the significance of lagged levels of the variables in this study, the appropriate test statistics is the familiar F or Wald test under the generalized

Dickey-Fuller types of regressions in an unrestricted error correction regression. The null hypothesis for test of long run co-integration is stated

$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = 0$ against

$H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq 0$

The co integration test is based on the F-statistics or Wald statistics. The F-test has a nonstandard distribution. Thus, Pesaran and Pesaran (1997) and Pesaran et al (2001) have provided two sets of critical values for the co integration test. The lower critical bound assumes that all the variables are I(0), meaning that there is no co integration among the variables, while the upper bound assumes that all the variables are I(1). If the computed F-statistic is greater than the upper critical bound, then the null hypothesis will be rejected, suggesting that there exists a co integrating relationship among the variables. If the F-statistic falls below the lower critical bounds value, it implies that there is no co integration relationship. However, when the F-statistic lies within the lower and upper bounds, then the test is inconclusive.

In this context, the unit root test is conducted to ascertain the order of integration of the variables. If all the variables are found to be I(1), then the decision is taken on the basis of the upper critical value. On the other hand, if all the variables are I (0), then the decision is based on the lower critical bound value. The ARDL method estimates $(P+1)^k$ number of regressions in order to obtain the optimal lags for each variable, where p is the maximum number of lags to be used and k is the number of variables in the equation (Shrestha and Chowdhury, 2005). The model is selected based on the Schwartz-Bayesian Criterion (SBC) or Akaike Information Criterion (AIC). The AIC chooses the maximum relevant lag length.

Once co integrating relationship is ascertained, the long run and error correction estimates of the ARDL model are obtained as given

$$\Delta lnFDI = \alpha_1 \ln FDI_{t-1} + \alpha_2 \ln RGDPg_{t-1} + \alpha_3 \ln RGDPc_{t-1} + \alpha_4 \ln REER_{t-1} + \alpha_5 \, INF_{t-1} + \alpha_6 \ln OPEN_{t-1} + \alpha_7 \, LIBR_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots...12$$

After the long run model is estimated, the next duty is to model the short run dynamics of the model by estimating an Error Correction Model associated with the long run estimates. The error correction representation of the series can be given as follows:

$\Delta lnFDI = \beta_0 + \beta_1 \sum_{i=1}^{p} \Delta lnFDI_{t-i} + \beta_2 \sum_{i=1}^{p} \Delta RGDPg_{t-i} + \beta_3 \sum_{i=1}^{p} \Delta lnRGDPc_{t-i} + \beta_4 \sum_{i=1}^{p} \Delta lnREER_{t-i} + \beta_5 \sum_{i=1}^{p} \Delta INF_{t-i} + \beta_6 \sum_{i=1}^{p} \Delta \ln OPEN_{t-i} + \beta_6 \sum_{i=1}^{p} \Delta LIBR_{t-i} + \beta_7 \sum_{i=1}^{p} \Delta TELE_{t-i} + \gamma ECM_{t-1} + \varepsilon_t$ ………………………………………..13

$\overline{ECM_{t-1}}$ Where the speed of adjustment of the parameter and is the residual obtained from equations (i.e. the error correction term). The coefficient of the lagged error correction term is expected to be negative and statistically significant to further confirm the existence of a co integrating relationship. Before directly getting on estimating the long run relationship of the model using ARDL bounds testing procedure, it is must to first test the order of integration of each variables included in the model. It is mainly to ensure that the variables are not co-integrated of order two (I (2)). This is because as stated earlier, ARDL approach is based on the assumption that the underlying series is either I(1), I(0) or mutually co-integrated. If the variable are found to be I(2), the computed F or Wald statistic are not going to be valid which may lead to erroneous conclusion. The diagnostic test statistics of the selected ARDL model can be examined from the short run estimates at this stage of the estimation procedure. Similarly, the test for parameter stability of the model can be performed by Cumulative Sum of Square of Recursive Residuals (CUSUMSQ) statistics. If the plots of CUSUMSQ statistics stay within the critical bounds of five percent level of significance, the null hypothesis of all coefficients in the given regression are stable cannot be rejected.

4.4.3. Granger Causality Test

The co-integration relationship indicates the existence of causal relationship between variables but it does not indicate the direction of causal relationship between variables. Therefore it is common to test for detecting the causal relationship between variables using the Engle and Granger (1987) test procedure. Granger (1969) definition of causality states that Xt causes Yt if the past history of Xt can be used to predict Yt more accurately than simply using the past history of only. This test enables an evaluation of the information content in the past values of a variable in predicting the contemporaneous as well as the future path of another. It is therefore vital for two main reasons.

First, it is equivalent to the econometric exogeniety in the sense that unidirectional causality that runs from the explanatory variables to the dependent variables serves a prerequisite for the consistent estimation of distributed lag models that do not involve lagged dependent variables. Second, it can be likened to leading indicators and rational expectations. Thus, Granger (1969) observed that it is difficult to determine the direction of causality between two related variables.

The following model is appropriate to check the causality between two variables X and Y;

$$\Delta Y_t = \alpha_0 + \Sigma_{i=1}^{p} \alpha_1 \Delta Y_{t-i} + \Sigma_{i=1}^{p} \alpha_2 \Delta X_{t-i} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..5$$

$$\Delta X_t = \beta_0 + \Sigma_{i=1}^{p} \beta_1 \Delta X_{t-i} + \Sigma_{i=1}^{p} \beta_2 \Delta Y_{t-i} + \varepsilon_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

Here the null hypothesis to be tested is H0: $\beta_1 = \beta_2 = \ldots\ldots\ldots = \beta q = 0$; against the alternative hypothesis H_1: At least one of them is not zero. ε_{1t} and ε_{2t} are random error terms, which are serially uncorrelated with zero mean and constant variance. If the null hypothesis is rejected for equation (a), it can be said that there is a unidirectional causality from X to Y. Conversely, if the null hypothesis is rejected for equation (b) it can be said that there is a unidirectional causality from Y to X. If the null hypothesis is rejected for both equations, it can be said that there is bidirectional causality between Y and X. They are referred to as the short run Granger causality test (Hossain**,** 2013).

4.5 Other diagnostic tests

After estimating our econometric model, we need to make sure that the model passes through a battery of diagnostic tests before drawing conclusions from the results and using them to inform policy making. Some of the most relevant post-estimation tests are given below.

Ramsey RESET TEST

Ramsey RESET test for functional form examines whether the models are well constructed. The null hypothesis of the test is that there are no omitted variables or the model doesn't suffer from an omitted variable bias and the model is well constructed.

Normality test

One of the assumptions in the OLS regression is that the error terms are normally distributed, and it is necessary to verify whether this assumption is meet using our data. Using information obtained from kurtosis and skewness, Jarque-Bera normality, which is a joint asymptotic test, investigates whether the error terms from the regression are normally distributed or not. The null hypothesis is that the error terms are normally distributed (i.e. a joint hypothesis of the skewness being zero and the excess kurtosis being zero).

Autocorrelation test

In regression we assume that there is no serial correlation among the error terms meaning that the error terms from period are not correlated with the error terms from adjustment time periods. Lagrange Multiplier test is used to test the serial correlation between the error terms. The null hypothesis is that the residuals are not serially correlated.

Hetroskedesity test

The hetroskedesity test enables us to check whether the variance of the error term are constant. We use White's test to investigate whether the assumption of homescedestity of the error terms is satisfied. The null hypothesis of White's test is that the error terms are homoscedastic and there is no model specification.

Stability test

We perform the test for parameter stability of the model using the Cumulative Sum of Square of Recursive Residuals (CUSUMSQ) statistics. If the plots of CUSUMSQ statistics stay within the critical bounds of five percent level of significance, the null hypothesis of all coefficients in the given regression are stable cannot be rejected.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

The study first tested for unit roots in order to determine the stationarity status of the variables using the Augmented Dickey-Fuller (ADF) and co-integration. The analysis of these tests then helped us to know the relationship between foreign direct investment and real effective exchange rate, RGDP growth rate, openness of economy, inflation rate, telephone lines per 1000 people for measure infrastructure.

5.1. Empirical Results for Unit Root Testing

As it is discussed the model is a valid instrument for estimation if the variables are stationary at I (0) and I (1), but the estimation procedure will be inappropriate if any of the variables are integrated at I(2). The purpose of doing stationarity test is to free the result from spurious regression. The results for the unit root test are presented in table 5.1.1. In order to avoid the issue of heteroskedastiy, with the exception of inflation rate, the study takes the natural logarithm of all the variables under consideration.

Table 5.1.1 shows the ADF test results with three scenario for each of the variables- with intercept, with intercept and trend, and one without any intercept and trend. The results show that all the variables are integrated of order zero or one i.e. we reject the null hypothesis that the variable is non-stationary at either at level or at first difference.

TABLE 5.1.1: UNIT-ROOT TEST OF VARIABLES

	ADF t-statistic at level I(0)			ADF t-statistic at level I(1)			
Variables	Intercept (C)	Trend and intercept(C &T)	None	Intercept (C)	Trend& Intercept (C&T)	None	Order of Integration
LnFDI	(0.874)	(1.387)	(0.158)	(3.054)**	(4.751)**	(2.986)**	I(1)
LnRGDPC	(1.327)	(1.694)	(0.917)	(3.934)**	(4.280)**	(3.652)**	I(1)
LnREER	(1.154)	(1.447)	(0.731)	(4.751)***	(4.675)***	(4.790)***	I(1)
LnOPEN	(0.259)	(3.613)**	(1.320)	(3.476)**	(3.412)***	(3.694)**	I(0)
RGDPgr	(1.674)	(2.704)	(0.533)	(9.577)***	(9.418)***	(9.670)***	I(1)
INF	(3.975)***	(4.437)***	(2.857)***	(3.355)**	(3.815)**	(2.118)**	I(0)
LnTele	0.112	1.166	(1.736)	(2.935)*	(3.669)**	(2.384)**	I(1)

5.2. Results for Bounds Tests for Co-integration

A natural step after testing for stationarity of the variables is to conduct a co-integration test. In other words, in addition to the stationarity of each of the variables, we will examine if the linear combinations of the variables is also stationary or not.

In the case where the series are of different order, using the Johanson co-integration test is inaccurate and the Bound Test for co-integration is more appropriate (Pesaran and Shin, 2001). The Bound test relies on F-statistics to test the presence of a long-run relationship among variables. Since Akaike information criterion (AIC) is a more appropriate criterion for a small sample size data, the maximum of lag length is recommended

using AIC. The F-test is used for investigating a level (long-run) relationship and will then be compared with the lower and upper bounds of critical value. If the F-statistic is greater than the upper bound it can be concluded that there is long run relationship among the variables. Conversely, if the F-statistic is less than the lower bound test one can conclude that there is no long run relationship among the variables under consideration. However, if the F-statistic falls between the upper and lower bound critical values, it can't conclude and need to look at the sign and significance of the error correction model in order to conclude.

TABLE 5.2 F-STATISTIC RESULT AND CRITICAL VALUES (LOWER AND UPPER BOUND) FOR THE *ARDL* MODELING APPROACH

Test Statistic	Value	k
F-statistic	5.117	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.361
2.5%	2.75	3.99
1%	3.15	4.43

The calculated F statistics is 5.117 which is higher than both the upper bound critical value at 10, 5 and 1 percent of significance level respectively. Therefore, we reject the null hypothesis of no co-integration implying that the variables have long-run relationship.

5.3 Long-run Diagnostics and Stability test

It is important that the estimated model passes through a battery of diagnostic tests before drawing conclusions from the results and using them to inform policy making. As outlined in chapter 4, we conduct a series of diagnostic tests including: serial correlation test (Brush and Godfray LM test), functional misspecification test (Ramsey's RESET test), normality test (Jaque- Bera test), and hetrosckedasticity test.

Serial correlation test

Using Brush and Godfray LM test, we examine whether the residuals are serially correlated. As shown in Annex 2a, the p-value is 0.8903, which is greater than 0.05 indicating that we fail to reject the null hypothesis of no serial correlation among the residuals.

Hetroskedasticity test

This study investigates the existence of homoscedastic residuals using white's test. The results in Annex 2b show that P-value is 0.1810 and we fail to reject the null hypothesis of homoscedastic residual.

Ramsey RESET test

Ramsey RESET test for functional form examines whether the model has omitted varialbes or whether the models are well constructed. Annex 2c show that the Since the p-value is 0.2445, which is greater than 0.05 implying that the model does not have omitted variables.

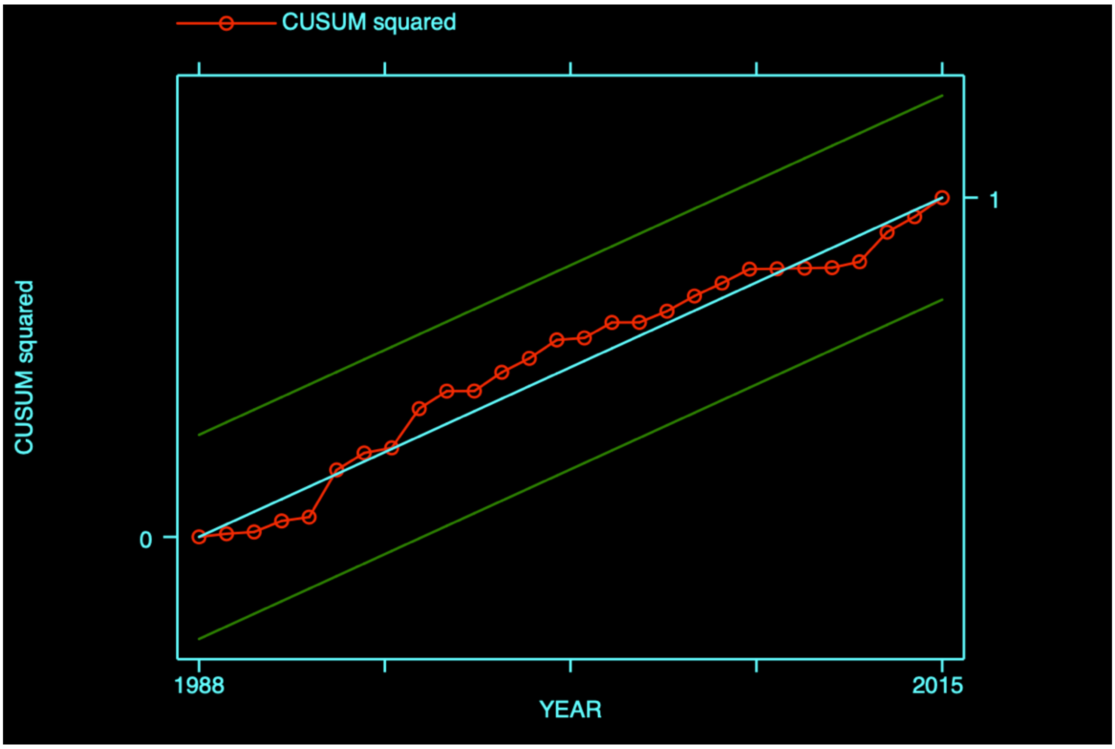
Jaque-Berra normality test

Using information about the Skewness and Kurtosis of the residual, Jaque-Berra test asses whether the residual is normally distributed. Annex 2d show that the joint p-value is 0.609 indicating that the residual is normally distributed.

To sum up, the diagnostic results presented above indicate that there the model is well specified, there is no serial correlation among the residuals, the residual is homosckedastic, and the residual is normally distributed. Thus, the estimation model passes the battery of diagnostic tests needed to verify the standard assumptions made in empirical estimation of the model.

Model stability

We examine the stability of the model using the graph plots of cumulative sum square of residuals with 5% critical lines. And, if the cumulative sum squared remains inside between the two critical lines or bounds back after it is out of the boundary lines, the null hypothesis of correct specification of the model cannot be rejected. But, if the cumulative sum goes outside (never returns back) between the two critical bounds there exists series parameter instability problem.



As depicted in the figure above, the plot of cumulative sum square of recursive residuals graphical test of stability revealed by oscillation of the calculated statistics between the critical bounds at 5% level of significance and since the plots of CUMSUMSQ stay within the lines, it confirms the equation is correctly specified and the model is stable.

5.4. Long-run ARDL Model Estimation Results

In the stationarity test, the result shows that the variables are stationary at level and at first difference. The F statistic result which indicated the existence of long run co-integration among the variables also confirmed to precede to the estimation of the long run coefficients of the model. Under the long-run section, table 5.4 presents the results found after running the appropriate ARDL model to find out the long run coefficients. The numbers in bracket are number of lag chosen by the model for each variable.

TABLE 5.3: RESULTS OF LONG RUN ARDL REGRESSION (1980-2015), DEPENDENT VARIABLE: LOG OF FDI INFLOWS

VARIABLES	(1)
Log of Real GDP per capita	0.002**
	(0.001)
Real GDP Growth	0.064**
	(0.022)
Log Telephone subscribers	9.191
	(11.59)
Log Openness	0.042**
	(0.018)
Dummy for liberalization (post 1991=1)	0.033***
	(0.011)
Log Real effective exchange rate (REER)	-0.040**
	(0.015)
Inflation	-1.403*
	(-0.702)
Observation	25

Source: Stata ARDL (2 2 2 0 0 2 1) model estimate result

Standard errors in parentheses

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

The empirical results of the long run model suggest that factors which include Real GDP per capita, real GDP, openness of an economy, liberalization, and real effective exchange rate are found to be statistically significant determinants of foreign direct investment. However, variable such as inflation, number of telephone subscriber, which is a proxy for infrastructure, are statistically insignificant at 5 percent significant level in determining foreign direct investment.

The long-run relationship between the foreign direct investment and market size measures included in the estimation such as real GDP per captia and growth rate of real GDP is positive and statistically significant. One percent increase in the real GDPpercapitaresults in a 0.002 percent increase in the foreign direct investment. Similarly, a unit increase in the growth rate of real GDP is associated with 6.4 million Birr increase in foreign direct investment. These two results are in line with the theoretical framework of Dunning (1993) i.e. it shows the existence of market seeking or horizontal FDI. This type of FDI is mainly aimed at serving the local market by producing the goods and services in the local economy making the political and economic situation of the host country pertinent. This result of the study is similar to the findings of Asiedu (2002) which shows that FDI inflows into Sub-Saharan African countries are market seeking.

The long run relationship between telephone subscribers, a proxy for infrastructure and foreign direct investment is found to be insignificant. This result is contrary to the theoretical works showing how infrastructure in a local economy can act as a main driver of FDI and a catalyst to increase investment. One reason for the insignificant result is that telephone subscribers might not be a good proxy of infrastructure investment like road expenditures. However, the road investment data obtained from MOFED only is available starting from 1996, and thus was not used in the analysis.

The results from Table 5.4 show that measures oftrade openness of an economy and foreign direct investment have a positive and statistically significant long-run relationship. In this study, we measured trade openness of a country using the share of import and export from total GDP of a country. The ARDL long-run estimation results indicate that a one percent increase in the measure of openness leads to a 0.04 percent increase in foreign direct investment. This result is in line with findings of previous studies in the area of foreign direct investment such as Haile and Assefa (2006).

Similarly, the empirical estimation results of ARDL long-run model shows the existence of a positive and statistically significant long-run relationship between liberalization policy of Ethiopian's government and foreign direct investment inflow in to the country. This result is an indication of the importance of creating a suitable working environment that attract private investment in general and foreign private investment in particular. Following the fall of the Derge regime in 1991, Ethiopia abandoned nationalization policies of private properties and encouraged privatization of most stated owned companies.

The coefficient of real effective exchange rate is negative and statistically significant. One percent increase in the real effective exchange rate results in a 0.04 percent decline in foreign direct investment. This result indicates the importance of macroeconomic policies like monetary and fiscal policies in fostering foreign direct investment. Foreign investors are attracted to countries that have predictable fiscal and monetary policies and those exhibiting low inflation.

5.5. Short-run ARDL Model (ECM) Estimation Results

Since the results from the Bounds cointegration test showed the existence of a long-run relationship between the variables, we proceed to estimate an error correction model. In this study, the short-run relationships between the foreign direct investment and macroeconomic variables are examined with the Error Correction Model (ECM) based on the ARDL approach. It indicates the speed of adjustment to restore equilibrium in the dynamic model and the coefficient of the ECM which have to be negative and statistically significant shows how quickly the dependent variable converges to the long run equilibrium (shows the eliminating of speed of disequilibrium). Results of the error correction model based on the ARDL model are presented in Table5.5

TABLE5.4*: RESULTS OF*ERROR CORRECTION MODEL BASED ON THE ARDL, *DEPENDENT VARIABLE: D.LOGFDI*

VARIABLES	(1)
Adjustment-ECM coefficient	
Log of FDI (L1)	-0.68***
	(0.283)
Short-run	
Log of FDI (LD)	-0.161
	(0.116)
Log of Real GDP per capita (D1)	0.046*
	(0.026)
Log of Openness (D1)	0.349*
	(0.19)
Inflation (D1)	0.099*
	(0.005)
Inflation (LD)	0.038
	(0.027)
Constant	0.386
	(1.244)
Observations	25
R-squared	0.88

Source: Stata ARDL (2 2 2 0 0 2 1) model estimate result

Standard errors in parentheses

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

As the determinants of foreign direct investment included in the empirical model are found to have a long-run relationship, the main interest of estimating ECM is to understand the speed of adjustment or how fast do changes in short-run get adjusted to retain the long-run relationship between the variables, which is indicated in section 5.4. Therefore, Table 5.5 shows that the error correction coefficient of *Log of FDI (L1)*has negative sign and is statistically significant confirming the existence of co-integration. The estimated short coefficient for the error correction term is -0.68 showing that there is high speed of adjustment to the long run equilibrium after the occurrence of disturbance in the short run. The value -0.68 indicates that 68% of the deviation in the short-term gets corrected each year.

5.6 Granger Causality Tests

In causality test four outcomes are possible. There may be unidirectional causality meaning that A may Granger cause B but not the other way round. There may also be the case where B Granger causes A, but not the other way round. It could also happen that A and B Granger causes each other implying bi-directional causality. When the sets of coefficient are not statistically significant, we say that, none of the variables Granger causes each other, implying that, the variables are independent. The granger causality test result in annex 3 reveals that there is unidirectional causality between foreign direct investment and GDP. This is because we reject the null hypothesis of FDI does not Granger Cause GDP at (0.0011less than 0.05).There is unidirectional causality from FDI and real effective exchange rate. There is also unidirectional causality from FDI to infrastructure, openness of the Economy and real GDP growth. However, there is no bidirectional causality among variables. (See annex 3).

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATION

In this paper we investigate the determinants of FDI in Ethiopia addressing and identifying obstacles of FDI could help Ethiopia to take better advantage of foreign investorsin order to accelerate the shift from a predominantly low productivity agriculture-based economy towards a higher-productivity manufacturing and export-based economy.

Despite extensive theoretical literature on the subject there is a need for more empirical work that investigates the effect of macroeconomic variables on foreign direct investment in Ethiopia. The purpose of this paper is to investigate the empirical linkage between foreign direct investment and macroeconomic variables using recent econometric data from 1980 to 2015. We investigate the existence of short run and long run relationship between FDI and set of macroeconomic variables proposed by both theoretical and empirical literature.

From the econometric estimation, this study draws important conclusions from the econometric results. First, the positive and statistically significant effect of economic growth on FDI confirm the theoretical predication that the role of economic growth is crucial to the development of FDI. High rate of GDP growth signals a country's economic prospects and encourages foreign investors. Keeping up the growth momentum and ascertaining its sustainability is a key to attracting more FDI.

The positive and significant effect of economic growth on FDI emphasizes the crucial role of economic growth in stimulating investment by foreign as well as domestic investors. Ethiopia has had a respectable growth performance in the post-1991 period18. High rate of GDP growth signals a country's economic prospects and encourages foreign investors. Keeping up the growth momentum and ascertaining its sustainability is a key to attracting more FDI. In this regard, furthering the growth performance of the economy through the creation of favorable macroeconomic environment, developing vital infrastructure, ensuring the quality of institutions as well as improving the quality of human capital are some of the important measures essential to attract FDI.

Second, the positive and statistically significant effect of measures of trade openness and liberalization signifies the importance of less government intervention in the market creates an attractive environment for investors and is positively associated with FDI.
Unlike previous studies, our result shows that there is no statistically significant relationship between infrastructure development measure included in the model and FDI. This result is both theoretically and empirically counter intuitive result, but this could mainly be indicating that telephone line might not be a good measure of infrastructure. Future research in the area could explore the relationship further by employing more appropriate measure of infrastructure.

In this study, we find a negative and statistically significant relationship between both inflation and REER and FDI. This result highlights the importance of having good monetary and fiscal policies that can strengthen the economy and builds confidence for potential investors.

The government of Ethiopia has been trying to boost FDI inflows into the country by liberalizing the investment regime of the country and by providing various investment incentives. Nevertheless, the amount of foreign direct investment coming to Ethiopia is quite small. In order to attract FDI and foster its growth, policy makers should give attention to macroeconomic stability of the country by closely looking at the inflation rate and change in the exchange rate. In addition, policy makers need to focus on improving the investment climate through further measures of liberalization, encouraging international trade and hence openness of the country.

REFERENCES

Anyanwu, J. C. (2011). *Determinants of foreign direct investment inflows to Africa, 1980-2007* (pp. 1-32). African Development Bank Group.

Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: is Africa different?.*World development*, *30*(1), 107-119.

Asiedu, E. (2003). Foreign direct investment to Africa: The role of government policy, governance and political instability. *Department of Economics, University of Kansas*.

Balasubramanyam, V. N. (2002). Foreign direct investment in developing countries: Determinants and impact. *New horizons for foreign direct investment*, *548*, 187.

Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *The economic journal*, *106*(434), 92-105.

Beaverstock, J. V. (2008). Global Shift (1986): Peter Dicken. *Transforming the world Economy. London: SAGE Publications Ltd. URL: http://www. sagepub. com/upm-data/18963_14_Hubbard_Ch_14. pdf [Accessed 19th April, 2012]*.

Bende-Nabende, A. (2002). Foreign direct investment determinants in Sub-Sahara Africa: A co-integration analysis. *Economics Bulletin*, *6*(4), 1-19.

Chakrabarti, A. (2001). The determinants of foreign direct investments: Sensitivity analyses of cross-country regressions. *kyklos*, *54*(1), 89-114.

Demirhan, E., &Masca, M. (2008). Determinants of foreign direct investment flows to developing countries: a cross-sectional analysis. *Prague economic papers*, *4*(4), 356-369.

Dunning, J. H. (1986). The investment development cycle revisited. *WeltwirtschaftlichesArchiv*, *122*(4), 667-676.

Dunning, J. H., &Lundan, S. M. (2008). *Multinational enterprises and the global economy*. Edward Elgar Publishing.

Economic Development (MOFED) (2002), *Ethiopia: sustainable development and poverty reduction program*

Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society*, 251-276.

Gujarati, D. (2008). N, 2003, Basic Econometrics,“. *New York: MeGraw-Hill*, 363-369.

Haile, G. A., &Assefa, H. (2006). Determinants of Foreign Direct Investment in Ethiopia: A time-series analysis. In *4th International Conference on the Ethiopian Economy*.

Hailu, Z. A. (2010). Impact of foreign direct investment on trade of African countries. *International Journal of economics and Finance*, *2*(3), 122-133.

Harrison, A., Dalkiran, E., & Elsey, E. (2000). International business: global competition from a European perspective. *OUP Catalogue*.

Habtamu Legesse, (2018), *Determinants of foreign direct investment in Ethiopia; Systematic review*, Head of department of Economics, Raya University, Maichew, Ethiopia.

Helpman, E., Melitz, M. J., &Yeaple, S. R. (2003). Exports versus FDI," NBER Working Paper No. 9439.

Hermes, N., &Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *The Journal of Development Studies*, *40*(1), 142-163.

Hernández-Catá, E., Schwab, K., & Lopez-Claros, A. (2004). The Africa competitiveness report 2004. World Economic Forum.

Hossain, F. (1995),“Current account determination in the inter-temporal framework; An empirical analysis’’, *A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY, Iowa State University Ames, Iowa 1995*

Hymer, S. H. (1976). *International operations of national firms*. MIT press.

Ikiara, M. (2003). *Foreign direct investment (FDI), technology transfer, and poverty alleviation: Africa's hopes and dilemma* (No. 16). African Technology Policy Studies Network.

Johansen, S., &Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, *52*(2), 169-210.

Johnson, A. (2005). *Host country effects of foreign direct investment: The case of developing and transition economies* (Doctoral dissertation, Jönköping International Business School).

Kaliappa, K., Khondoker , and Abdul M. (2010), *Determinants of foreign direct investment in developing country: a comprehensive analysis.* ASARC Working Paper

Lim, M. E. G. (2001). *Determinants of, and the relation between, foreign direct investment and growth: a summary of the recent literature* (No. 1-175). International Monetary Fund.

Lipsey, R. E. (2004). Home-and host-country effects of foreign direct investment. In *Challenges to globalization: Analyzing the economics* (pp. 333-382). University of Chicago Press.

Markusen, J. R. (1997). Trade versus Investment Liberalization. NBER Working Paper 6231. *Social Sci-ence Electronic Publishing*, *77*(35), 339-371.

Medina, L., Prat, J., and Thomas, A.(2010),"Current Account Balance Estimates for Emerging Market Economies'', *IMF Working Paper WP/10/43*

Moosa, I. A., &Cardak, B. A. (2006). The determinants of foreign direct investment: An extreme bounds analysis. *Journal of Multinational Financial Management*, *16*(2), 199-211.

Morisset, J. (1999). *Foreign direct investment in Africa: policies also matter*. The World Bank.

Mottaleb, K. A., &Kalirajan, K. (2010). Determinants of foreign direct investment in developing countries: A comparative analysis. *Margin: The Journal of Applied Economic Research*, *4*(4), 369-404.

Mundell, R. A. (1957). International trade and factor mobility. *American economic review, 47*(3), 321-335.

Narayan, K.M and Smyth, R. (2004). Dead Man Walking: An Empirical Reassessment of the Deterrent Effect of Capital Punishment Using the Bounds Testing Approach to Cointegration. Annual Meeting of the American Law and Economics Association, Northwestern University, Chicago, May 2004.

Nayak, D., & Choudhury, R. N. (2014). *A selective review of foreign direct investment theories* (No. 143). ARTNeT Working Paper Series.

Oecd, O. E. C. D. (2008). Benchmark Definition of Foreign Direct Investment.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics, 16*(3), 289-326.

Protsenko, A. (2004). *Vertical and horizontal foreign direct investments in transition countries* (Doctoral dissertation, lmu).

Shenkar, O., Luo, Y., & Chi, T. (2007). *International business*. Rout FDI Theory and Application'' Second edition , Ohio State Universty

Shrestha, M. B. and Chowdhury, K. (2005). ARDL Modeling Approach to Testing the Financial Liberalization Hypothesis. *University of Wollongong Economics Working Paper Series 2005.*

Singh, H., & Jun, K. W. (1999). *Some new evidence on determinants of foreign direct investment in developing countries*. The World Bank.

Solomon Mamo(2008).*Determinants of foreign direct investment in Ethiopia*. Thesis submitted to Maastricht School of Governance in partial fulfillment of the requirements for the degree of Master of Science in Public policy.Maacstricht, the Netherlands

UNCTAD (2001), *World Investment Report: Trends and Determinants*, United Nations Conference on Trade and Development. New York and Geneva, United Nations.

UNCTAD (2004a). World Investment Report 2004: *The Shift Towards Services. New York and Geneva*: United Nations. Retrieved on July 15,200

UNCTAD (2004b). *An Investment Guide to Ethiopia: Opportunities and conditions*. New York and Geneva: United Nations. Retrieved on July10,200

UNCTAD (2007), *World Investment Report: Foreign Direct investment and the Challenge of Development,* United Nations Conference on Trade and Development. New York and Geneva, United Nations.

UNCTAD, T. (1998). Development Board. *Review of UNCTAD's technical cooperation", Ginevra*.

World Bank survey (2012), *Chinese FDI in Ethiopia,* Africa Region.

World Bank. (2009). *Africa Development Indicators 2008/2009: From the World Bank Africa Database*. World Bank Publications.

APPENDICES

Appendix 1: PP stationarity test

	PP t-statistic at level I(0)			PP t-statistic at level I(1)			
Variables	Intercept (C)	Trend and intercept(C &T)	None	Intercept (C)	Trend& Intercept (C&T)	None	Order of Integration
LnFDI	(0.764)	(1.320)	(0.139)	(3.029)**	(4.651)**	(2.997)**	I(1)
LnRGDPc	(1.165)	(1.560)	(0.736)	(3.820)***	(4.118)***	(3.525)**	I(1)
LnREER	(1.034)	(1.578)	(0.622)	(4.624)***	(4.732)***	(4.930)***	I(1)
LnOPEN	(0.246)	(3.408)**	(1.237)	(3.353)**	(3.185)***	(3.290)**	I(0)
RGDPgr	(1.366)	(1.652)	(0.426)	(9.526)***	(9.103)***	(9.496)***	I(1)
INF	(3.630)***	(4.251)***	(2.651)***	(3.362)**	(3.669)**	(2.841)**	I(0)
LnTele	0.341	1.361	(1.603)	(2.901)*	(3.413)**	(2.715)**	I(1)

APPENDIX2: DIAGNOSTIC TEST RESULTS FOR LONG RUN MODEL

A. Serial Correlation result

Breusch-Godfrey Serial Correlation LM Test:

H0: No serial correlation

Lags (p)	Chi2	df	Prob> chi2
1	0.019	1	0.8903

B. heteroskedasticity test

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

chi2(26) = 32.37

Prob> chi2 = 0.1810

C. functional form

Ramsey RESET test using powers of the fitted values of rgdpg

Ho: model has no omitted variables

F(3, 26) = 1.47

Prob> F = 0.2445

d. Jarque Berra test (Skewness/Kurtosis tests for Normality)

H0: Residual is normally distirbuted

				joint ------	
Variable	Obs	Pr(Skewness)	Pr(Kurtosis) adj	chi2(2)	Prob>chi2
Residual	36	0.4862	0.5002	0.99	0.609

APPENDIX 3

Pair wise Granger Causality Tests
Date: 30/10/19 Time: 14:14
Sample: 1980 2015
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDPg	34	8.75065	0.0011
GDPg does not Granger Cause FDI		0.92061	0.4096
GDPc does not Granger Cause FDI	34	8.85896	0.0010
FDI does not Granger Cause GDPc		1.25814	0.2992
INF does not Granger Cause FDI	34	0.43733	0.6499
FDI does not Granger Cause INF		3.29311	0.0514
LNOPPEN does not Granger Cause FDI	34	1.88602	0.1698
FDI does not Granger Cause LNOPPEN		0.46460	0.6330
LNLIB does not Granger Cause FDI	34	0.53994	0.5885
FDI does not Granger Cause LNLIB		0.02592	0.9744
RGDPGR does not Granger Cause FDI	34	1.89289	0.1688
FDI does not Granger Cause RGDPGR		7.48621	0.0024
LN TEL does not Granger Cause FDI	34	3.03000	0.0638
FDI does not Granger Cause LN TEL		0.01154	0.9885
DR does not Granger Cause FDI_GDP	34	0.95192	0.3977
FDI_GDP does not Granger Cause DR		0.28051	0.7574
LNM2_GDP does not Granger Cause FDI_GDP	34	0.50692	0.6076
FDI_GDP does not Granger Cause LNM2_GDP		1.54451	0.2305
FB_GDP does not Granger Cause FDI_GDP	34	2.04128	0.1481
FDI_GDP does not Granger Cause FB_GDP		0.76667	0.4737
LNREER does not Granger Cause FDI_GDP	34	3.94023	0.0306
FDI_GDP does not Granger Cause LNREER		1.48060	0.2442
LNOPEN does not Granger Cause FDI	34	1.67742	0.2045
FDI does not Granger Cause LNOPEN		0.43357	0.6523
GDP does not Granger Cause DR	34	0.42884	0.6553
DR does not Granger Cause FB_GDP		0.73108	0.4901

LNOPEN does not Granger Cause LNREER	34	3.21144	0.0550
LNREER does not Granger Cause LNOPEN		0.22659	0.7986
LNLIB does not Granger Cause LNREER	34	0.53814	0.5895
LNREER does not Granger Cause LNLIB		0.65984	0.5245
RGDPGR does not Granger Cause LNREER	34	1.53355	0.2328
LNREER does not Granger Cause RGDPGR		2.89853	0.0712
LNRI does not Granger Cause LNREER	34	10.5568	0.0004
LNREER does not Granger Cause LNRI		5.02432	0.0134
LNTOT does not Granger Cause LNOPPEN	34	0.03935	0.9615
LNOPPEN does not Granger Cause LNTOT		0.18369	0.8332
RGDPGR does not Granger Cause LNOPPEN	34	0.04090	0.9600
LNOPPEN does not Granger Cause RGDPGR		10.0994	0.0005
LNRI does not Granger Cause LNOPPEN	34	0.51835	0.6009
LNOPPEN does not Granger Cause LNRI		4.30461	0.0231
RGDPGR does not Granger Cause LNTOT	34	0.31874	0.7296
LNTOT does not Granger Cause RGDPGR		5.21508	0.0116
LNRI does not Granger Cause LNTOT	34	0.15857	0.8541
LNTOT does not Granger Cause LNRI		1.72242	0.1964
LNRI does not Granger Cause RGDPGR	34	4.41473	0.0212
RGDPGR does not Granger Cause LNRI		0.43513	0.6513

Null Hypothesis:	Obs	F-Statistic	Prob.
FB_GDP does not Granger Cause FDI_GDP	34	2.04128	0.1481
FDI_GDP does not Granger Cause FB_GDP		0.76667	0.4737
LNREER does not Granger Cause FDI_GDP	34	3.94023	0.0306
FDI_GDP does not Granger Cause LNREER		1.48060	0.2442
LNOPPEN does not Granger Cause FDI_GDP	34	1.67742	0.2045
FDI_GDP does not Granger Cause LNOPPEN		0.43357	0.6523
RGDPGR does not Granger Cause FDI_GDP	34	0.58217	0.5651
FDI_GDP does not Granger Cause RGDPGR		1.37662	0.2684

LNOPPEN does not Granger Cause LNREER	34	3.21144	0.0550
LNREER does not Granger Cause LNOPPEN		0.22659	0.7986
RGDPGR does not Granger Cause LNREER	34	1.53355	0.2328
LNREER does not Granger Cause RGDPGR		2.89853	0.0712
RGDPGR does not Granger Cause LNOPPEN	34	0.04090	0.9600
LNOPPEN does not Granger Cause RGDPGR		10.0994	0.0005
RGDPGR does not Granger Cause LNTEL	34	0.04090	0.7600
LNTEL does not Granger Cause RGDPGR		.0994	0.0005