Determinants of Ethiopian Foreign Direct Investment Inflows:

Bounds Testing Approach

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Statement of Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a Master's degree in any other university, and that all the sources of materials used for the thesis are duly acknowledged.

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Statement of Certification

This is to certify that the thesis presented by Tamirat Hailu, entitled: *Determinants of Ethiopian Foreign Direct Investment Inflows: Bounds Testing approach* submitted in partial fulfillment of the requirements for the Degree of Master of Business Administrations (MBA in Finance) complies with the regulations of the University and meets the accepted standards with respect to the originality and quality.

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Abstract

The very purpose of this research paper is to investigate the long run relationship between foreign direct investment (FDI) and its determinants in Ethiopia. Accordingly, bounds testing approach to Auto Regressive Distributed Lag (ARDL) model has been utilized to test co-integrations among the variables of interests in Ethiopia for the period 1992-2017. Taking foreign direct investment as a dependent variable and real GDP per capita, consumer price index, exchange rate, public debt, gross fixed capital formation and human capital as independent variables, co-integration test has been conducted. The result confirm long run association among these variables. Subsequently, from the long run estimation result output, real GDP per capita as a proxy for market size, gross fixed capital formation as measure of infrastructure development and exchange rate depreciation have positive significant effect on foreign direct investment inflows; but negative and significant effect of consumer price index on foreign direct investment inflows to Ethiopia have been found in the long run. The short run relationship and error correction model (ECM) result reveals positive and significant impact of consumer price index and gross fixed capital formation on FDI inflows. Exchange rate is affecting FDI inflows negatively in the short run as it is shown by the study. The policy of promoting the economy through creating enabling investment climate to increase the output of the economy, maintaining macroeconomic stability, ensuring market determined exchange rate and developing the infrastructure to increase FDI inflows have been recommended.

Key words: Bounds testing, Co-integrations, ECM, FDI, Ethiopia

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Lists of Acronyms and Abbreviations

ADF: Augmented Dickey Fuller Test

AIC: Akaike Information Criterion

ARDL: Auto Regressive Distributed Lag

CUSUM: Cumulative Sum of Recursive Residual Test

CUSUMQ: Cumulative Sum of Squares of Recursive Residuals Test

ECM: Error Correction Model

FDI: Foreign Direct Investment

GDP: Gross Domestic product

GTP: Growth and Transformation Plan

HQ: Hannan Quin Information Criterion

IMF: international Monetary Fund

LM: Lagrange Multiplier

M&As: Merger and Acquisitions

MNEs: Multi-National Enterprises

NBE: National Bank of Ethiopia

OECD: Organization for Economic Co-operation and Development

PP: Philips Perron Test

R & D: Research and Development

SBC: Schwarz Bayesian Criterion

VAR: Vector Auto Regressive

VECM: Vector Error Correction Model

CHAPTER ONE

Introduction

1.1. Background of the Study

FDI is expected to bring the following benefits to the host countries. First, FDI can benefit by supplying capital, technology, and management resources that would otherwise not available. Second, FDI create jobs to the host country economy. Third, it could have positive effect on BOP of a country; investment in host country can be a substitute for import and if FDI is of export seeking it could enhance export. Fourth, FDI improves competition in host countries and contributes to decrease price of a product and welfare of a consumer. By so doing, FDI can boost a countries' economic growth. Madura (2006). But, FDI is not without a pitfall. FDI inflow can have an adverse effect on domestic producers because it may force them into an unfair competition. It could also worsen the balance of payment as the subsidiaries subsequently repatriate their profit to the home country in the long run. Additionally, the national sovereignty and autonomy of the host country may be lost as the investors can make key decisions that affect the economy, social and politics because they have no real commitment to the host countries. Leibsher and et al. (2007)

It is the Government of Ethiopia's (GoE) strategy that Ethiopia's economy should grow at an annual growth rate of more than 10 percent for no less than two decades if the country is to attain the projected middle income country status by the year 2025. Meanwhile, Ethiopia's gross domestic savings as proportion of GDP has been historically quite low. Since it will be difficult to achieve such a growth trajectory without mobilizing domestic savings, the GoE has initiated a series of measures under GTP II with a view to raising the rate of private investment in GDP from around 17 percent 2013/14 to more than 20 percent in the coming years. (World Bank Global Economic Prospect, 2017).

In Ethiopia, the gap between domestic investment and savings has remained wide due to the low levels of income and domestic savings. Between 2013/14 and 2018/19, gross domestic investment as a proportion of GDP is averaged 37.8, while the average gross domestic savings remained low at 21%. Gross domestic saving fall short of financing the high level of gross domestic investment.

This saving gap can be filled by loans and development assistance from multilateral agencies such as the World Bank or by private foreign investment. Though, this sources of financing somehow increasing from the period 2013/14-2017/18, it has declined to 31.9% for the period 2018/19.

With a public debt–to-GDP ratio of 61.8% at the end of June 2018, Ethiopia remains at high risk of debt distress, according to a 2018 debt sustainability analysis. A tax transformation program is under way to strengthen tax policy and administrative efficiency. A reduced trade deficit and strong growth in remittances helped improve the current account deficit from 8.1% of GDP in 2016/17 to 6.0% in 2017/18. Gross official reserves remained low, at 2.5 months of imports in 2016/17 and 2.1 months in 2017/18. African Development Bank Group (2019)

Given this fact, FDI is the most important alternative source of foreign capital for Ethiopia. FDI as a source of capital and other business know-how is therefore desperately essential to finance growth and development.

The increase in contributions of FDI to job creation, technology, new products, new management skills and practices makes it important to analyze factors that determine its flow to countries. Moreover, the contributions of FDI to Growth Fixed Capital formation and economic growth has triggered the importance of studying and identifying major factors that are determinants of FDI which enables to take policy measures so as to optimize the benefits of FDI in Ethiopia. The purpose of this study is to make contributions to current body of knowledge focusing on determinants of FDI and to forward policy implication based on the results of the finding.

1.2. Statement of the Problem

Concerning the impacts of FDI on economic growth of country, most empirical researchers found a positive significant results. For example, Zekarias, S. (2016); John (2016); Jugurnath et al. (2016); Bhasin and Gupta (2017); Sunde (2016); Agarwal (2015) found significant positive effect of FDI on economic growth for East African Countries, Nigeria, Sub-Saharan Africans (SSA), India, Namibia and BRICS countries respectively. However, no significant results are found between FDI and economic growth by Garang, A. et al. (2018) for Uganda.

Liebscher et al. (2007) empirically investigated the impact of FDI on economic growth and find out the following results. First, FDI brings innovations such as new technologies, new products, new management practices and new skills. Second, the introductions of modern management skills

and production techniques into the host country force domestic producers and investors to compete with the source country investors. In such processes, domestic incumbents become more productive and adopt a better ways of doing business. Third, foreign investors can also create forward and backward linkages both to suppliers and customers in the host country. In relation to this, Makki and Somwaru (2004) conclude that FDI is a mechanism through which advanced technology is transferred to developing countries and promote domestic investment. FDI also increase Total Factor Productivity (TFP), local R & D potential. Iwasaki and Suganuma (2015). Additionally, positive but weak effect of FDI on productivity growth has been found by Malikane & Chitambara (2017).

However, Reyes (2017); Iwasaki and Suganuma (2015) pointed out that the success of FDI spillover can only be guaranteed if domestic firms have the necessary absorptive capacity to recognize the importance of information and management skills from foreign investors, to assimilate it and apply it to their production process.

For individual businesses, FDI raises questions of ownership and location considerations. For the public, FDI raises fears of unemployment and loss of independence. For policy makers, FDI and the internationalization of business are accompanied by the challenging task of increasing the attractiveness of their country as a business location and providing the ground for positive spillovers, while at the same time responding to the fears of the public. And for international institutions there is a sheer endless list of tasks, from publishing comprehensive data on FDI and providing funds and investment insurance, to promoting an ongoing dialogue between the major nations in order to avoid the revival of protectionist and beggar-thy-neighbor policies. Leibsher and et al. (2007)

The growing importance of FDI to a given country economy has initiated many scholars to study determinants of FDI in order to find out key variables that could significantly affect it and to forward policy measures accordingly. The problems with the current body of knowledge concerning FDI determinants to the developing countries are the significant variables that affect FDI inflow in one part of the world might not be significant on the other parts of the world. Additionally, time is also an important variable; the same FDI determinant variables for a given period of time might not bring the same impact in subsequent periods.

There are a number of factors that determine FDI volume and distribution to developing countries. FDI inflows can be favored by natural resources into SSA countries (Asiedu 2002), liberalization of capital (Asiedu and Lien 2003) and democracy (Asiedu and Lien 2008). Additionally, real GDP growth rate, trade openness, and infrastructure development are also among the major FDI inflow determinants (Brhane, 2015; Haile and Assefa 2006)

Though there are enormous literature in the area of FDI determinants in developing world, their numbers are relatively few in Ethiopia (eg. Haile and Assefa, 2006; Menamo, 2014; Workneh, 2015; Brhane, 2015; Aga, 2016; Deyu, 2016; Fantaye, 2016). Therefore, the study tend to contribute to the existing literature on the determinants of inward FDI in East Africa country (i.e. Ethiopia) by providing new evidence to the current body of knowledge of FDI. Besides, this paper has adopted a newly developed model, a bound testing approach to co-integration or Autoregressive Distribute Lag model (ARDL) constructed by Pesaran et al. (2001).

1.3. Objectives of the Study

The general objectives of the paper is to analyze the determinants of FDI inflow to Ethiopia in the long run and the followings are the specific objectives;

1. To find out how market size proxied by gross domestic product per capita affect foreign direct investment (FDI) in Ethiopia
2. To assess the effect of macroeconomic instability measure by increase in consumer price index on foreign direct investment (FDI) attraction to Ethiopia
3. To study the effect of exchange rate depreciation on foreign direct investment (FDI)
4. To analyze how public debt affect FDI attraction to Ethiopia
5. To investigate how the development of infrastructure affect FDI inflow to the country
6. To assess the effect of human capital development on FDI inflow to Ethiopia

1.4. Research Hypothesis

On the basis of the above research questions the following hypothesis have been formulated.

Ha1: Market size relate to FDI inflows to Ethiopia

Ha2: macroeconomic instability measured by inflation affect FDI inflows to Ethiopia

Ha3: Exchange rate depreciation attract FDI to the country

Ha4: Public debt has relationship to FDI inflows to Ethiopia

Ha5: Infrastructure development has an effect to FDI attraction to Ethiopia

Ha6: Human capital development affect FDI inflows to Ethiopia

1.5. Significance of the Study

Studying factors that determine the flow of FDI in Ethiopia is important to understand and know which of them are significant so as to act upon them accordingly. I believe that studying the determinants of FDI will be benefiting to academicians, foreign investors and policy makers.

For the academicians this study would be beneficial because it serves as empirical literature review to argue for or against it which can be used to strengthen future findings.

Here, the very motives of home country investment in to the host country is generations of profits; the study will help investors to know and understand the status quo of investment situations and take profitable investment actions.

For policy makers the study will be of paramount use to identify key factors that significantly affect FDI and take actions accordingly to promote FDI attraction into Ethiopia.

1.6. Scope of the Study

The focus of the study is to analyze the determinants of foreign direct investment inflow to Ethiopia for the period 1992-2017. The choice of the study is limited by the availability of data; particularly the data on FDI started to be reported after the liberalizations of the economy upon the downfall of the Derg regime, the late government.

1.7. Limitations of the Study

The study is solely limited to secondary data which is collected in another context and in turn may lead to information which is not updated and inaccurate in some case.

1.8. Organization of the Study

The study is organized as follows: chapter one is about introduction and background of the study, chapter two describes the related literature review, chapter three discusses overview of economic performance and FDI in Ethiopia. Methodology and data will be discussed on chapter four, chapter five explains result and discussion. And finally conclusion and policy recommendations are presented in chapter six.

CHAPTER TWO

Literature Review

2.1. Introduction

There are enormous literatures in the area of FDI determinants that makes it possible to have diverse knowledge and understanding of them. However, to some extent it makes it difficult to choose which determinants are best to the situation at hand. Reviewing can be made in two ways; from what theories say, theoretical literature review and from the evidence and assessment in the real world, empirical literature review.

2.2. What is Foreign Direct Investment?

Moosa (2002 p. 1) defines FDI as "the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country)."

International Monetary Fund (IMF 1993) defines FDI as "an investment made to acquire lasting interest in an enterprise operating outside the economy of the investor." Foreign Direct Investment represent movement of capitals, technologies, management and marketing expertise from home/foreign country to host countries.

According to Organization for Economic Co-operation and Development (OECD 2008 p. 48) "Foreign direct investment reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor." [1]

Here, direct investment means the relationship between the investor and the enterprise and all subsequent capital transactions between them and among affiliated enterprises. Maitena (2003).

[1] The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. According to OECD an ownership of 10% voting power is assumed to be an evidence of such long term relationship between the direct investor and an investment enterprise)

2.3. History of Foreign Direct Investment

The history of FDI stated here is taken from Moosa (2002) and described as follows.

In the nineteen century foreign investments was prominent, but it took the form of lending by Britain to finance economic development in other countries as well as the ownership of financial assets. In the interwar period of twenties centuries FDI declined, but direct investment rose to about a quarter of the total. Another important development that took place in the interwar period was that Britain lost its status as the major world creditor, and the USA emerged as the major economic and financial power.

In the post Second World War period, FDI started to grow, for two reasons. The first was technological-the improvement in transport and communications which makes control possible from distance. The second reason was the need of European countries and Japan for US capital to finance reconstruction and following the damage inflicted by the war. Moreover, there were some US tax laws that favored FDI. By the 1960s, all these factors were weakening to the extent that they gave rise to a reversal of the trend towards growth in FDI. First, various host countries started to show resistance to the US ownership and control of local industry, which led to a slowdown of outflow from the USA, and leading to a decline in the net outflow from the USA. The 1970s witnessed lower FDI flows, but Britain emerged as a major player in this game as a result of North Sea oil surpluses and the abolition of foreign exchange controls in 1979.

The 1980s witnessed two major changes and saw a surge in FDI. The first change was that the USA became a net debtor country and a major recipient of FDI with a negative net international investment position. One of the reasons for this development was the low saving rate in the US economy, making it impossible to finance the widening budget deficit by resorting to the domestic capital market, and giving rise to the need for foreign capital, which came primarily from Japan and Germany. Another reason was the restrictive trade policy adopted by the USA. The other major change in the 1980s was the emergence of Japan as a major supplier of FDI to the USA and Europe. Motivated by the desire to reduce labor costs, Japan direct investment also expanded in South East Asia.

The surge in FDI in the 1980s is attributed to the globalization of business. Moreover, it is argued that FDI benefits both MNCs and host country, and this is why there has been tolerance towards

FDI. Another reason for the surge in FDI is the increase in FDI inflows to the USA as a result of the depreciation of the US dollar in the second half or the 1980s. The total flows of FDI from industrial countries more than quadrupled between 1984 and 1990.

In the period 1990-92, FDI flows fell as growth in industrial countries slowed, but a strong rebound subsequently took place. This rebound is attribute to three reasons: (i) FDI was no longer confined to large firms, as an increasing number of smaller firms became multinational; (ii) the sectoral diversity of FDI broadened, with the share of the service sector rising sharply; and (iii) the number of countries that were outward investors or hosts of FDI rose considerably.

Moreover, the 1990s brought considerable improvement in the investment climate, triggered in part by the recognition of the benefits of FDI. The change in attitude, in turn, led to a removal of direct obstacles to FDI and to an increase in the use of FDI incentives. Continued removal of domestic impediments through deregulation and privatization was also widespread.

In the current few years the development of digital technology has called for the change in FDI pattern of the world. According to UNCTAD (2017) the adoption of digital technology has the potential to transform the international operations of MNEs. For example, the number of top hundred tech companies between the years 2010-15 has increased by more than double. Digital technology includes internet plat form, ecommerce and digital content firms. The importance of digital technology to developing world is less directly visible in terms of job creations and investment but indirectly to the development of digital technology.

2.4. Forms of FDI

The followings are modes of FDI in which MNEs are operating in host countries.

Greenfield FDI

In green field investment, a parent company starts a new venture in a foreign country by constructing new operational facilities and acquiring new fixed assets.

Moreover, it may also include all financial transfers from a multinational's headquarters to its subsidiary that may take the form of equity or loan financing. In relation to this, there is also a brownfield FDI.[2]

Merger and Acquisition (M&A)

Most often these two words are used together assumed to have the same meaning but they are different. In case of Merger, two firms from different countries combine their assets to establish a new legal entity. Whereas, in Acquisition foreign firm control the assets of local firm and the latter become the affiliates of the former.

Joint ventures

An investment jointly owned and operated by two or more firms. Most firms enters into foreign market through joint ventures with firms that are already in operation in those markets. This will allow firms to jointly utilize their specific comparative advantages.

2.5. Theories of FDI

The following section discusses theories related to FDI inflows. Theories can be categorized into two sections. First section focuses on literature assuming perfect competitions and the second part explains theories based on imperfect competitions.

2.5.1. Theories of FDI Assuming Perfect Competitions

2.5.1.1. Capital Arbitrage Theory of FDI

This theory was formulated by relaxing the neoclassical factor immobility and argued that the difference in capital return among countries causes FDI flows. The core assumption in this regard is the responsiveness of factors of production to international factor price differentials. Capital

[2] Brownfield FDI is an investment in which foreign investors acquire the existing facility of the enterprise in the host country and upgrade the system. Its resources and capabilities are primarily provide by the investor, replacing of most resources and capabilities by the acquired firm.(Meyer and Estrin 2013)

flows from countries with low return to high return will finally works to equate rate of return between countries. The theory forwarded the assumptions of risk neutrality in investment decisions by countries and claims return differential as the reason to engage in FDI. (Corden, 1974 as sited by, Santos et al 2017).

The problem with this theory is it assumes FDI to move in a single direction to countries and fails to explain why a single country experiencing both inflow and outflow at the same time. MNEs might also be interested in market share maximization, in solving excessive trade restrictions than mere profit. Further, the differential return hypothesis fail to elaborate why firms prefer FDI rather than portfolio investment. Moosa (2002)

2.5.1.2. Portfolio Diversification Theory

This theory was an extension of the early hypothesis by Markowitz (1959) and takes considerations of investing across countries to minimize risk or, portfolio diversification. Here, the decision to invest is not only limited by expected return but also by risk. The risk aversion behavior of investors induce capital flow in a two way direction until the return differential disappears through arbitrages. However, it remains true that the diversification hypothesis, which takes risk into account, is superior to the differential rates of return hypothesis, for the following reasons. First, diversification hypothesis offers the main advantage that it can be generalized. Second, it offers a plausible explanation for cross-investment between countries and industries. Third, it considers risk, which constitutes a very important element in FDI decisions.

Like the differential rates of return hypothesis, the portfolio diversification hypothesis does not explain why MNEs are the greatest contributors to FDI, and why they prefer FDI to portfolio investment. Moosa (2002)

2.5.1.3. The Market Size Hypothesis

According to market size hypothesis larger market size having a better prospect for growth, increasing degree of development are the most important factors that investors consider in investing in a host countries. As soon as the size of the market of a particular country has grown to a level warranting the exploitation of economies of scale, the country becomes a potential target for FDI inflows. Balassa (1966) as sited by Moosa (2002) pointed out that a sufficiently large market allows for the specialization of the factors of production, and consequently the achievement

of cost minimization. FDI to the host countries is the functions of market size of receiving countries. [Wei and Liu, (2001); Chakrabarti (2001)].

2.5.2. Theories of FDI Assuming Imperfect Market

2.5.2.1. The Industrial Organization Theory

Hymer (1976) developed the industrial organization theory that explains why firms engage in FDI. And this theory argues that the firm to operate in foreign country should have some firm specific advantages such as capital, management capabilities, technology, marketing, access to raw materials, economies of scales and the like. While this theory elaborates why firm operate in foreign country, it fails to explain why they prefer FDI to exports.

Another industrial organization approach to the theory of FDI is based on models of 'oligopolistic competition' and stresses that the advantages that enable a firm to attain a large size in its domestic market facilitate the expansion of its foreign subsidiaries as sited by Du Pont, (2000) in Caves, (1974). This approach emphasizes that once a firm has achieved a superior growth rate, it has a compulsion or incentive to maintain the rapid growth of sales and profits. For an extended period, the growth rate for one or several firms within an industry is higher than that for the industry as a whole — the implication being that some firms with below-average growth rates will leave the industry. As some firms exit, the surviving firms realize a growth rate higher than that of the industry because they take over part or all of the market share of the firms that leave.

2.5.2.2. Vernon's product life cycle theory

This theory was developed by (Vernon 1966) and proposes how US firms are starting to operate and expand their production abroad. The product life cycle was divided into four stages namely the pioneer, growth, maturity and declining stages. Once, consumption is expanded in the home country and demand is created for such products in foreign markets, investors of home countries start to look for both developed and developing countries to expand their operations. The theory was explained by Vernon as follow:

Location of new product: According to Vernon the home markets[3] are characterized by high income consumers and high labor costs that derive applications of knowledge and scientific

[3] Here home market signify US market

inquiries by entrepreneurs to respond to the markets by developing a new products. In this case, producers are interested to come up with a product that addresses high income consumers' need and labor saving or capital intensive products. It is the home producers which have the first chance of scanning and serving the home market. Therefore, the location of the new products will be at home. However, location doesn't necessarily be closer to the market as long as the costs of producing such products are relatively cheaper in the host country than home.

The Maturing product: At this stages of product development the market demand of the product expands and calls for some degree of standardization by producers at home countries. But, they still works on product differentiation so as to withstand with the existing competitors. Efforts of firms to achieve some set of standardization bring up economies of scales. If the product is of high income elasticity, its demand in foreign countries will increases as well. At this particular point, home country's producers starts to think of operating abroad. As long as, the average production costs of producing in the host countries is lower than the marginal cost of producing at home country and the transportation costs of exporting, investment can take place abroad.

Standardizations of the product: At the advanced stages of standardizations of the product, investors may also consider making investment in less developed countries for some products. But, the location decision would be based primarily on a low cost labor in the developing countries even if other factors are left for empirical analysis. Less developed countries are considered because they are assumed to operate at the initial stages of production and have high demand for labor to produce a given output. By investing in the host countries of less developed nations, home country producers are interested to import it to their country although there are some case of serving the demand of local markets.

2.5.2.3. Internalization Theory

This theory was developed by Coase (1937) who argued that marketing costs that arises from producing home and exporting can be eliminated by forming firm in host country. The very reason for internalization is the existence of externalities in product and factor markets. Internalization avoids time lags, bargaining and buyer uncertainty due to market imperfection.

The basic hypothesis of this theory is that multinational hierarchies represent an alternative mechanism for arranging value-added activities across national boundaries to that of the market,

and that firms are likely to engage in FDI whenever they perceive that the net benefits of other joint ownership of domestic and foreign activities, and the transactions arising from them, are likely to exceed those offered by external trading relationships. The core prediction of the internalization theory is that, given a particular distribution of factor endowments, MNE activity will be positively related to the costs of organizing cross-border markets in intermediate products. Du Pont (2000).

2.5.2.4. Location Theory

According to this theory, immobility of factors such as labor and natural resources cause MNEs to engage in FDI. It is this mobility that create variation in cost of production. For example, most developing countries tend to attract FDI due to the presence of low wage in their economy. Moosa (2002)

2.5.2.5. Eclectic Theory[4]

This theory was originally developed by Dunning (1977) and has been improved consecutively to incorporate the existing economic and political situations that possibly affect activities of Multi-National Enterprises (MNEs). The theory tries to investigate how allocations of resources and exchanges of goods and services are taken place among countries of the world, though it has some limitations.

The analysis of the theory uses an integrative approaches to international involvements of the MNEs on the basis of ownership-specific advantages of the enterprises and location-specific advantages of the country as well as how such enterprise could internalize their ability to their advantages.

Dunning (2000) explains the OLI (Ownership, location and Internalization theory) or popularly called the Eclectic paradigm as follow:

[4] This theory is not as such new but rather a comprehensive one which combines the previous industrial organizations theory, internalization theory and location theory together to better explain the reasons of MNEs foreign operations.

Ownership advantages: This sub paradigm asserts that the greater the competitive advantages of the home country's enterprise as compared to the host country's enterprise, the more they operate in FDI.

Location advantages: This sub paradigm states that the more the immobile the factors or resource endowments that can be used in combination with the firm specific ownership advantages are in foreign than domestic country, the more they use their competitive advantages by engaging in FDI.

Internalization advantages: this sub paradigm avers the alternative ways of creating and exploiting firm's ownership specific advantages given location specific advantages.

There are generally four types of FDI in which a MNEs can operate for according to Dunning and Lundan (2008)

Natural-resource seeking FDI

Investing firms' motive here is to exploit resources of high quality and relatively lower costs in the host country than home country.

There are three types of resource seekers; first, primary resources seekers that seek physical resources such as oil, minerals, coals and gases, metals and agricultural products. Second, those seeking supplies of cheap skilled and semi-skilled labor forces. Third, those seeking technological capabilities, management and organizational skills.

Market-seeking FDI

A type of FDI to supply goods and services to host countries or some nearby neighboring countries. Most often this type of FDI occurs to substitute exports due to trade restrictive policies in the home country, or increase in demand in the host countries which justify local productions.

Market seeking investment can also take place to maintain and protect the existing market or to exploit and operate the new markets. Firms seeking potential market in the host countries consider market size and per capita income, market growth, country specific consumer preferences, structure of the markets, psychic distance and access to regional and global markets

Efficiency-seeking FDI

The motivation of efficiency seeking FDI is to guarantee the structure of established resource-based or market-seeking investment so that an investing company can benefit from the common

operations of geographically distributed activities. These benefits could be essentially those of the economies of scale, economic of scope and of risk diversification. They stem from cross-border product or process specialization, the learning experiences that result from producing in different cultures, and the opportunities for arbitraging cost and price differentials across the exchanges. The intention of the efficiency-seeking MNE is to take advantage of different factor endowments, cultures, institutional arrangements, demand patterns, economic policies and market structures, by concentrating production in a limited number of locations to supply multiple markets.

Strategic assets-seeking FDI

The fourth group of MNEs comprise those which engage in FDI, usually by acquiring the assets of foreign corporations, to promote their long-term strategic objectives – especially that of sustaining or advancing their global competitiveness. The investing firms involved include both established MNEs pursuing an integrated global or regional strategy, and first-time foreign direct investors seeking to access or to buy some kind of competitive strength in an unfamiliar market. The motive for strategic asset-seeking investment is less to exploit specific cost or marketing advantages over their competitors (although these may sometimes be important) and more to augment the acquiring firm's global portfolio of physical assets and human competences, which they perceive will either sustain or strengthen their ownership-specific advantages or weaken those of their competitors. Increasingly, too, strategic and rationalized FDI are going hand in hand as firms restructure their assets to meet their objectives. Importantly, asset-seeking investment is also increasingly undertaken by MNEs from emerging economies. Competition policy, technological, managerial, relational as well as Physical infrastructure such as ports, roads, power, and telecommunications are the main drivers for investment to host countries.

2.6. Empirical Literature Review

In the empirical literature there are many determinant variables for FDI inflows to host countries. The most important are GDP growth rate, market size, trade openness, ease of trading activities, natural resources, macroeconomic variables such as inflations and interest rates. Additionally infrastructure, human capital, domestic investments, domestic credits, public debt, levels of corruption in home and host countries, and level of democracy are founded to be determinants of FDI. The strength of their significance depends on countries specific situations and levels of their development and geographical locations to mention few. Some of the variables are common to

most countries as shown by studies. Still some of the factors produce significant impact on some economy than others, in one period than other. I made review of the following empirical works as they are in one way or the other linked to FDI determinants to Ethiopian case.

By applying co-integrated VAR time series approach, Berhane (2015) analyze the determinants of FDI in Ethiopia for the period 1974/75-2014/15. The result indicated that in the long run infrastructure development, the domestic market size, human capital, trade openness and external debt are found to be positively and significantly related with FDI while inflation is negatively related to it. Whereas, in the short run, gross fixed capital formation and inflation are negatively and significantly affect FDI, while GDP growth rate is positively and significantly affect FDI.

Economic growth measured by GDP growth rate is the most important and significant determinants of FDI, particularly for market seeking FDI. The better the prospect of economic growth in a given country, the better will be the attraction of FDI. Asiedu (2002).

Mijiyawa (2015) provided an empirical investigations on what drives FDI in Africa for the period between 1970-2009; using a five year panel data set for maximum number of African countries with the available data. And forwarded that market size/larger countries, trade openness, political stability and return on investment have a significant and positive effect on FDI. Additionally, he also finds that lagged FDI inflow has a positive and significant effect on FDI inflow which suggested that countries that attract FDI currently will continue to attract in the future.

Yasmin et al. (2003) using a panel data model and by applying three approaches; common intercept model, random effect model and fixed effect model made analysis of determinants of FDI for 15 developing countries and found that the Gross Domestic Product (GDP) per capita as the positive and significant determinants of FDI flow to the low income group countries in the study group. Similar result was also found by Wei and Liu, (2001) Amal (2016), Ang (2008), Deyu (2016) and, Fentaye, (2016).

Many studies on the determinants of FDI have shown that trade openness measured by the ratio of the sum of export and import to GDP as having a significant impact on FDI inflow. For example Asiedu (2002), concluded that openness has a significant positive impact on FDI attraction. These result was substantiated by Yasmin et al. (2003), Ang (2008), Haile and Assefa (2006), Menamo (2014), and Deyu (2016). Similarly, a study made by Cantah et al. (2016) by using dynamic panel

data estimation techniques in 27 Sub Saharan African (SSA) countries revealed that trade openness measured by the ease of trading activities and trade tariffs have an impact on FDI. Accordingly, countries improving their trade environment such as reducing the number of days to complete import and export, the paper work associated with trade and tariffs tend to attract more FDI. The interesting result in this study is that the impact of trade openness proxies (ease of trading activities and trade tariffs) is four times larger than the traditional openness measure (the ratio of sum of export plus import to GDP).

Using Vector Error Correction model with co-integration, Deyu (2016) studied determinants of FDI in Ethiopia and the results showed that the increase in domestic investment[5] have negative impact on FDI inflow to the country in the long run while the effect is of insignificant and positive in the short run. The availability of domestic credit to foreign investors has been linked with FDI inflow. Although it is of insignificant determinants in the same study.

Amal (2016) studied FDI in Brazil by applying time series technique for the period 1961-2013 and forwarded that macro-economic variables such as inflation have insignificant effect on FDI though it has the expected negative sign. The same statistically insignificant result was also found by Cleve et al., (2015). However, macroeconomic variable, inflation have a significant negative impact on FDI inflow to Ethiopia. Haile and Assefa (2006), Fantaye (2016).

The cheaper the exchange rates of the host country the cheaper it is for MNEs to acquire local firms. Exchange rate devaluation was also founded to be positively linked with FDI flow to Brazil Amal (2016). In relation to this, Ang (2008) and Deyu (2016), came up with the same study result that exchange rate devaluation has a positive and significant influence on FDI attraction.

The empirical analysis has been done using a secondary data from 1981 to 2007 by Azam and Khan (2011) to estimate the impact of public debt on FDI for the Pakistan economy. By applying simple log linear regression model and the method of Least Squares, they found statistically significant and negative impact of public debt on FDI inflows. By employing a Vector Error Correction Model, the same result was found by Oche et al. (2016) for South Africa in the long run.

[5] Domestic investment here include both private and public investment

The better and well developed an infrastructure of a given country, the better the prospect to attract FDI. Because without such input factors like good transport, electricity, telephone and internet it is very difficult to conduct an investment in a host countries. Haile and Assefa (2006); Fantaye (2016) found that poor infrastructure in Ethiopia discourages FDI attraction. Their finding was also confirmed by Ang (2008) that good infrastructure as proxied by government spending on transport and communication tend to attract FDI in Malaysia. But, Workneh (2015) came to conclude that no clear relationship was found concerning the impact of infrastructure on FDI in Ethiopia, whereas Asiedu (2002) found insignificant results for SSA countries.

Institutional factors are also important for FDI attractions to the country as shown by studies of some researchers. For example, study made by Asiedu and Lien (2010) by applying a linear dynamic panel data model for 112 developing countries over the period 1982-2007 assessed the impact of level of democracy on FDI and brought up the following results; The effect of democracy on FDI depends on the importance of natural resources in the host country's exports. Democracy facilitates FDI in countries where the share of natural resources in total exports is low, but has a negative effect on FDI in countries where exports are dominated by natural resources. This result has important implications for countries in Sub-Saharan Africa since these countries have weak democracies, and their exports are dominated by primary commodities. Abdul Karim, et al. (2011) using a bound testing approach to co-integration has found that institutional variables such as government stability, bureaucracy and corruptions are important for FDI attractions to Malaysia economy.

By controlling other major typical determinants of FDI and by applying fixed effect panel estimation for 96 developing countries over the period 1970-2000, Asiedu and Lien (2003) investigated the effects of liberalizations of capital control on FDI. Their result revealed that none of capital control policy such as the existence of multiple exchange rate regimes, restriction on capital account and repatriations of export proceeds had significant impact on FDI inflows to Africa countries.

By developing a ARDL model, Mugableh (2015) made the time series analysis of determinants of FDI in Malaysia for the period 1984-2009 and conclude that growth in GDP, exchange rate, open economy and broadest money supply positively affect FDI while inflation discourage it in the long run.

Bekhet, and Al-Smadi (2015), using bound testing approach to co-integration analyze both the short run and long run association between FDI and its determinants for Jordanian economy for the period (1978-2012). Their findings indicate that there are long run relationship among FDI, Gross Domestic Product, Consumer price index, economic openness, financial development indicators such as money supply (M2) and stock market index. Whereas, Consumer Price index, economic openness, and GDP significantly affect FDI in the short run. Using the same bound testing approach or ARDL model Mohammadvandnahidi, et al. (2012) studied the long run relationship between FDI and its determinants for the period (1975-2007). Accordingly, their findings concluded that exchange rate, infrastructure and openness has a long run effect on FDI attractions.

Similarly, by adopting the same bound testing approach of co-integration, Dembo & Nyambe (2016) investigate the short run and long run causal relationship between FDI, GDP, inflation, population growth and exchange rate between the years 1984 to 2014. In the short run, GDP and inflation and currency depreciation has a positive effect on FDI. And in the long run, inflation and GDP has a positive impact on FDI attraction whereas currency depreciation and population growth has negatively affected FDI inflow to Namibian economy.

2.7. Research Gap

From the literature review made, there are many economic, social and political determinants of FDI inflow to countries in the world. Though there are many determining factors for FDI attraction so far investigated by different researchers, most of them have exhibited different and conflicting results which makes it difficult to make a conclusive remark and policy recommendation. In Ethiopia there are various studies on the determinants of FDI inflows, particularly of macroeconomic variables. But, only few of them make a distinction of short run and long run relationship between FDI and its determinants. Since macroeconomic variables are less responsive in the short run as suggested by economic theories, the study will contribute to the current body of knowledge by incorporating the long run impacts of selected variables on FDI inflows to Ethiopia.

Additionally, the study will also be important in terms of methodology, because it is constructed based on the recently developed ARDL bounds testing approach to co-integrations; in which none of the paper on FDI determinants to Ethiopia has so far adopted as per my knowledge.

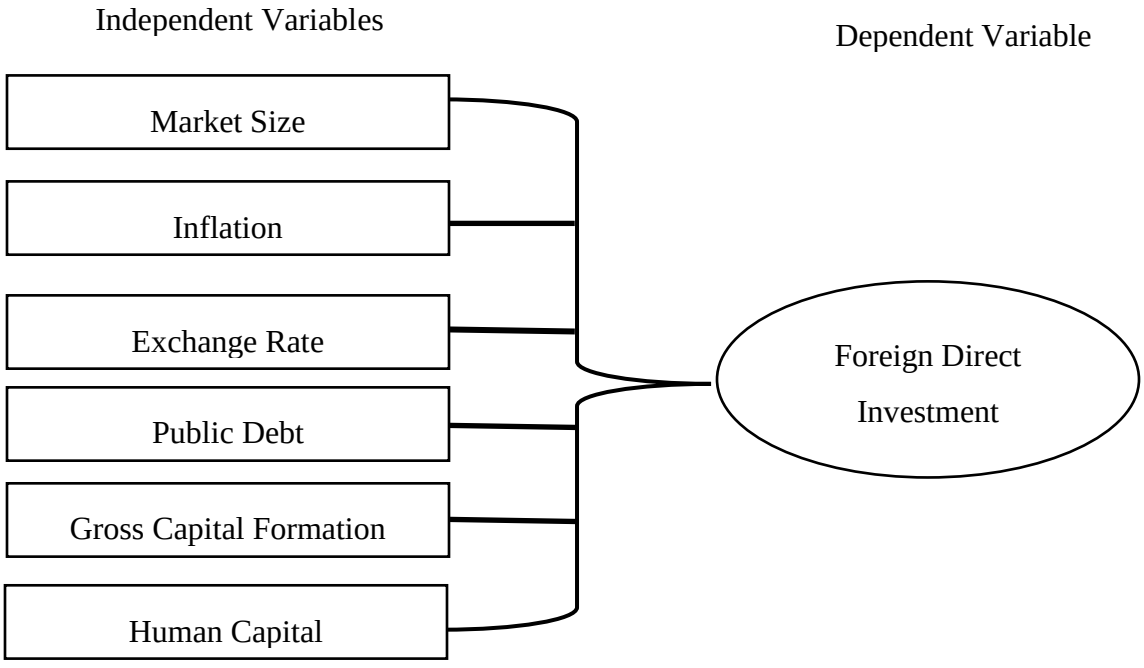
2.8. Conceptual Framework

Conceptual framework is analytical tool with different form and context. It refers to specific or narrower ideas a researcher utilizes in his/her study. It is a researcher's own constructed model that s/he uses to explain the relationship that exists between the main variables in his/her study. It can also be an adaptation of a model in an existing theory which a researcher adapts to suit his/her research purpose. Adom, et al. (2018).

After reviewing both theoretical and empirical literatures, the following conceptual framework has been Prepared.

Figure 1 Conceptual Framework of the study

Source: Own computation based on theoretical and empirical literature review



CHAPTER THREE

Overview of Current Macroeconomic Performance and FDI in Ethiopia

3.1. Overview of the Ethiopian Macroeconomic Performance

In Ethiopia real GDP growth slowed in 2017/18, due partly to civil unrest, political uncertainty, and policy adjustments that involved fiscal consolidation to stabilize the public debt. On the supply side, GDP growth was driven by services (8.8% growth) and industry (12.2%), facilitated by the development of energy, industrial parks, and transport infrastructure. On the demand side, private consumption and investment continued to drive growth, along with the government's stable spending on public infrastructure and strong foreign direct investment inflows.

With a public debt–to-GDP ratio of 61.8% at the end of June 2018, Ethiopia remains at high risk of debt distress, according to a 2018 debt sustainability analysis. A tax transformation program is under way to strengthen tax policy and administrative efficiency. A reduced trade deficit and strong growth in remittances helped improve the current account deficit from 8.1% of GDP in 2016/17 to 6.0% in 2017/18. Gross official reserves remained low, at 2.5 months of imports in 2016/17 and 2.1 months in 2017/18. African Development Bank Group (2019)

In Ethiopia, the gap between domestic investment and savings has remained wide due to the low levels of income and domestic savings. From table 1, between 2013/14 and 2018/19, gross domestic investment as a proportion of GDP is averaged 37.8, while the average gross domestic savings remained low at 21%. Gross domestic saving fall short of financing the high level of gross domestic investment.

This saving gap can be filled by loans and development assistance from multilateral agencies such as the World Bank or by private foreign investment. Though, this sources of financing somehow increasing from the period 2013/14-2017/18, it has declined to 31.9% for the period 2018/19.

Table 1 Selected Macroeconomic Variables

Year	GDP at constant prices	Gross domestic savings (% of GDP)	Gross domestic investment (% of GDP)	Public debt (% of GDP)	External debt (% of GDP)
2013/14	10.3	20.5	38	46.8	25.8
2014/15	10.4	21.9	39.4	54	30.3
2015/16	8	22.4	38.5	55.4	30.7
2016/17	9	20.4	36.6	56.9	30.4
2017/18	8.5	20.4	36.4	59	33.1
2018/19	8.3	21.5	37.7	58.1	26.1
source: IMF, country report 2018					

Given this fact, FDI is the most important alternative source of foreign capital for Ethiopia. FDI as a source of capital and other business know-how is therefore desperately essential to finance growth and development.

Real GDP growth is projected to be 8.3% in 2018/19 and 2019/20, supported by industry and service sector expansion and agricultural sector recovery. Industrial growth will be boosted by ongoing industrial zone development, and agriculture will benefit from investments in fertilizer, irrigation, and improved seeds. African Development Bank Group (2019)

It is the Government of Ethiopia's (GoE) strategy that Ethiopia's economy should grow at an annual growth rate of more than 10 percent for no less than two decades if the country is to attain the projected middle income country status by the year 2025. Meanwhile, Ethiopia's gross domestic savings as proportion of GDP has been historically quite low. Since it will be difficult to achieve such a growth trajectory without mobilizing domestic savings, the GoE has initiated a series of measures under GTP II with a view to raising the rate of private investment in GDP from around 17 percent 2013/14 to more than 20 percent in the coming years. World Bank Global Economic Prospect (2017).

Public investment will remain moderate, reflecting efforts to stabilize the public debt. The impending privatization of the state-owned railway, maritime, air transport, logistics, electricity, and telecommunications sectors is expected to boost private investment and mitigate the reduction in public spending. Ethiopia's rising incomes, 94 million people, emerging consumer goods market, and increasing urbanization provide economic opportunities. African Development Bank Group (2019)

3.2. FDI in Ethiopia

After the fall of the Derg regime and the coming to the power of EPRDF government to Ethiopia, there have been many economic reforms that started to encourage FDI attraction to the country. Ethiopia has been trying to attract foreign investments in many economic sectors by taking the following measures;

- 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.

Foreign investment has certainly been growing in Ethiopia but it began with smaller amounts. In the first half of the 1990s, FDI inflows averaged $8.2 million a year or $1.50 for every $1,000 of GDP. In the second half of the decade, they expanded to an annual average of $155 million. FDI then declined sharply in 2001 and picked up again in 2002, when it was $75 million. The EIC's preliminary data for 2003 suggest an upsurge. According to the EIC's figures for (approved, not necessarily actual) FDI over the past decade, manufacturing has been the main sector to attract investment, followed by agriculture and forestry. Ethiopia's FDI performance has hardly been stellar in the regional context – all its neighbors have done better, with the exception of Kenya. On the other hand, the decline of 2001 was no doubt affected by the conflict with Eritrea, which lasted

from 1998 to 2000. With the restoration of peace and the speeding up of improvements in the investor's environment, one may reasonably expect an upward trend in FDI.

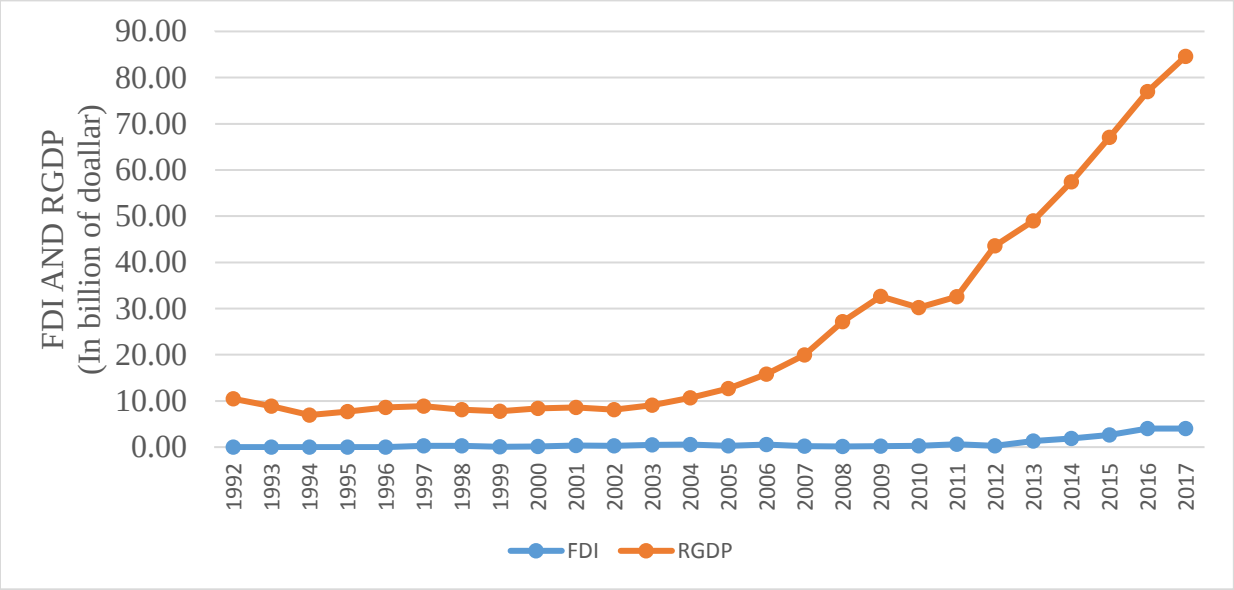


Figure 2. FDI inflows and Real GDP of Ethiopia for the period (1992-2017). Database available at World Bank (WB), World Development Indicator (WDI), 2018.

Ethiopia has seen a steady growth in FDI flows in the last several years, only less than 0.5 billion dollar. It was only starting from the year 2012 that the country starts to attract more than 1 Billion dollar worth of FDI and has registered remarkable FDI inflows since then. For example, with a record growth of 46 percent FDI flow, the country has become one of the largest recipients of FDI in the continent and the second largest LDC host economy in the year 2016. UNCTAD (2017)

Ethiopia emerged as the 8th largest recipient of FDI projects in Africa, up from 14th position in 2013. FDI flows reached record highs in 2015 and 2016, with respectively USD 3.3 and USD 4.2 billion, compared to the USD 344 million annual average for 2005-2007 and accounting for more than 11.1% and 8.8% of Gross Fixed Capital formation in 2014 and 2015 respectively. In nominal terms, FDI inflows to Ethiopia more than quadrupled, over the past five years. (EIC 2017). Ethiopia in the year 2017 had attracted USD 3.6 billion value of FDI and became the second largest recipient of FDI in Africa. UNCTAD (2018). Additionally, despite a 24% decline in investment, Ethiopia maintain its top rank in East Africa, with investments in petroleum refining, mineral extraction, real estate, manufacturing and renewable energy. UNCTAD (2019).

3.2.1. Industrial Parks in Promoting FDI in Ethiopia

According to EIC (2017), with the vision to make Ethiopia a leading manufacturing hub in Africa by 2025, the GOE places high focus on industrial park development and expansion. Investment laws of Ethiopia provide a wide-ranging incentives package for investments in priority sectors of high export potential, especially targeting industrial parks developers and enterprises.

The Industrial park has been established based on the principles of:

- Specialized Parks: enhancing economy of scale and efficiency through the development of specialized/clustered industrial parks;
- Export Promotion: government provision of industrial park incentives targeted at increased export performance and competitiveness;
- Sustainability: maintaining high environmental standards through the use of renewable energy and zero liquid discharge (ZLD) technology;
- Vertical Integration: enhancing forward and backward linkages in the economy; and
- Skills development and competitiveness: developing workers' skills for enterprise competitiveness.

The government of Ethiopia has taken the following tax and non –tax incentives to encourage investment attractions to Ethiopia both from domestic and foreign sources.

- Income tax exemption
- Customs duty exemption
- Ease of access to industrial park space at promotional rate
- One-stop shop service
- Customs facilitation
- Expedited visa procedure
- Guarantee against expropriation
- The right to own immovable property
- Guarantee for remittance of funds
- The right to open and operate foreign currency accounts

Moreover, Ethiopia has witnessed structural reforms for the last several years including privatization of state enterprises, liberalization of the trade and investment administration and

introduction of modern regulations and institutions, which have helped transform the Ethiopian economy into one of the most open economies in the East African countries.

CHAPTER FOUR

Source of Data, Empirical Model and Methodology

4.1. Source of Data

For this study a secondary data from various sources are used. Particularly, data on foreign direct investment, real GDP per capita and gross secondary education enrollment are taken from World Bank database (world development indicator), data on consumer price index, gross fixed capital formation and exchange rate are sourced from National Bank of Ethiopia (NBE), whereas data on public debt is adopted from International Monetary Fund (IMF), World Economic Outlook Database. Before using the data, their time series properties are investigated. Eviews 9 and Microfit 5.5 econometrics software package have been used for regression analysis.

4.2. Definitions of Variables

Foreign Direct Investment- according to World Bank, Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship. For the study, stock of FDI in dollar have been used.

The choice of independent variables are constrained by availability of data as it is the case for many time series data in developing countries. For example, data on real wage, trade policies, tax legislation, and corruption to mention few are not readily available for Ethiopia. To this end, the following independent variables are considered after review empirical literatures on the determinants of FDI inflows.

Market Size- larger market size having a better prospect for growth, increasing degree of development are the most important factors that investors consider in investing in a host countries. Larger market size enables foreign investors to use their ownership advantages to exploit economies of scales. Dunning and Lundan (2008). According to market size hypothesis FDI to the

host countries is the functions of market size of receiving countries. [Wei and Liu, (2001); Chakrabarti (2001);]

Gross domestic product per capita as a measure of market attractiveness of Ethiopia to foreign investors and it is expected that increase in GDP per capita will increase FDI inflow.

INFLATION RATE to measure macroeconomic instability. Inflation will reduce investor confidence in their operation in Ethiopia. A change in consumer price index (CPI) is used to measure inflation and expected to negatively affect FDI inflows to Ethiopia.

EXCHANGE RATE- The exchange rate between the host and home country is often used to measure the costs of production inputs, both local and foreign imported inputs. Thus, an increase in the exchange rate (a depreciation of the currency of the host country) is expected to have a positive effect on inward FDI in the host country.

PUBLIC DEBT: When debt is moderately accrued and wisely utilized, it fosters economic growth and welfare. However, excessive borrowing, overreliance and imprudence can lead to disastrous outcomes. Can result in financial ruin and bankruptcy for both individuals and firms. Not only high government debt can result in financial ruin but also it impedes the ability of a government to deliver necessary services to the people.

Foreign lending expands a country's resources, which lead to an increased output. Domestic lending tends to distribute the resources within the country with lower susceptibility to debt crisis. Consequently, a country's debt level is a key indicator to potential investors who are interested in the knowledge about the country's future ability to repay its debts. High debt levels, especially in low-income countries, tend to affect the investors' confidence, which directly affects both domestic and foreign investment. Government debt is used by investors to measure a country’s ability to make future payments on its debt, thus affecting the country borrowing costs and government bond yields. Alzahrani, (2018).

Annual net government debt data will be used and expected to be negatively linked to FDI attraction to Ethiopia in the long run.

INFRASTRUCTURE- the development of infrastructure such as road network, telecommunication, electricity and internet access will facilitate MNEs operation in a given host

countries. Gross fixed capital formations as a percent of GDP will be used as a proxy to measure of infrastructure development and the increase in capital formation is expected to promote FDI.

HUMAN CAPITAL- Large, efficient, and educated population is a requirement to attract FDI. Literature indicated that the availability of educated work force is a pull factor for MNEs foreign operations. In this age of digital and high tech era, educated labor is the requirement for the ease operations of various technology based machines. Human capital is measured by secondary education enrollment. This indictor is expected to be positively correlated with FDI.

Table 2 Variables, proxy used and expected sign

Variables	Proxy	Expected long run sign
Market size	Real GDP Per Capita	+
Macroeconomic instability	Consumer price index	-
Exchange rate	Birr to Dollar	+
Public Debt	Government Debt	-
Infrastructure	Gross Capital Formation as % of GDP	+
Human Capital	Gross Secondary education enrollment	+

4.3. Econometrics Model and Estimation Technique

After reviewing both theoretical and empirical literatures, market size, infrastructure, exchange rate, inflation, government debt and human capital are considered to be the determining factors for FDI attraction to Ethiopia for this particular study and analyzed whether there are long run relationship among such variables. All variables except gross fixed capital formation[6] are taken in the form of natural logarithm because one it is convenience for percentage interpretations and second to avoid problems of heteroscedasticity. Thus, economic model can be written as in the following linear specification form:

[6] Gross fixed capital formation is taken as a proportion to GDP so no need to transform it to natural logarithm

$$FDI_t = \beta_0 + \beta_1 GDPPC_t + \beta_2 CPI_t + \beta_3 EXRT_t + \beta_4 PD_t + \beta_5 GFCF_t + \beta_6 HK_t + \varepsilon_t \ldots\ldots (1)$$

Where,

FDI= net stock of FDI inflow

B_0= constant parameter

B_1- B_6= slope parameters

GDPPC=real GDP per capita

CPI= Consumer Price Index

EXRT= Exchange Rate

PD= Public Debt

GFCF= Gross Fixed Capital Formation as a percent of GDP

HK= Human Capital

t=time index

ε_t= Error term

The paper employs a bound testing approach to Autoregressive Distributed Lag (ARDL) model to study both short run and long run relationship between ***FDI*** and its determinants; ***GDPPC, CPI, EXRT, PD, GFCF,*** and **HK**. The model is appropriate for small sample of this kind. Additionally, unlike the Vector Auto Regressive (VAR) model which is strictly meant for integrated of order one series, the ARDL model can be applied to variables with integrated of order zero *I*(0) or order one *I*(1) or mutually con-integrated.[7] Nkoro and Kelvin (2016) pointed out that the ARDL approach doesn't need pretesting of variables for unit root as it is the case for standard co-integration procedures. Also, in applying the ARDL model there is no need of knowing the order of integration as the long as the variables in the model is not of *I*(2).

The estimation using ARDL method can be made in three steps Pesaran et al., (2001).

[7] I(o) implies variables are level stationary and I(1) means variables are stationary at their first difference

Step 1-determination of long run relationship between variables

The first step in ARDL model approach is test of co-integration to determine whether there is a long run relationship among variables. The ARDL (p, q) model for testing the co-integration can be specified in the following Unrestricted Error Correction Model (UECM) by letting each variables as endogenous and others as exogenous each time; [8]

$$\Delta Y_t = \alpha_{0i} + \sum_{i=1}^{p} \beta 1\, \Delta Y_{t-i} + \sum_{i=0}^{q} \beta 2\, \Delta X_{t-i} + \delta 1 Y_{t-i} + \delta 2 X_{t-i} + \varepsilon_{1t} \quad \ldots\ldots\ldots\ldots (2)$$

$$\Delta X_t = \alpha_{0i} + \sum_{i=1}^{p} \beta 1\, \Delta X_{t-i} + \sum_{i=0}^{q} \beta 2\, \Delta Y_{t-i} + \delta 1 X_{t-i} + \delta 2 Y_{t-i} + \varepsilon_{1t} \quad \ldots\ldots\ldots\ldots (3)$$

Where, p and q are the optimal lag length for the dependent and independent variables in order. βs are the short run dynamic coefficients, δs are long run relationship coefficients, Δ is the first difference operator, α_{0i} is the constant parameter, ε_{1t} is error term, that is assumed to independently and identically distributed (iid).

The coefficient of joint null hypothesis equals zero (no co-integration) is tested for all lagged level variables against the alternative (there is co-integration) by calculating the F-statistic (Wald statistic).

Ho:$\delta 1 = \delta 2 = 0$ $(no\ long\ run\ relationship\ exists)$

H1:$\delta 1 \neq \delta 2 \neq 0$ $(long\ run\ relationship\ exists)$

The approach apply F-statistics, though the asymptotic distribution is non-standard.[9] Here, two assumptions can be made. One, all variables are integrated of order zero *I*(0) or one *I*(1). This band allows to check whether the variables are stationary, integrated of order zero, one or a combination.

If the calculated F-statistic/Wald statistic value exceeds the upper bound, the null hypothesis of no co-integration will be rejected which implies that there is co-integrations among variables. But if the F-statistics value is lower than the lower bound, the researcher fail to reject the null hypothesis of no co-integration, implying there is no long run relationship among variables. A value between

[8] The model is developed following Nkoro and Kelvin (2016), ARDL co-integration technique; application and interpretation.

[9] Here, the usual critical value can't be used because the distribution is not normal. Rather Pesaran et al., (2001), developed the critical value for *I*(0) and *I*(1) bound that can be found from Pesaran et al., Table.

the bound indicates that it is impossible to make any conclusive relationship among variables. Here, the researcher need to know the order of integration by using unit root test of the variables.

Step 2- Estimation of long run estimates of the ARDL model

Once the existence of long run relationship between variables are confirmed, the second step is estimations of long run relationship between variables using ARDL estimation technique by choosing appropriate lag length for the model. Selection of the optimum lag length can be made by using proper model lag order selection criteria such as Akaike Information Criterion (AIC) Schwarz Bayesian Information Criterion (SBC) or Hannan-Quinn (HQ) Criterion. In this case, if the optimal lag order of the model is determined, then the co-integration relationship can be estimated.

Thus, the ARDL (p, q) model for long run equation can be:

$$Y_t = \alpha_{0i} + \sum_{i=1}^{p} \delta 1\, Y_{1t} + \sum_{i=1}^{q1} \delta 2\, X_{1t} + \sum_{i=0}^{q2} \delta 3\, X_{2t} + \sum_{i=0}^{q3} \delta 4\, X_{3t} + \sum_{i=0}^{q4} \delta 5\, X_{nt} + \varepsilon_{1t} \ldots. (4)$$

Here, Xs represent explanatory variables.

Step 3- Re-specification of the ARDL model into an Error Correction Model

The third and final step will be to estimate the short run dynamic parameter coefficients by using the error corrections model (ECM) related to the long run estimates.

The short run Error Correction Model (ECM) is specified as;

$$\Delta Y_t = \alpha_{0i} + \sum_{i=1}^{p} \beta 1\, \Delta Y_{1t} + \sum_{i=1}^{q1} \beta 2\, \Delta X_{1t} + \sum_{i=0}^{q2} \beta 3\, \Delta X_{2t} + \sum_{i=0}^{q3} \beta 4\, \Delta X_{3t} + \sum_{i=0}^{q4} \beta 5\, \Delta X_{nt} + \pi ECM_{t-1} + \varepsilon_{1t} \ldots\ldots. (5)$$

$\beta 1, \beta 2, \beta 3, \beta 4$ and $\beta 5$ are the short-run dynamic coefficients convergent to equilibrium, whereas π is the speed of adjustment to long-run equilibrium following a shock to the system.

CHAPTER FIVE

Results and Discussions

5.1. Descriptive Statistics and Correlation Matrix

The result of descriptive statistics and correlation matrix have been displayed in table 3. Descriptive statistics gives a presentation of the mean, median, maximum and minimum values of variables applied together with their standard deviations, skewness, kurtosis and Jarque-Berra in this study. An analysis of all the variables was obtained using Eviews software for the period of 26 years (1992 to 2017) on yearly basis.

LFDI had a mean of 8.28 with a standard deviation of 0.97. LGDPPC recorded a mean Of 2.36 with a standard deviation of 0.28. LCPI resulted to a mean of 1.45 with a standard deviation of 0.32. LEXRT resulted to a mean of 0.995 with a standard deviation of 0.23375. LPD has a mean of 10.99 with standard deviation of 0.45. GFCF was with the mean value of 0.30 and standard deviation of 0.067 while LHK had a mean of 5.95 and standard deviation of 0.28. The Jarque-Bera test reveal that $LGDPPC_t$, $LCPI_t$, $LEXRT_t$, LPD_t, $GFCF_t$ and LHK_t are normally distributed. Particularly, LGDPPCt has a t value of 2.8435, $LCPI_t$ has a t value of 3.4129, $LEXRT_t$ is 0.0825, LPD_t is with 4.0794, $GFCF_t$ has a t value of 2.87978 and LHK_t is with a t value of 2.7492

Evidence of strong correlation between $LFDI_t$ and its determinants; $LGDPPC_t$, $LCPI_t$, $LEXRT_t$, LPD_t, $GFCF_t$ and LHK_t was also found from the correlation matrix. The correlation matrix value of 0.515, 0.666, 0.868, 0.701, 0.748, and 0.735 were found between $LFDI_t$ and its determinants $LGDPPC_t$, $LCPI_t$, $LEXRT_t$, LPD_t, $GFCF_t$ and LHK_t

Table 3 Descriptive Statistics and Correlation Matrix results

Descriptive Statistics and Correlation Matrix results							
Source: Output of Eviews 9 econometrics software							
	LFDI	LGDPPC	LCPI	LEXRT	LPD	GFCF	LHK
Mean	8.281374	2.361116	1.45034	0.99565	10.9926	0.3026	5.95433
Median	8.434176	2.252358	1.27117	0.93707	10.7984	0.27489	5.93582
Maximum	9.603919	2.885114	2.03017	1.4555	11.9748	0.42891	6.31669
Minimum	5.230449	2.046743	1.11707	0.44755	10.3478	0.20821	5.5529
Std. Dev.	0.967146	0.284311	0.32309	0.23375	0.44686	0.06703	0.27878
Skewness	-1.311568	0.539095	0.64432	0.04687	0.96096	0.64961	-0.1322
Kurtosis	5.174242	1.79076	1.77945	2.74037	2.73204	2.01498	1.42909
Jarque-Bera	12.5755	2.8435	3.4129	0.0825	4.0794	2.87978	2.7492
Probability	0.0019	0.2413	0.1815	0.9596	0.1301	0.23695	0.2529
LFDI	1						
LGDPPC	0.515016	1					
LCPI	0.666149	0.96646	1				
LEXRT	0.868200	0.817759	0.92475	1			
LPD	0.701504	0.885841	0.94685	0.92539	1		
GFCF	0.748359	0.810081	0.90375	0.90845	0.90972	1	
LHK	0.735747	0.856392	0.89594	0.88879	0.78647	0.83174	1

5.2. Unit Root Analysis

A time series is said to be stationary if its probability distributions are stable over time. Taking any collection of random variables in the sequence and then shift the sequence ahead h times periods, the joint probability distribution must remain unchanged. Wooldridge (2016). Or, according to Gujarati (2012).a time series is said to be stationary if its mean and variance are constant over time and the value of the covariance between two time periods depends only on the distance between the two time periods and not the actual time at which the covariance is computed. Such a time series is known as weakly stationary or covariance stationary. Empirical work based on time series

data assumes that the underlying time series is stationary. In regressing a time series variable on another time series variables, we may find spurious regression. [10] Gujarati and Porter (2009).

One of the methods to test for stationarity of the time series data is unit root analysis. By forming unit root hypothesis, the null that there is a unit root against the alternative there is no unit root in the series, it is possible to check whether a series is stationary or not. If the null is rejected in a given integration order, then the series is stationary and can be used for further analysis. Gujarati (2012)

Unlike other co-integration method, ARDL approach doesn't require the prior test of integration order. The reason to conduct stationarity test is to make sure that none of the variables in the model are I(2), since the ARDL approach is based on the assumption that the variables under study are I(0), I(1) or mutually integrated. The critical value are prepared by Pesaran et al.(1999 and 2001) for I(0) and I(1) not for I(2). The unit root tests are conducted based on Augmented Dick Fuller (ADF) and Philips Peron (PP) test and are described in table 4.

[10] Spurious regression is a situation where we expect no relationship between two variables, yet a regression of one on the other variable often shows a significant relationship. Gujarati and Porter (2009)

Table 4 Unit Root Test Result

source: Output of Eviews 9 econometrics software									
variables	ADF				PP				
	I(0)		*I*(1)		*I*(0)		*I*(1)		
	Constant	Constant &Trend	Constant	Constant &Trend	Constant	Constant &Trend	Constant	Constant &Trend	Decision
LFDI	-3.82*	-4.55*	-5.59*	-5.49*	-3.83*	-4.62*	-8.42*	-8.97*	*I*(0)
LGDPPC	0.05	-2.28	-3.04**	-3.26***	0.82	-2.77	-2.95***	-3.02	*I*(1)
LCPI	-1.16	-4.00**	-3.92*	-4.33**	1.07	-1.32	-3.93*	-4.32**	*I*(1)
LEXRT	1.10	-0.67	-6.80*	-3.02	-1.41	-3.43**	-6.19*	-6.19*	*I*(1)
LPD	1.48	-0.49	-6.39*	-5.76*	0.42	-0.89	-5.67*	-6.53*	*I*(1)
GFCF	-1.37	-2.22	-5.57*	-5.43*	-1.37	-2.36	-5.56*	-5.43*	*I*(1)
LHK	-0.17	-2.05	-3.93*	-3.69**	-0.17	-2.34	-3.96*	-4.10*	*I*(1)
* indicates statistically significant at 1% level.									
** indicates statistically significant at 5% level.									
*** indicates statistically significant at 10% level.									

Both ADF and PP test results display that LFDI is *I*(0) series both at constant and trend at 1% significant level whereas, LGDPPC, LCPI, LEXRT, LPD, GFCF, and LHK are *I*(1) in constant at different significant level. The result entails the ARDL bound testing approach to co-integration can be applied.

5.2. Co-integration Test

The following system of UECM is estimated by making each variables as dependent each time to test for the existence of long run relation among variables; the Ho of no co-integration is tested against the alternative H1 of co-integration.

$$\begin{bmatrix} \Delta LFDI \\ \Delta LGDPPC \\ \Delta LCPI \\ \Delta LEXRT \\ \Delta LPD \\ \Delta GFCF \\ \Delta LHK \end{bmatrix} t = \begin{bmatrix} \alpha 1 \\ \alpha 2 \\ \alpha 3 \\ \alpha 4 \\ \alpha 5 \\ \alpha 6 \\ \alpha 7 \end{bmatrix} + \sum_{i=0}^{p} \begin{bmatrix} \beta 11 & \beta 12 & \beta 13 & \beta 14 & \beta 15 & \beta 16 & \beta 17 \\ \beta 21 & \beta 22 & \beta 23 & \beta 24 & \beta 25 & \beta 26 & \beta 27 \\ \beta 31 & \beta 32 & \beta 33 & \beta 34 & \beta 35 & \beta 36 & \beta 37 \\ \beta 41 & \beta 42 & \beta 43 & \beta 44 & \beta 45 & \beta 46 & \beta 47 \\ \beta 51 & \beta 52 & \beta 53 & \beta 54 & \beta 55 & \beta 56 & \beta 57 \\ \beta 61 & \beta 62 & \beta 63 & \beta 64 & \beta 65 & \beta 66 & \beta 67 \\ \beta 71 & \beta 72 & \beta 73 & \beta 74 & \beta 75 & \beta 76 & \beta 77 \end{bmatrix} \begin{bmatrix} \Delta LFDI \\ \Delta LGDPPC \\ \Delta LCPI \\ \Delta LEXRT \\ \Delta LPD \\ \Delta GFCF \\ \Delta LHK \end{bmatrix} t - i +$$

$$\begin{bmatrix} \delta 11 & \delta 12 & \delta 13 & \delta 14 & \delta 15 & \delta 16 & \delta 17 \\ \delta 21 & \delta 22 & \delta 23 & \delta 24 & \delta 25 & \delta 26 & \delta 27 \\ \delta 31 & \delta 32 & \delta 33 & \delta 34 & \delta 35 & \delta 36 & \delta 37 \\ \delta 41 & \delta 42 & \delta 43 & \delta 44 & \delta 45 & \delta 46 & \delta 47 \\ \delta 51 & \delta 52 & \delta 53 & \delta 54 & \delta 55 & \delta 56 & \delta 57 \\ \delta 61 & \delta 62 & \delta 63 & \delta 64 & \delta 65 & \delta 66 & \delta 67 \\ \delta \beta 71 & \delta 72 & \delta 73 & \delta 74 & \delta 75 & \delta 76 & \delta 77 \end{bmatrix} \begin{bmatrix} LFDI \\ LGDPPC \\ LCPI \\ LEXRT \\ LPD \\ GFCF \\ LHK \end{bmatrix} + \begin{bmatrix} \varepsilon 1 \\ \varepsilon 2 \\ \varepsilon 3 \\ \varepsilon 4 \\ \varepsilon 5 \\ \varepsilon 6 \\ \varepsilon 7 \end{bmatrix} t \text{.....(1)}$$

The optimal lag for each variables in the model can be estimated using either AIC, SBC, or HQC criteria, a criterion that gives minimum value in absolute value. In dealing with an annual data, econometrics literatures recommend the maximum lag order to 2. Accordingly, the optimal lag for each variables as dependent variable is as follows; ΔLFDI=1, ΔLGDPPC=2, ΔLCPI=2, ΔLEXRT=1, ΔLPD=1, ΔGFCF=1, ΔLHK=1.

Table 5 co-integration test results

Co-integration test results source: Output of Microfit 5.5 econometrics software					
Series Models	ARDL	F-statistic	Bound critical values		Decisions
			I(0)	*I*(1)	
ΔFDIt	(1,1,2,2,1,0,1)	4.2537***	2.6361	3.9824	co-integrated
ΔLGDPPCt	(2,1,1,2,2,2,2)	12.5575**	3.2199	4.8415	co-integrated
ΔLCPIt	(2,1,2,2,2,2,2)	13.2178**	3.2199	4.8415	co-integrated
ΔLEXRTt	(1,0,0,1,2,2,0)	4.3933***	2.6361	3.9824	co-integrated
ΔLPDt	(1,2,0,0,0,2,0)	3.0312	2.6361	3.9824	Inconclusive
ΔGFCFt	(1,1,0,1,0,2,0)	1.6502	2.6361	3.9824	Not co-integrated
ΔLHKt	(1,1,0,0,0,0,0)	1.4591	2.6361	3.9824	Not co-integrated
Critical bound values for *I*(0) & *I*(1) are for case II intercept and no trend * indicates statistically significant at 1% level. ** indicates statistically significant at 5% level. *** indicates statistically significant at 10% level.					

The result of co-integration test from table 5 with ΔLFDIt, ΔLGDPPCt, ΔLCPIt and ΔLEXRTt as a dependent variable model reveal that there are long run relationship among variables. The model with ΔGFCFt and ΔLHKt as a dependent variables show no long run relationship, whereas the model with ΔLPDt exhibit no conclusive result as it falls between the two critical bounds.

5.4. Diagnostic and Stability Test

Pesaran *et al.* (2001) recommend conducting both diagnostic check and stability test to know the standard property of the model and to determine the whether the model is stable consistent in the long run. Hence, this study conducted the model stability and diagnostic checking which comprised of Serial correlation test (Brush & Godfray LM test), functional form (Ramsey's RESET test), Normality (Jarque-Bera test), and Heteroscedasticity test. Additionally, stability of the long run estimates is tested by applying the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test. In decision to accept or reject the null hypothesis, the p-values related to the test statistics are taken into consideration.

From Table 6, the model with LFDI as dependent variable passes all diagnostic test namely, serial correlation of the residual, functional form, normality test and Heteroscedasticity.

Table 6 Diagnostic Tests Results

Diagnostic Tests **Source:** Output of Microfit 5.5 econometrics software		
A:Serial Correlation	CHSQ(1)=3.1405[.167]	F(1,8)=2.5470[.149]
B:Functional Form	CHSQ(1)=.15777[.691]	F(1,8)=.052939[.824]
C:Normality	CHSQ(2)=1.7470[.417]	Not applicable
D:Heteroscedasticity	CHSQ(1)=1.3008[.254]	F(1,22) =1.2607[.274]
A:Lagrange multiplier (LM) test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values		

Fig.3 & Fig. 4 show the plots of CUSUM and CUSUMQ tests of the LFDI model respectively which reflect stability, and consistency of the co-integration estimates in the long- run, as all residuals were found to be within the critical bounds of the 5% significance level.

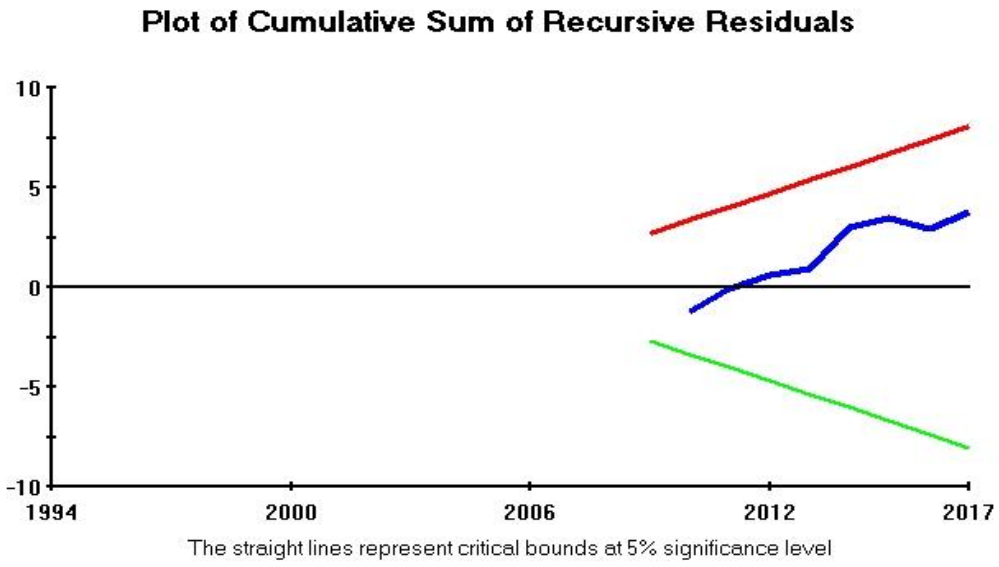


Figure 3 plot of Cumulative Sum of Recursive Residuals of LFDI model

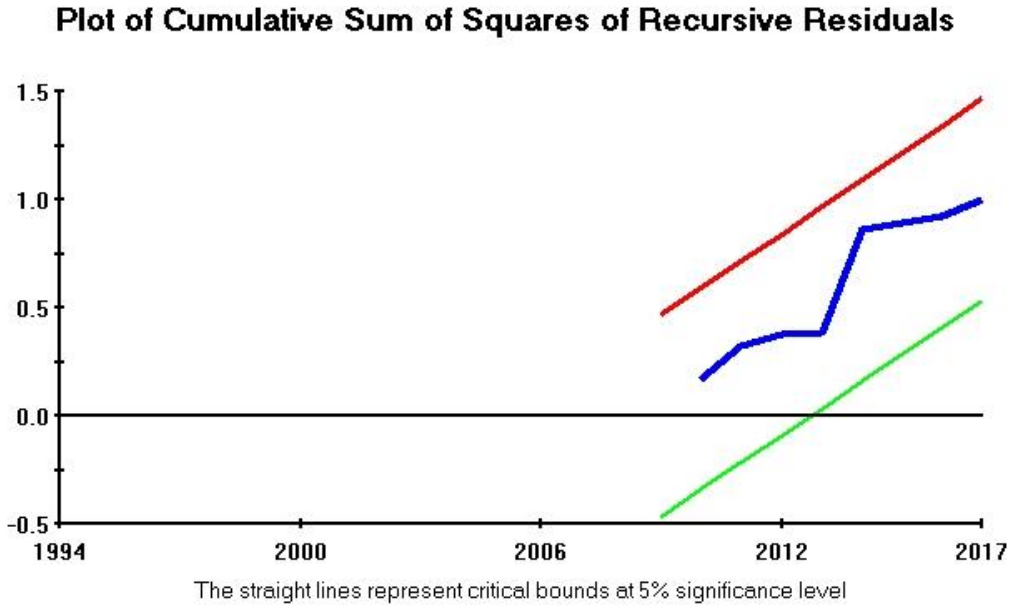


Figure 4 plot of Cumulative Sum of Square Recursive Residuals of LFDI model

5.5. Long Run Relationship Analysis

Now, after checking the co-integrating relationships, the next step is to investigate the long run associations between FDI and its determinants, the result of which is portrayed in table 7.

FDI inflows positively respond to increase in GDP per capita which is consistent with the findings of Amal (2016) for Brazil; Ang (2008) for Malaysia; and Fentaye, (2016) for Ethiopia. Similarly, the study reveals that exchange rate depreciation has positive impact on FDI, which is found by Ang (2008) for Malaysia; Mohammadvandnahidi, et al. (2012) for Iran; Deyu (2016) for Ethiopia Bhasin & Gupta (2017) for India. Infrastructure development has also significantly and positively affected FDI attractions to the country, which is confirmed by the result of Haile and Assefa (2006) and Fentaye, (2016) for Ethiopia. However, negative relationship between FDI and inflation measured by change in CPI is found. This result is consistent with many studies; Bekhet and Al-Smadi (2015) for Jordan; Workneh (2014) and Berhane (2015) for Ethiopia.

More specifically, a 1% increase in GDPPC, EXRT and GFCF, cause an 11%, 12%, 7% increase in FDI inflow at 1%, 1% and 10% significant level respectively to Ethiopia. Whereas, a 1% increase in CPI has caused FDI to decline by 17% at 1% level. The value of R^2 and adjusted R^2 are .97 and 0.928 indicating that 97% of variation in the dependent variable, FDI, has been explained by the independent variables in the model. The value of F-stat is highly significant implying that the overall model is robust.

Table 7 Long Run Estimation Results

Estimated Long Run Coefficients using the ARDL Approach
Source: Output of Microfit 5.5 econometrics software
Maximum lags: 2 (Automatic selection)
Model selection Method (Schwarz Bayesian Criteria)
Model ARDL (1,1,2,2,1,0,1)
Dependent variable is LFDI
24 observations used for estimation from 1994 to 2017

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LGDPPCt	11.6689 *	3.4193	3.4127[.008]
LCPIt	-17.1307*	4.6905	-3.6522[.005]
LEXRTt	12.2343*	3.2477	3.7671[.004]
LGDt	0.8292	0.58593	1.4152[.191]
GFCFt	6.9536***	3.1242	2.2257[.053]
LHKt	-1.8305	1.0972	-1.6683[.130]
Constant	-6.6756	7.3597	-.90705[.388]
		R2	0.97218
		Adjusted R2	0.92889
		F-Stat.	22.4615[.000]

* indicates statistically significant at 1% level.
** indicates statistically significant at 5% level.
*** indicates statistically significant at 10% level.

5.6. Short Run and ECM Analysis

The short run result of the model has been displayed in table 8. In the short run, growth in GDPPC and HK have no significant effect on FDI inflow to Ethiopia. This means in short run the effect of change in GDP per capita and human capital are insignificant. This could be explained by the fact that these variables need more time to see their effect. For example, human capital is an intensive investment for the future.

However, change in consumer price index (CPI), exchange rate (EXRT) and GFCF have significant impact on FDI inflows to Ethiopia. Particularly, a 1% increase in CPI after one period and GFCF of this year increases current FDI inflows by 5.83% and 6.63% at 5% and 1% significant level respectively in the short run. Whereas a 1% increase in EXRT of last year tend to decrease current FDI inflow by 4.97%. The sign of coefficient of ECM (-1) is negative and significant at

1% level, which is -. 95, meaning the shock to the system will be corrected to the long run equilibrium quickly. Almost 95% of disequilibria will be corrected this year.

Table 8 Short Run and ECM Coefficient

Short Run and ECM coefficients for selected ARDL model Source: Output of Microfit 5.5 econometrics software Model ARDL (1,1,2,2,1,0,1) Dependent variable is ΔLFDI 24 observations used for estimation from 1994 to 2017			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
ΔLGDPPC	0.9453	2.6017	.36334[.722]
ΔLCPI	-3.1594	1.8049	-1.7505[.102]
ΔLCPI1	5.8333**	2.3169	2.5178[.025]
ΔLEXRT	-0.45833	2.1087	-.21736[.831]
ΔLEXRT1	-4.9711*	1.7035	-2.9182[.011]
ΔLPD	-0.58588	0.54188	-1.0812[.298]
ΔGFCF	6.6326**	2.4603	2.6958[.017]
ΔLHK	1.1169	1.5323	.72888[.478]
ecm(-1)	-.95384*	0.17565	-5.4304[.000]
ecm = LFDI-11.6689*LGDPPC +17.1307*LCPI-12.2343*LEXRT-.82920*LPD-6.9536*GFCF +1.8305*LHK +6.6756*C * indicates statistically significant at 1% level. ** indicates statistically significant at 5% level. *** indicates statistically significant at 10% level.			

CHAPTER SIX

Summary, Conclusions and Policy Recommendations

6.1. Introduction

This final chapter discusses summary of findings, the conclusion made and the policy implication from the result found. It also pinpoints few suggestion for future research.

6.2. Summary of Findings

In this research paper the short run and long run relationship between FDI and its determinants in Ethiopia have been analyzed for the period between 1992 and 2017. The descriptive and correlation matrix analysis are made for the data under study. Since a time series data are employed, the stationarity of the variables are tested using the popular methods in the literature, ADF and PP tests. The null hypothesis of no unit root is tested against the alternative that there is unit root in the variables selected. And from the result GDPPC, CPI, EXRT, PD, GFCF and HK variables are *I*(1) series while FDI is *I*(0); which confirm the applications of the bound test approach to co-integration.

ARDL bound testing approach to co-integration has been used to determine whether the long run relationship among the variables exists. And the result of the bound test indicates that the calculated F-statistics exceed the upper value of *I*(1) critical value which confirms long run associations among the variables taking FDI, GDPPC, CPI and EXRT as dependent variables.

The following long run relationship result of the ARDL model has been found by taking FDI as a dependent variable. Market size measured by GDPPC, currency depreciation measured by Ethiopian Birr to US dollar and infrastructure development as proxied by Gross Fixed Capital Formation have Positive significant effect on FDI attraction to Ethiopia in the long run whereas inflation measured by the change in consumer price index has negative and significant impact on FDI inflows. Human Capital as proxied by secondary education enrollment and public debt have no significant effect on FDI attraction as revealed by the result in the long run. Diagnostic test result of the given model pass all tests such as serial correlation, functional form, normality and heteroscedasticity.

The short run coefficient of the ARDL model displayed that inflation and infrastructure have a positive significant effect on FDI inflows while exchange rate has a negative impact on FDI attractions. In the short run, no significant effect of real GDP per capita, public debt and human capital to Ethiopian FDI inflows. The ECM coefficient is negative and significant as shown by the model.

6.3. Conclusions

From the study findings, it is concluded that real GDP per capita is positively associated with FDI inflows in the long run. So, increase in real GDP per capita leads to increase in FDI inflows to Ethiopia. A change in consumer price index is negatively related with FDI attractions to Ethiopia and therefore, an increase in consumer price index will cause a fall in FDI inflows to the country in the long run. Besides, from the positive regression result of exchange rate and gross fixed capital formation, it is concluded that currency depreciation and an increase in infrastructure will improve FDI inflows to Ethiopia in the long run.

The study also come up with a change in consumer price index and gross fixed capital formation are positively related with FDI inflows in the short run. Meaning, an increase in average consumer price and an infrastructure development will boost FDI attraction to Ethiopia. From another interesting result of the currency depreciation on FDI attractions, it is concluded that an increase in currency depreciation reduce FDI inflows to Ethiopia in the short run.

6.4. Policy Recommendations and Future Research

Based on the findings of the study, the followings policy recommendations and future research points have been forwarded.

The government should focus on increasing the output of Ethiopian economy by creating enabling environment and promoting private sectors to create more investment and employment to enhance people's income which not only increase purchasing power but also diversify their purchases which in turn enhance market seeking FDI proven by the study. In relation to this, the GOE should further increase regional integrations in East Africa and maintain peace around the region so that more foreign investment can be attracted to address the nearby neighboring markets.

Inflation can be good in the short run since it increases investors' income in the form of high prices, but it negatively affect FDI attraction to Ethiopia in the long run because it decreases foreign investors' confidence over the economy. Inflation makes import of capital goods and inputs very expensive. Due to this, policy recommendation of maintaining stable prices through different fiscal and monetary measures such as tax incentives and decreasing money supply by the government so as to continue attracting more foreign direct investment to the country.

The result of positive long run relationship between FDI and exchange rate confirm that depreciation of domestic currency in terms of foreign currency can boost FDI. This is because a depreciated currency value would lead to higher relative wealth position of foreign investors and hence lower the relative cost of capital. By introducing credible exchange rate management system and market determined exchanges rate, it is possible to increase FDI inflows to the county in the long run.

Finally, another very important policy measure by the government is strengthening of infrastructures. Through improving the coverage and quality of transport system, telecommunications, electricity and internet technology, policy makers can attract more FDI to Ethiopia. The industrial parks in different parts of the country should be further expanded to continue attracting more FDI to the country.

For future research, much works remains to be done in terms of studying the determinants and impacts of FDI in Ethiopia, particularly of the influence of other variables not included in this research; such as other macroeconomic, political and institutional factors on FDI attractions. At present many potential FDI determining variables were either not accessible overall, or were insufficient in quantity. Additionally, it would be interesting to further study the qualitative and quantitative determinants and impacts of industry-specific FDI by taking both primary and secondary data.

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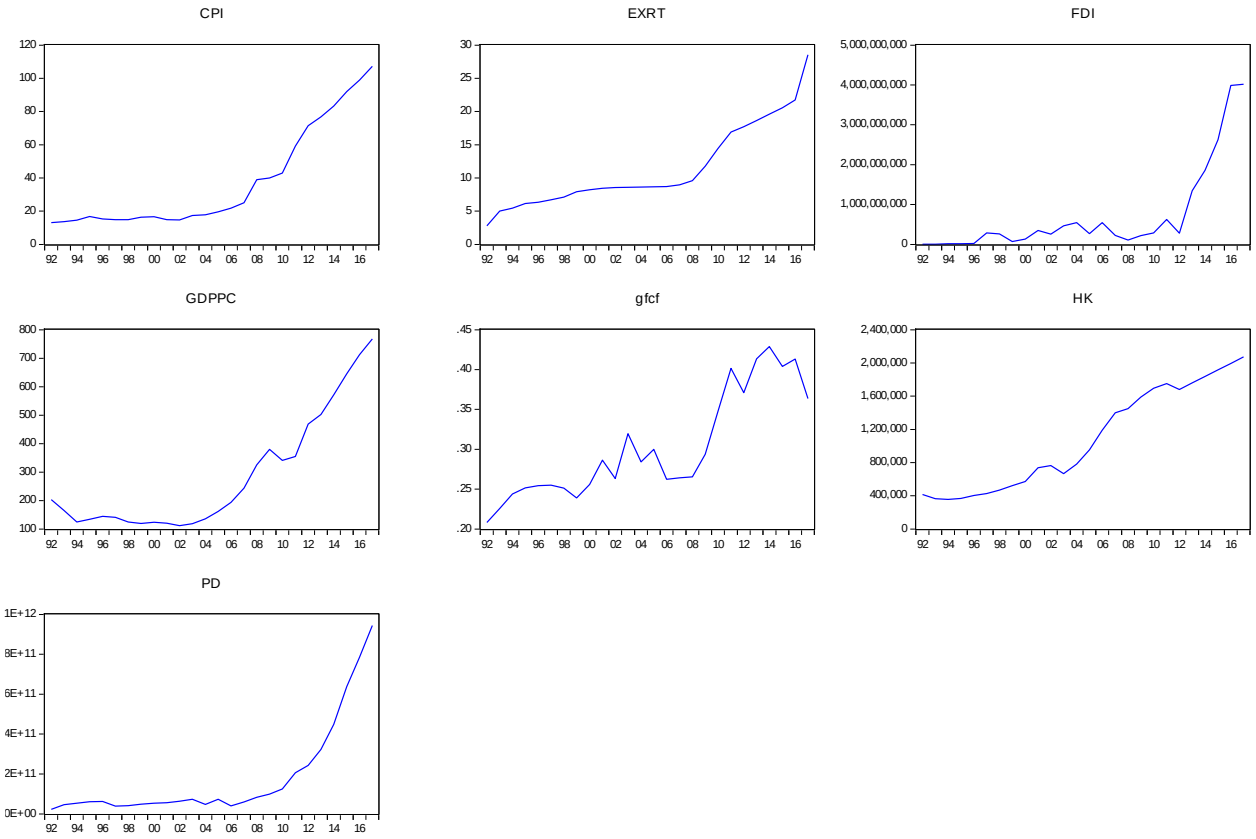
Appendices

Appendix A. Time series graphs for various economic variables



Appendix B: Autoregressive Distributed Lag Estimates

5/14/2019 9:59:01 AM

Estimated Long Run Coefficients using the ARDL Approach

ARDL(1,1,2,2,1,0,1)selected based on Schwarz Bayesian Criterion

```
********************************************************************************
Dependent variable is LFDI
24 observations used for estimation from 1994 to 2017
********************************************************************************
Regressor             Coefficient       Standard Error         T-Ratio[Prob]
LFDI(-1)                 .046165            .17565             .26283[.799]
LGDPPC                    .94530            2.6017             .36334[.725]
LGDPPC(-1)               10.1849            2.7329             3.7268[.005]
LCPI                     -3.1594            1.8049            -1.7505[.114]
LCPI(-1)                 -7.3471            2.4066            -3.0529[.014]
LCPI(-2)                 -5.8333            2.3169            -2.5178[.033]
LEXRT                    -.45833            2.1087            -.21736[.833]
LEXRT(-1)                 7.1568            3.3561             2.1325[.062]
LEXRT(-2)                 4.9711            1.7035             2.9182[.017]
LPD                      -.58588            .54188            -1.0812[.308]
```

```
LPD(-1)                    1.3768            .48477            2.8401[.019]
GFCF                       6.6326            2.4603            2.6958[.025]
LHK                        1.1169            1.5323            .72888[.485]
LHK(-1)                   -2.8629            1.7409           -1.6444[.134]
C                         -6.3674            7.0242           -.90649[.388]
*****************************************************************************
R-Squared                      .97218   R-Bar-Squared                  .92889
S.E. of Regression             .17673   F-Stat.    F(14,9)     22.4615[.000]
Mean of Dependent Variable    8.4809   S.D. of Dependent Variable      .66275
Residual Sum of Squares       .28110   Equation Log-likelihood        19.3108
Akaike Info. Criterion        4.3108   Schwarz Bayesian Criterion     -4.5246
DW-statistic                  2.6534   Durbin's h-statistic     -3.1415[.002]
*****************************************************************************

Testing for existence of a level relationship among the variables in the ARDL
model
*****************************************************************************
F-stat     95% Lower Bound  95% Upper Bound  90% Lower Bound  90% Upper Bound
4.2537          3.2199          4.8415          2.6361          3.9824

W-stat     95% Lower Bound  95% Upper Bound  90% Lower Bound  90% Upper Bound
29.7762         22.5392         33.8902         18.4528         27.8766
*****************************************************************************
If the statistic lies between the bounds, the test is inconclusive. If it is
above the upper bound, the null hypothesis of no level effect is rejected. If
it is below the lower bound, the null hypothesis of no level effect can't be
rejected. The critical value bounds are computed by stochastic simulations
using 20000 replications.


                            Diagnostic Tests
*****************************************************************************
*    Test Statistics  *          LM Version       *          F Version      *
*****************************************************************************
*                     *                           *                         *
* A:Serial Correlation*CHSQ(1)  =   3.1405[.167]*F(1,8)       = 2.5470[.149]*
*                     *                           *                         *
* B:Functional Form   *CHSQ(1)  =   .15777[.691]*F(1,8)       =.052939[.824]*
*                     *                           *                         *
* C:Normality         *CHSQ(2)  =   1.7470[.417]*       Not applicable      *
*                     *                           *                         *
* D:Heteroscedasticity*CHSQ(1)  =   1.3008[.254]*F(1,22)      = 1.2607[.274]*
*****************************************************************************
A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values
```

Appendix C: Long run relationship Output of ARDL model

```
5/14/2019                                                          9:59:01 AM


                    Estimated Long Run Coefficients using the ARDL Approach
              ARDL(1,1,2,2,1,0,1)selected based on Schwarz Bayesian Criterion
*****************************************************************************
Dependent variable is LFDI
24 observations used for estimation from 1994 to 2017
```

```
*************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob]
LGDPPC                    11.6689             3.4193             3.4127[.008]
LCPI                     -17.1307             4.6905            -3.6522[.005]
LEXRT                     12.2343             3.2477             3.7671[.004]
LPD                        .82920              .58593            1.4152[.191]
GFCF                      6.9536              3.1242             2.2257[.053]
LHK                      -1.8305              1.0972            -1.6683[.130]
C                        -6.6756              7.3597            -.90705[.388]
*************************************************************************

Testing for existence of a level relationship among the variables in the ARDL
model
*************************************************************************
F-stat  95% Lower Bound  95% Upper Bound  90% Lower Bound   90% Upper Bound
4.2537          3.2199          4.8415          2.6361          3.9824
W-stat 95% Lower Bound   95% Upper Bound   90% Lower Bound   90% Upper Bound
29.7762         22.5392         33.8902         18.4528         27.8766
*************************************************************************
If the statistic lies between the bounds, the test is inconclusive. If it is
above the upper bound, the null hypothesis of no level effect is rejected. If
it is below the lower bound, the null hypothesis of no level effect can't be
rejected. The critical value bounds are computed by stochastic simulations
using 20000 replications.
```

Appendix D: Short Run relationship output and ECM

```
5/14/2019                                                        9:30:02 AM

              Error Correction Representation for the Selected ARDL Model
              ARDL(1,1,2,2,1,0,1)selected based on Schwarz Bayesian Criterion
*************************************************************************
Dependent variable is dLFDI
24 observations used for estimation from 1994 to 2017
*************************************************************************
**
Regressor              Coefficient       Standard Error         T-Ratio[Prob]
dLGDPPC                    .94530              2.6017              .36334[.722]
dLCPI                     -3.1594              1.8049            -1.7505[.102]
dLCPI1                     5.8333              2.3169             2.5178[.025]
dLEXRT                    -.45833              2.1087            -.21736[.831]
dLEXRT1                   -4.9711              1.7035            -2.9182[.011]
dLPD                      -.58588              .54188            -1.0812[.298]
```

```
dGFCF                        6.6326             2.4603             2.6958[.017]
dLHK                         1.1169             1.5323              .72888[.478]
ecm(-1)                     -.95384             .17565            -5.4304[.000]
**************************************************************************
List of additional temporary variables created:
dLFDI = LFDI-LFDI(-1)
dLGDPPC = LGDPPC-LGDPPC(-1)
dLCPI = LCPI-LCPI(-1)
dLCPI1 = LCPI(-1)-LCPI(-2)
dLEXRT = LEXRT-LEXRT(-1)
dLEXRT1 = LEXRT(-1)-LEXRT(-2)
dLPD = LPD-LPD(-1)
dGFCF = GFCF-GFCF(-1)
dLHK = LHK-LHK(-1)
ecm = LFDI  -11.6689*LGDPPC +  17.1307*LCPI  -12.2343*LEXRT   -.82920*LPD-6
          .9536*GFCF +   1.8305*LHK +   6.6756*C

**************************************************************************
R-Squared                      .91709   R-Bar-Squared                  .78811
S.E. of Regression             .17673   F-Stat.    F(9,14)     11.0609[.000]
Mean of Dependent Variable     .12749   S.D. of Dependent Variable     .38393
Residual Sum of Squares        .28110   Equation Log-likelihood       19.3108
Akaike Info. Criterion         4.3108   Schwarz Bayesian Criterion    -4.5246
DW-statistic                   2.6534
**************************************************************************
R-Squared and R-Bar-Squared measures refer to the dependent variable dLFDI
and in cases where the error correction model is highly restricted, these
measures could become negative.


Testing for existence of a level relationship among the variables in the ARDL
model
**************************************************************************
F-stat   95% Lower Bound  95% Upper Bound  90% Lower Bound  90% Upper Bound
4.2537        3.2199           4.8415           2.6361           3.9824
W-stat   95% Lower Bound  95% Upper Bound  90% Lower Bound  90% Upper Bound
29.7762        22.5392          33.8902          18.4528          27.8766
**************************************************************************
If the statistic lies between the bounds, the test is inconclusive. If it is
above the upper bound, the null hypothesis of no level effect is rejected. If
it is below the lower bound, the null hypothesis of no level effect can't be
rejected. The critical value bounds are computed by stochastic simulations
using 20000 replications.
```