DETERMINANTS OF FOREIGN DIRECT INVESTMENT INFLOW TO ETHIOPIA: A TIME SERIES ANALYSIS

YALEW MENGISTIE DEBALKIE

September, 2022

ADDIS ABABA UNIVERSITY, ADDIS ABABA

Determinants of Foreign Direct Investment Inflow to Ethiopia: A Time Series Analysis

A Thesis Submitted to Post Graduate Studies, Department of Development Economics, ADDIS ABABA UNIVERSITY in Partial Fulfillment of the Requirements for the Degree of MASTER OF SCIENCE IN DEVELOPMENT ECONOMICS

By:

Yalew Mengistie Debalkie

September, 2022

ADDIS ABABA UNIVERSITY, ADDIS ABABA

DECLARATION

I, Yalew Mengistie, hereby declare that the thesis entitled "Determinants of Foreign Direct Investment Inflow to Ethiopia: A Time Series Analysis" for a Master's Degree in Addis Ababa University, is my piece of original research work. This thesis contains no materials which have been accepted for the award of any other degree or diploma in any institutions.

Declaration By:

Name: Yalew Mengistie

ID: GSE/5773/12

Signature: _____

Date: _____

Confirmed by (Advisor):

Name: Mulugeta G/Mariam (Ph.D.)

Signature: _____

Date: _____

STATEMENT OF CERTIFICATION

This is to certify that the thesis presented by Yalew Mengistie, entitled: "Determinants of Foreign Direct Investment Inflow to Ethiopia: A Time Series Analysis" submitted in partial fulfillment of the requirements for the Degree of Master of Science in Development Economics complies with the regulations of the University and meets the accepted standards with respect to the quality and originality of the paper.

Signed by the Examining committee:

Advisor _____, Signature_____, Date_____

Internal Examiner_____, Signature_____, Date_____

External Examiner_____, Signature_____, Date_____

ACKNOWLEDGEMENT

Foremost my thanksgiving goes to *Son of Mary* for his endless Love, Mercy, Forgiveness, and Patience in accomplishing this thesis work, and in all circumstance of my life. *Glory to the Son and the Mother!* Next to this, I would like to express my heartfelt and sincere gratitude to my advisor Mulugeta (Ph.D.) for his indispensable, invaluable and continuous support and guidance throughout this work. Furthermore, my deepest thanks goes to my *beloved Brothers*.

ACRONYMS AND ABBREVIATIONS

ADF	**Augmented Dickey Fuler**
ARDL	**Autoregressive Dstributive Lag Model**
AIC	**Akaike Information Criterion**
CDRC	**Center for Dialogue, Research and Co-operation**
CUSUM/SQ	**Cumulative Sum/Cumulative Sum Square**
ECM	**Error Correction Model**
EIC	**Ethiopian Investment Commission**
FDI	**Foreign Direct Investment**
GDP	**Gross Domestic Product**
IMF	**International Monentary Fund**
LM	**Lagrange Multiplier**
ME	**Ministry of Education**
MNEs	**Multinationla Corporations**
MWIE	**Ministry of Water, Irrigation, and Electricity**
NBE	**National Bank of Ethiopia**
RESET	**Regression Specification Error Test**
L/UBCV	**Lower/Upper Bound Critical Value**
UNCTAD	**United Nations Conference on Trade And Development**
UNHCR	**United Nation Higher Commissioner for Refuges**
VAR	**Vector Autoregressive**
WDI	**World Development Indicators**
WFP	**World Food Program**
WIR	**World Investment Report**
¬	**Negation (Not)**

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURS

ABSTRACT

The main aim of this paper is to identify the key determinant factors of FDI inflows to Ethiopia for the period 1991 to 2020 using autoregressive distributed lag model (ARDLM) with Error Correlation Methods. The empirical results reveal that trade openness, domestic market size, inflation rate, and political stability and absence of violence are the key determinant factors of FDI inflows to Ethiopia. Moreover, human capital and government effectiveness are also important determinant factors of FDI inflow in the short run, while infrastructure facility is a fundamental determinant factor in the long run. Among these factors, at 5% level of statistical significance, trade openness, and domestic market size affect FDI inflow positively both in the short run and long run, whereas inflation rate, and political stability and absence of violence have negative and statistically significant effect in both cases. On the other hand, government effectiveness and human capital associated with FDI inflow to Ethiopia positively in the short run. Besides, infrastructure facility development has statistically significant effect on FDI inflow in the long run. Hence, these findings implies that minimizing barriers to trade, improving domestic market size and infrastructure facilities, creating more stable macroeconomic and political environment, giving due attention to well-organized system of education, and having effective governance system are also crucial to attract more FDI to Ethiopia.

Keywords: *FDI, Ethiopia, Determinant, ARDL Model, Bound Test, ECM*

CHAPTER ONE

1. INTRODUCTION

1.1. Background to the Study

As the world becomes highly integrated, the flow of capital from capital-rich to capital-poor countries is also growing significantly (Adugna & Sisay, 2001). One possible reason for the flow of capital is that total factor productivity of the typical developing country is clearly much lower than that of the typical developed country. This also reflects differences like technological efficiency of individual producers in these differing groups of countries. Moreover, large income differences between the two groups of countries, caused by differences in marginal labour productivity, could also arise from these technological differences (Edward, 2005). Thus, this capital movement could be taken as a key to address the pressing problems of developing countries in general and Africa in particular (Adugna & Sisay, 2001).

There are different forms of capital flows from capital-rich to capital-poor countries. Among these forms of capital flows such as foreign direct investment, portfolio investment, long and short term loans (public or private), remittances, official development assistance, etc., foreign direct investment (hereafter, FDI) is the largest source of external finance for many developing economies, and the most resilient to economic and financial crisis (Singhania & Gupta, 2011). It makes up 39% of total incoming finance in developing economies as a group (UNCTAD, 2018).

FDI, which foreign investor manages and exerts a significant degree of influence and control over the enterprise resident in the other economy, is the most common and very important particularly in the case of African economies. This is because it brings to the host countries something new, like modern technologies that helps to use resources which otherwise be unavailable (transferred through training and technical assistance), new managerial and marketing skills, develop human capital via training and expanding of practical learning mechanism, labor force skill development, creates additional employment opportunities (significantly reduce unemployment rate, for instance between 1992 to 2016, foreign investment projects in Ethiopia created a total of 0.6 million job opportunities), helps to have competitive business environment (both internally and externally). These in turn improves the welfare of Ethiopia and reduce absolute poverty (Getinet & Hirut, 2006; Singhania & Gupta, 2011, and WDI, 2019).

In the last decade Ethiopian economy witnessed steady growth of foreign direct investment (FDI) inflows. In 2018 Ethiopia was one of the top five largest recipients of FDI in Africa, which is $3310.3, after Egypt ($6797.6), South Africa ($5334), Congo ($4313.1) and Morocco ($3640.4) (EIC, 2019).

Moreover, the government of Ethiopia has been striving to make Ethiopia one of the top investment destinations in the world in the coming few years by improving business climate of the country. For instance, it has set up a team which led by the prime minister, and targeting at addressing the issue. In addition to this effort, mainly due to its substantial investment incentives, the big market with over 110 million population sizes and its strategic location for other markets, many foreign investors are flowing to invest in Ethiopia (EIC, 2019).

1.2. Statement of the Problem

Ethiopia has been investing mainly in infrastructure, agriculture, education, disaster risk management, health, and safety net programs. These investments have led to substantial progress in socio-economic development including life expectancy increment, poverty and malnutrition reduction, improve school enrolments and expanded access to fresh water, health services and improved sanitation (CSA, 2014).

Despite these key activities and improvements, however, major challenges remain yet. For instance, 87% of the population is multi-dimensionally poor, i.e. suffering from some combination of food insecurity, limited employment opportunities, etc. These challenges are experienced differently among different population groups (CDRC, 2019). Long-standing and widespread vulnerability to a range of shocks such as food insecurity and starvation are high (UNDP, 2019, WFP, 2020). Moreover, because of huge population size and other modernity factors, there exist an imbalance relationship between demand for quality education, entrepreneur skill development, job access, managerial and marketing skill development trainings and their accessibility here in Ethiopia makes the situation worst. In line with this about 31% of households of Ethiopia (more than 30 million people) have insufficient energy intake (less than 2,550 kcal per day); and every year since 2005 an average of 14 million people (out of which 8 million are chronically food-insecure people) have required food assistant from productive safety net programme (UNHCR, 2020; CSA, 2013; ME, 2019, and MWIE, 2018).

On the other hand, Ethiopia's cultivated area has increased by 27% since 2004 but production growth could not be balanced with the increased demand. Cereal yields grew impressively from 1 metric ton per hectare in 1995 to 2.5 metric ton in 2015, but the population grew by 77% over the same period. This is due to the fact that most farming technique in Ethiopia adopted traditional agricultural system as they could not access modern technology and know-how because of poverty, backwardness, and having low entrepreneur skill. In addition, production is highly vulnerable to climate shocks, especially the increasing and frequent droughts (WFP, 2020).

In order to assist the agricultural productivity and escape from food insecurity problem, investments in small-scale irrigation systems, and access to finance and credit in rural areas are increasing but remain limited. Furthermore, tax revenue as a proportion of gross domestic product of the country fell from 12.70% in 2014/15 to 10.70% in 2017/18, while the budget deficit as a proportion of GDP increased from 1.9% to 3% over the same period. Revenue collection remains low compared with the revenue generating potential of the economy and the total demand for government expenditure (WFP, 2020).

Hence, in consideration of the potential benefits of FDI which helps to alleviate those mentioned challenges through transfer of advanced technology, creating more job opportunities, human capital and managerial skill development, etc., the government of Ethiopia has been striving to increase foreign direct investment in a wide range of sectors. Such sectors includes agriculture, agro-processing, leather and leather products, and textiles and garments. In addition to these efforts, the government also issued several investment incentives, including customs duty exemption, income tax exemption, export incentives and made other constructive changes regarding foreign investment, like transparent and efficient administration of investment, and mitigating the impacts of environmental pollution relating to investment projects to encourage FDI inflow (EIC, 2017). These measures, also paved the way for increased FDI inflows to Ethiopia and makes the country to be ranked the fifth largest recipient of FDI in Africa in 2018 (EIC, 2019).

Besides to taxation incentives, there are also other key determinant factors which either facilitate or hinder the inflow foreign direct investment to the host country, Ethiopia. Thus, identifying these key determinant factors of foreign direct investment inflow to Ethiopia is an indispensable condition to take full advantage of foreign direct investment. In line with this, there are different studies conducted across the world, and particularly in Africa.

As observed from the literature, there are contradicting findings of different researchers around the world, and even here in Ethiopia. This is most likely because of the way they collected the data, the way they proxied the variables under consideration, the sample size and the method of data analysis, and the statistical tests they have deployed to check the fitness their model. This also intern leads them to make a wrong conclusion and recommendation based on the results or statistical outputs. This may also create difficulties to policy makers to understand and identify the most critical determinant factors of foreign direct investment inflow to Ethiopia to formulate policies. Moreover the result and conclusion drown from this analysis could mislead academicians, and even make the researcher themselves unable to have the same conclusion and common understanding on these factor variables. Therefore, this study tried to minimize this confusion among researchers, academicians, and policy makers by deploying the right modeling approach, and pre and post estimation statistical tests for a time series data having the required sample size.

1.3. Research Question

What are the main determinant factors of foreign direct investment (FDI) inflow to Ethiopia over the period 1991 – 2020?

1.4. Objective of the Study

1.4.1. General Objective of the Study

The general objective of this study is to identify factors that determine the inflow of foreign direct investment towards Ethiopia for the period 1991 to 2020.

1.4.2. Specific Objective of the Study

I. To identify the short-run and long-run determinant factors of FDI inflows to Ethiopia and helping policymakers to formulate a sound policy on FDI inflow.
II. To determine the effects of infrastructure facilities and human capital on FDI inflow to Ethiopia.
III. To determine how much of the variation of FDI inflow to Ethiopia is explained by the regressor variables considered in this study.

1.5. Significance of the Study

These days lack of good job opportunities, chronic food insecurity (poverty), lower living standard, lack of access to quality education and advanced technologies and related perils are a major challenges in Ethiopia. Hence the country needs foreign investment in addition to foreign banks loan and domestic investment to escape from these challenges. Thus, foreign direct investment is believed to be a potential source of capital which able to bridge this gap. Therefore, this study will have a significant role to the country by identifying the key determinant factors which affects FDI inflow to Ethiopia either negatively or positively via providing empirical evidence. Besides, it will have an important implication for Ethiopian policy makers to formulate sound policies on how to attract foreign direct investment.

1.6. Scope of the Study

This study aims to analyze only seven determinants of foreign direct investment and try to identify most important determinant factors to attract quality investments here in Ethiopia. In doing so, FDI will be taken as a dependent variable and seven determinant factors, i.e. trade openness, market size, inflation, human capital, infrastructure facility development, government effectiveness, and political stability are considered as an explanatory variables. The methodological scope of the research is a time series data analysis method using ARDL modeling approach.

1.7. Limitations of the study

The study is merely limited to secondary data which have been collected from secondary sources like WB, NBE, world governance indicators, and IMF. Due to this nature of the data, variations from institution to institution and data incompleteness were the major problems that challenged the researcher. Hence, the researcher has taken the data which were similar in two or more institutions by comparing it. Besides, the study was focused on only seven among major determinant factors of FDI inflow to Ethiopia.

1.8. Organization of the Paper

This research study is organized in to five chapters. The first chapter provided the general overview of the study and it contains background of the study, problem statement of the study, research question, objective, significance, scope and limitations of the study. The second chapter reviewed both the theoretical and empirical literature on the key determinant factors of FDI inflow to Ethiopia. The third chapter focused on the methodology of the study that includes research design and approach, data source and type, method of data analysis, and model diagnostic tests. The fourth chapters focused on the results & discussion of the study and the last chapter focused on summary, conclusion and recommendations of the study.

CHAPTER TWO

2. LITERATURE REVIEW

Introduction

This chapter is all about review of the relevant literatures. It contains both the theoretical review including main theories of FDI, empirical review of the study, and conceptual framework o the study.

2.1. Theoretical Review

FDI is an international investment. It is made by a resident entity in one economy (direct investors) with the objective of establishing a lasting interest (the existence of a long term relationship between the direct investor and enterprise, and a significant degree of influence by the direct investor on the management of the direct investment enterprises) in an enterprise resident in an economy other than that of the investor (direct investment enterprise) (WIR, 2007). In this sense, investors purchase bonds and stocks from foreign countries hoping to get more return and adding more to the stock of capital (Todaro & Smith, 2012).

FDI has an important impact on human capital development via labor's skill improvement, on the job training (learning through doing), available training programs, which help acquiring knowledge and experience, especially on new arrival technologies application, etc. (Amsalu, 2020). In connection to human capital development, Ethiopia has devoted a reasonable amount of resources to develop education and health sectors aiming at increasing productivity and economic growth in the course of time. Some foreign companies are participating in these activities through different ways: such as foreign private initiatives, projects implemented together with global organizations and Ethiopian government. They discuss on how to transfer skills and experiences from foreign investors to Ethiopian labor force in different industries, and come to the point that the effort of foreign investors on company level alone is insufficient, and plan to build like vocational training center in which the respective specialists, workers and managers will complete training in accordance with international standards (Amsalu, 2020). This could also be the best example of joint venture form of investment.

Foreign direct investment can take three different forms. The first one Greenfield investment which involves building up of their new business operation using their own technology and input materials or properties, and investors have the highest degree of control over the companies or facilities and land of the sponsoring company (Ashraf & Herzer, 2014). It is more popular in relation based countries that give support to the full control and protection over the investment of the investors (Alon et al., 2020). For developing regions like Africa, particularly for Ethiopia, Greenfield FDI is the most productive, development and environmental-friendly, relational and generally welcomed FDI because it create and expand new job opportunities, thereby reduce unemployment rate, facilitate technology transfers and know-how to the host country. However, it may crown out domestic investments because of its like modern technology advancement.

Whereas, the second forms is Mergers and Acquisitions (M&A) FDI which involves purchasing of assets of existing domestic firms. It is an investment when one company takeover another and establishes itself as a new owner, or two business teams come and join up to form a single new legal entity or company (Nazmi & Hykmete, 2016, Tung et al., 2021). Unlike Greenfield FDI, it may not necessarily create new job opportunities or facilities since it only involves a change of ownership and management for an already existing business in the host country. However, the most highlighted benefit from this type of FDI is that it increased productivity of the workforce (Nazmi & Hykmete, 2016). Hence, it still contribute to economic development of the host country via human capital development (learning by doing, trainings related to the position, etc.), managerial skill development etc. While, the third form of FDI inflow to any host country is the joint venture FDI. It is a combination of investment of local companies, governments, and/or foreign companies in one host country, made because of factors like scale and scope of an economy, market size, cultural difference, technological constraints and changes, interest rates, and protection of autonomy and missing patent rights (Nazmi and Hykmete, 2016). For instance, based on article 6(1) of the new investment proclamation no. of 1180/2020 of Ethiopia, there are specific sectors reserved for joint venture investment with the government. These sectors includes, bus rapid transit, international air transport service, electronica energy import and export, etc.

2.1.1. Theories of Foreign Direct Investment

Production Life-Cycle Theory - This theory was developed in 1966 by Raymond Vernon. It focused on the four stages of production cycles (innovation, growth, maturity and decline) and explains FDI as part of this cycle. As stated by Vernon, international companies first produce an innovative product for the local market (innovation stage) and it will become advantageous in possessing the new technology (growth stage). But when the home demand is saturated, firms will start to export the surplus to serve foreign market after identifying lower cost locations and new markets (maturity stage). At this stage of the product life cycle, the host country with huge market size will be benefited. This is because countries with larger market size could receive more FDI inflows than that of lesser market size as it provides more opportunities for sales and profits (Portilla et al., 2016; Anna et al., 2020, & Dessalegn et al., 2020). Besides, the more the host country is open to international market for the exchanging of goods and services, the more foreign investors it received from abroad. Hence, openness to trade is another enabling factor to attract the interest of investors (Singhania and Gupta, 2011). But, the later stages of production cycle, i.e., when the new product reaches maturity stage and lose its uniqueness; the competition from rival firms will become stiff. Therefore, at this stage producers will start to look for lower cost foreign destinations. With this, foreign direct investment occurs in the latter two stages (i.e. maturing product stage and declining product stage).

Internalization Theory of FDI - This theory, developed by Hymer in 1976, focused on explaining the reason behind multinational companies open branches in a foreign countries rather than selling their technology. Hymer asserts that the main motive for foreign investors is firm's desire to exercise a full control over operation. His argument mainly relied on the existence of imperfect competition; hence, firms should first possess some kind of monopolistic advantage before engaging in cross boarder activity. Those monopolistic advantages may include ownership of patents, know-how, managerial skills, etc. that the local companies do not have. In support of this theory, Krugman and Obstfeld (2006) explained the difficulty in selling or licensing some kind of technology. Technology is economically useful knowledge, may sometimes be embodied in the mind of a group of individuals, and is impossible to write or sale to other parties. These difficulties of marketing and pricing of certain know-how will lead multi-national companies to open foreign branches under their own supervision. Therefore, once these investors get ownership right, they

prefer to have well educated man power to easily understand and implement their technologies. Man powers with high and better education levels are able to perform a more complex activities or tasks efficiently and adopt the available technologies that the investor bring to the economy (Antonio, 2014). However, sustainable development could only be possible with the right institutionally advocated policies. Thus, good governance like good public and civil services, good policy formulation and implementation, government's commitment to be responsibility, etc. and politically stable environment, i.e. absence of any form of violence, terrorism, institutional pattern of authority is respected, existence of legal means of political changes, etc. encourages foreign direct investments (Ajide & Raheem, 2016, and Rania & Samar, 2022). In line with this, the pioneering study undertaken by Dunning (2003) indicated that good governance and economic freedom are significant determinants of FDI. Moreover, other institutional factors such as political stability and low corruption enhance FDI inflows (Dunning, 2003, and Bissoon, 2011). Therefore, it is recommended to analyze these factors together with possessing monopolistic advantage in the host county to have a healthy investment.

The Eclectic Paradigm – This theory of J. Dunning provides a general explanation for FDI determinants. Dunning (1993) has recognized three variables, such as ownership-specific (O), location-specific (L), and internalization (I). The paradigm is also called the OLI framework. The key statement is that all these three factors are important in determining the extent and pattern of FDI inflow. Ownership-specific variables include tangible assets like natural endowments, man-power and capital, and intangible assets like technology and information, managerial, marketing and entrepreneurial skills, and organizational systems. Whereas, Location-specific variables refer to factor endowments as well as market structure, government legislation, policies, and other cultural environments in which FDI is running. Lastly, internalization refers to the firm's inherent flexibility and capacity to produce and manage the market through its own internal subsidiaries. From these three advantages if only one is met, then firms will rely on exports, licensing or the sale of patent, to service foreign markets. Thus, the generalized prediction of the eclectic theory is that a firm can only capture a foreign market through FDI if it has the capacity to exploit simultaneously all the three advantages.

From Dunning's theory of eclectic, the ownership and internationalization advantages are necessarily of a micro in nature, while locational advantages generally corresponding to

macroeconomic variables (Mariam et al., 2019). In general, countries that have location advantages can attract more FDI (Getinet and Hirut, 2006). However, the presence of location specific advantages in the host country per se do not able firms to undertake FDI, rather the location choice decisions considered the profitability with which the ownership and internalization advantage can be combined with the locations. Dunning (1993) pointed out that the principal objective of firms in undertaking foreign production is to advance their long-term profitability. In general, focusing on locational advantages, Dunning (2000) identifies three main motives that encourage MNEs to engage in foreign production: market seeking, resource seeking, and efficiency seeking FDI.

Market-seeking motives correspond to FDI that target at supplying the local market or markets in the host countries. Since, foreign investors are well aware that if the population size or real GDP per capital of the host country is huge enough, they could find enough consumers of their products and would cherish and crave for such market (Anyanwu, 2011). Thus, market size is a fundamental and significant determinant of FDI inflow to the host countries (Vijayakumar, 2010). Thereby, larger market size of the host country, its per capita income and consumer's demand (all of them to take advantage of the economies of scale) are the main reasons behind market-seeking FDI (Mariam et al., 2019). However, a market with high inflation rate reduces the expected profit on investment and hence the volume of investment becomes diminished. Thereby, FDI inflows will be discouraged by economies with higher inflation rate as the home currency will be depreciated by inflation in such a way that the same amount invested will mean less value in terms of the currency of the host economy, lower purchasing power and capacity in the host country (Mhlanga et. al., 2010).

Whereas, resource-seeking companies are those which invests abroad in order to obtain cheap resources. Host countries with good infrastructure facility like electricity services, alongside other natural resources could most likely attract more FDI from abroad. For instance, well-established infrastructure such as roads, airport, electricity, water supply, telephones, and internet access will reduce the cost of doing business. This also helps to maximize the rate of return. The inverse is also holds true for poor infrastructure facility. Then, a trustworthy infrastructure system needs to be in place to permit the movement of output and input from source to production point and port of shipment (Kinuthia & Murshed, 2015).

Efficiency-seeking motives correspond to FDI is designed to encourage a more efficient division of man power or specialization of assets by MNEs. This implies foreign direct investors may not only be interested in low cost of man power or workforce but also professionalism and quality of human capital really matters; low wages might implies lack of productivity, professionalism and quality of human capital (Omanwa, 2013, and Sherif & Dalia, 2016). Therefore, quality of human capital is an important determinant factor of FDI inflow particularly in developing countries like Ethiopia.

2.2. Empirical Review

Many empirical studies have been conducted in analyzing determinant factors of foreign direct investment, especially in Africa. Researchers have been using different statistical methods, periods and different types of variables to find the factors that affect FDI inflow to different developing countries in Africa.

The inflow of FDI to a host country has important benefits on the economic development. Then, it needs to give a due attention in the economic literatures (Visansack et al., 2018). The studies conducted by Vijayakumar (2010) and Visansack et al. (2018) in India and China over a study period of 1975 to 2007 and 1995 to 2015 respectively using panel data analysis method, concluded that although market size, inflation rate and infrastructure are positive and significant determinants of FDI, trade openness is not significant determinants. This is most likely related to the interest of foreign investors whether to sell their product within the host country or not based on their profit amount. Hence, if the investor could found that domestic market and other factors like good infrastructure, with stable inflation rate, he may not want to export his product abroad as he can generate a reasonable amount of profit. On the other hand, trade openness is positively correlated with FDI and statistically significant, whereas inflation and political instability have a negative but statistically insignificant effect to attract FDI (Tania & Samsubar, 2021). This study was conducted in Indonesia using panel data over a study period of 2005 to 2015. Whenever high inflation rate persist for a long period of time, it reduces the expected profit on investment and hence the volume of investment becomes diminished. While, Neha and Monica (2018) have conducted a study using panel data analysis technique over a period of 2004 to 2013 in Queen Mary university of London. Their finding depicts that trade openness has positive and statistically significant association with FDI inflow to the host country. Hence, investors investing in this host country are mainly export oriented.

Foreign direct investment is a vital device for the development of any economy as it is more stable than several forms of capital flows. The consensus is that it provides the much needed requirement for economic development and growth. However, evidences in Nigeria have shown FDI crowding out domestic firms and possible contraction of the economy thereby affecting industries and employment (Osemene et al., 2017). The study conducted by Osemene et al. (2017) in Nigeria using co-integration and ECM over the period of 1984 to 2015 revealed that inflation and export are negative related to FDI in Nigeria, which matches with Oludayo's, (2020) which was studied in Nigeria over the period of 1986 to 2018 using ARDL approach of time series analysis, and Tania & Samsubar (2021) findings on the effect of inflation rate. Due to the negative effect of inflation, interest rate and export on the countries FDI inflow, they recommend the respective government body to promote import liberalization through the reduction of tariffs; reduce the importation of consumable and intermediate goods and encourage the local industries to produce such goods.

Besides to this, some other factors have positive influences to attract FDI, such as labor force, macroeconomic policy and political stability, skilled labor, and market size (the higher income could attract more FDI inflows into the host countries) have positive and significant role on FDI attraction. But trade openness negatively affects FDI inflows (Vijayakumar, 2010; Visansack et al., 2018; Minh et al., 2020). Moreover, economic shocks often have a negative impact on FDI inflows. Based on the findings of this study the researcher has recommend that the concerned authorities should pay special attention on expanding the market size because it is the first priority of foreign investors, s/he has to work hard on human capital development, s/he has to adjust trade openness so as to able to steal the attention of many foreign investors. As a bottom line, macroeconomic stability needs to be addressed based on international standards in order to secure the belief of foreign investors in the long-term (Minh et al., 2020). This is due to the fact that the inflow of FDI strongly depends on the policies of the host country, particularly those directly affecting the operation of FDI projects among which the macroeconomic policy is one of the interests.

Husam et al. (2017) have empirically analyze determinants of foreign direct investment using the same statistical analysis method with Tania & Samsubar (2021), over a period of 1995 to 2013 by deploying a panel data approach, and the result of the analysis revealed that human capital, market size (with the GDP growth as proxy), political stability, and trade openness positively correlated

with foreign direct investment. The existence of educated and skilled workers among the labor force raises investors' confidence that their investments would be effectively managed. Likewise, the more open host country to international marker is likely to attract more FDI from abroad. Therefore, working on these essential determinant variables could benefits the host country through attracting more investments from abroad. In addition to the positive effect of market size and human capital on FDI, Ngô et al. (2018) also revealed that infrastructure development is a positive and significant determinant of FDI inflow at the subnational level in Vietnam. They have analyzed a longitudinal data set over a period of 2008 to 2013, and clearly mentioned the effect of well-developed infrastructure facilities, skilled human capital, and large and developed domestic market in attracting foreign direct investment. Thus, developed and middle income countries are the primary choice of foreign investors because they want to access well developed domestic market, skilled and technically efficient human capital, well developed infrastructure services or facilities, etc. so as to run their investment effectively.

The study conducted by Van and Quang (2021) concerning the effect of inflation in attracting foreign direct investment using panel data with pooling and fixed effect model over a period of 1996 to 2019, domestic market size and inflation, together with quality of economic institution are key drivers that significantly attract FDI while political instability and quality of political institutions, like government effectiveness, are negatively associated with FDI inflow. Poor institutional quality, like weak governance effectiveness which is characterized by lack of accountability and transparency in any financial controlling system, exposed to corruption and other weak manifestations challenges. Likewise, political instability has a long lasting economic, social psychological and effect alongside weak governance, particularly, in developing countries. Hence, formulate and develop economic stage wise policies could minimize the effect of political instability and incourage FDI inflow to the host countries (Van & Quang, 2021, and Rania & Samar, 2022).

Furthermore, Linh and Winai (2020) have tried to identify the determinant factors of FDI inflow to 62 developing countries over the period of 1996 to 2014 using dynamic extreme bounds analysis method, which is used to examine the strength of explanatory variables. The analysis result depicts that trade openness, large domestic market size and developed infrastructure are an important factor

of FDI inflow. While, macroeconomic instability has negative effect to FDI inflow because it may increase the interest rate and thereby leads to higher financial cost.

Based on the empirical analysis conducted by Abdu on motives of FDI in Ethiopia over a period of 1992 to 2015 using vector auto-regressive model and ordinary least square method, among different economic and financial variables considered in the research to assess their effect on foreign direct investment inflow to Ethiopia in the long run, market size, and trade openness are positively associated with FDI. On the other hand, inflation is the dominant enemy of FDI inflow towards Ethiopia. Thus, the government of Ethiopia need take appropriate macroeconomic policy measures to tackle this and other investment related impediments in order to attract and motivate investors (Abdu, 2020). Having large domestic market size and being open to international market, and minimization of restrictions on foreign trades of goods and services are good mechanisms of attracting FDI from abroad.

Amanuel (2014) has tried to identify the determinant factors of FDI inflow to Ethiopia using a time series analysis (multiple linear regression method) over the study period of 1990 to 2011. In this study, trade openness and macroeconomic instability (inflation) were identified as statistical significant determinant factors of FDI. He has recommended the government of Ethiopia to focus on more of outward looking growth strategy implementation, and macroeconomic policy environment to build the interest and confidence of foreign investors. While, domestic market size, human capital and infrastructure were statistically insignificant determinants. In here, how to proxy of a variables, method deployed to analysis the data and length of the study period are really needs meticulousness. For instance, Amanuel (2014) has proxied size of domestic market by real GDP growth rate, and he also used only 20 years period data for the study. But, it is recommended to use greater than 30 years period data for time analysis so as to get good and reliable estimates alongside the right sign. Besides, since market size depicts effective demand, it may depicts the right sign and statistical significant coefficient if it proxied by real GDP per capital.

Moreover, study conducted by Habtamu (2019) using descriptive analysis method over a study period of 2006 to 2017, implied that FDI could be determined by a number of independent variables, like market size, economic growth rate, real growth domestic product, infrastructure, natural resources, political situations, etc. in considering the situations of the host countries. Based on his finding, trade openness, real growth domestic product (domestic market size), liberalization,

exchange rate, and devaluation are positively related to the inflow of FDI in Ethiopia. Whereas inflation, poor infrastructure, volatile and high lending interest rate are still statistically significant but negatively affect the inflow of FDI to Ethiopia. Therefore, the government has to make a serious intervention through infrastructure development, formulation of reliable fiscal and monetary policies, and mitigate the negative effect of inflation, interest rate, and other macro variables. This implies if there is large market size with good infrastructure facilities and stable macroeconomic conditions in the host countries, the inflow of FDI could be maximized.

2.3. Conceptual Framework of the Study

Based the theoretical and empirical reviews above, the researcher has developed the following conceptual framework.

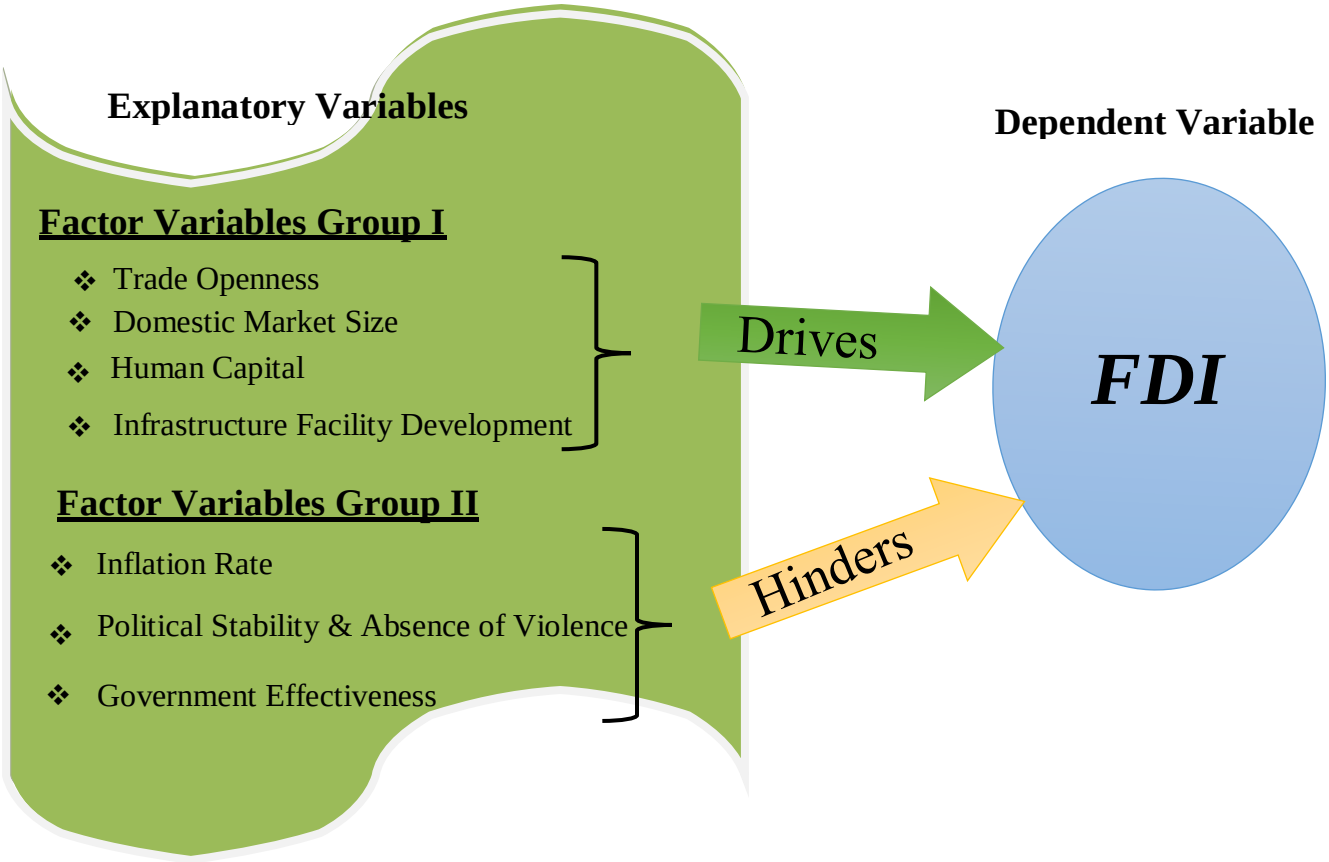


Figure 1: Conceptual Framework

CHAPTER THREE
3. RESEARCH METHODOLOGY

Introduction

As this chapter is the brain of the whole analysis, the main contents included here with are design and approach of the research, data source and type, data analysis technique, model specification, and pre and post diagnostic tests of the model were discussed.

3.1. Research Design

The research design adopted to address the research question mentioned above is explanatory research design. In analyzing, examining, and explaining the relationship between foreign direct investment and its determinant factor variables considered in this study, such a research design is most preferable over others. This is due to the fact that explanatory research design focuses on explaining and displaying a logical proof to draw inferences in respect to causal relations among variables being assessed (Bryman and Bell, 2007) to have a better understanding on the subject matter.

3.2. Research Approach

Quantitative research approach is a systematic approach that entails the use of numerical analysis that provides a narrow and concise description of controlled variables (Muijs, 2011). Besides, it is useful in generalizing the finding of the research on which the sample is based to the larger population (Punch, 2013). Hence, in identifying, analyzing and explaining the relationship between these variables which are measured or proxied in terms of quantities or numbers, quantitative research approach is preferred over qualitative approach, and adopted to this study.

3.3. Data Set, Type and Sources

3.3.1. Data Set

There are many empirical and theoretical literatures that suggest determinant factors to enhance the inflow of FDI towards the host country. Among them this study tried to test as which determinant variable has long run and short run effect on the inflow of FDI. In doing so, the study takes time series data on the above discussed factor variables that supposed to determine the inflow of FDI to Ethiopia.

3.3.2. Data Type and Sources

Based on the availability of data on FDI inflow and major explanatory variables that affect FDI inflow to Ethiopia, annual time series data were collected. The type of data the researcher used in this study were secondary data, collected from different reputable sources like National Bank of Ethiopia (NBE), The World Bank data base, World Development Indicators, international monetary fund (IMF), and World Bank governance indicators. The length and duration of the data used in this thesis is thirty years annual time series data that ranges from 1990 to 2020.

3.4. Data Analysis Techniques

Data analysis is the process used to transform the row data in to information through analyzing and then make meaningful outcomes (Burns and Grove, 2007). In analyzing the determinant factors of FDI inflow to Ethiopia, using time series data collected from different sources, the researcher adopted an Auto-Regressive Distributive Lag (ARDL) Model with a Bound test for Co-integration.

3.4.1. Basics of ARDL Approach to Co-integration Testing

Irrespective of whether the underlying variables are I(0), I(1) or a combination of both, ARDL is a preferred approach to co-integration or bound procedure for a long-run relationship (Emeka and Aham, 2016). In such situation pre-testing problems associated with standard co-integration analysis which requires the classification of the variables into I(0) and I(1) can be avoided. Meaning the bound co-integration testing procedure does not require the pre-testing of the variables for unit roots and is robust when there is a single long run relationship between those variables. If the F-statistics (Wald test) depicts that there is a single long run relationship and the sample data size is small or finite, then ARDL approach becomes relatively more efficient, else ARDL approach cannot be applied. Hence, an alternative approach like Johansen and Juselius (1990) becomes the preferred one. That is, if the various single expression of the underlying individual variable as dependent variable shows a feedback effect, i.e., multiple long run relationships between the variables, then other techniques like multivariate procedure could be employed (Emeka and Aham, 2016).

3.4.2. General Model Specification

The general ARDL (m, n) model with p exogenous variables, which can also be written as ARDL $(m, n; p)$, could be specified as:

$$Y_t = \beta_0 + \sum_{i=1}^{m} \delta_i Y_{t-i} + \sum_{j=1}^{p} \sum_{i=0}^{n} \beta_{ij} X_{jt-i} + \varepsilon_t \dots\dots\dots 3.1$$

Where:

Y_t – Stationary dependent variable, X_t – Stationary explanatory variables allowed to be purely I(0) or I(1) or a combination of both, β & δ are coefficients, β_0 is constant term, j = 1,2,…, p is number of explanatory variables included in the model, m & n are optimal lag orders, and $\varepsilon_t \sim iid(0,\ \delta^2)$.

Therefore, to study the determinant factors of FDI, the following model was framed.

Foreign Direct Investment = f[trade openness, domestic market size, human capital, inflation rate, political stability & absence of Violence, infrastructure facility, & Government effectiveness].

This implies:

$$\boldsymbol{FDI_t = \beta_0 + \sum_{i=1}^{m} \delta_i FDI_{t-i} + \sum_{i=0}^{n} \beta_{1i} OPP_{t-i} + \sum_{i=0}^{r} \beta_{2i} GDPC_{t-i} + \sum_{i=0}^{s} \beta_{3i} HC_{t-i} + \sum_{i=0}^{u} \beta_{4i} INFR_{t-i} + \sum_{i=0}^{v} \beta_{5i} PSAV_{t-i} + \sum_{i=0}^{x} \beta_{6i} INFS_{t-i} + \sum_{i=0}^{y} \beta_{7i} GE_{t-i}\ \varepsilon_t \dots\dots 3.2}$$

Where:

- **FDI_{t-i} denotes net FDI inflows to Ethiopia as % of GDP**
- **OPP_{t-i} is openness of trade**
- **$GDPC_{t-i}$ is Real Gross Domestic Product per Capital Income**
- **HC_{t-i} is Human Capital**
- **$INFR_{t-i}$ is the Annual Inflation Rate**
- **$PSAV_{t-i}$ is Political Stability and Absence of Violence**
- **$INFS_{t-i}$ is infrastructure facility denoted by electric power consumption (kWh per Capita)**
- **GE_{t-i} is Government Effectiveness**

3.4.3. Description and Summary of Variables

3.4.3.1. Dependent variable

FDI **-** Foreign Direct Investment has been one of the major sources of foreign capital since the beginning of globalization. It has positive effects such as higher foreign capital investments, technology spillover and increased market accessibility (Cheshta & Neha, 2019). In this study, FDI is measured as the natural log of annual net FDI inflows (% of GDP) to Ethiopia.

3.4.3.2. Independent variables

Trade Openness – In this study, openness is measured by dividing the sum of exports and imports by the value of total GDP. That is (exports + imports) to GDP. It is hypothesized that the more open the country to international trade is, the greater the inflow of foreign direct investment to the host country.

Size of Host Countries' Domestic Markets **-** Countries with larger domestic markets are likely to attract more FDI, especially when FDI inflows aim at serving the domestic market (Abdoul, 2015), i.e. when FDI is market seeking. As a proxy for domestic market size, the natural log of real GDP per capital is used since market size refers to effective demand. Thus, researcher expects a positive link between the size of domestic markets and FDI inflows.

Human Capital **-** is generally considered as a complementary factor to physical capital. It implies skilled people, that is, skill acquired by individuals through a process of investment in education, health and training. Knowledge is now regarded as a new factor of production, innovation and growth. Thus, large stock of human capital makes it easier for a country to absorb new products or ideas that have been discovered somewhere else (Alemu & Bishnu, 2011). In line with this, the researcher used the natural logarithm of secondary school enrolment (% gross), as a proxy to human capital. Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers (WDI, 2021). Therefore, it is expected to have a positive and significant short and long run relationship with FDI inflow towards Ethiopia

Inflation Rate - a measure of the change in average paid price by consumers for a market basket of consumer goods and services annually. High inflation rate is a sign of macroeconomic instability and a source of uncertainty in an economy (Barro, 1980). By making the host countries' economic environment uncertain, high inflation rate reduces the expected return to investment and so the volume of investment (Abdoul, 2015). Thus, as a proxy for the inflation rate, and so as to minimize the effect of outliers, the researcher used the natural logarithm of the annual rate of the consumer price index.

Infrastructure facility Development - good infrastructure is an important factor for developing countries seeking to attract FDI from abroad. Hence, the construction and improvement of foundational infrastructure services with the objective of accelerating economic growth and improvement in quality of life is helpful in attracting the interest of foreign investors (Vijayakumar, 2010). As a proxy for available physical infrastructure, the researcher used the natural logarithm of electric power consumption (kWh per capita) since it measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants (WDI, 2014). Besides, the amount of energy produced and consumed is a good indicator of the level of productivity of a given country (Edward et al., 2018). A positive relationship between electric power consumption (kWh per capita) and FDI inflows is hypothesized.

Political stability and the absence of violence - political stability and the absence of violence measure the probability that the government in power will be destabilized or overthrown by possibly unconstitutional means including politically motivated violence and terrorism. Political stability is essential if markets are to work effectively in guiding resource allocation and fostering confidence of economic agents in undertaking long-term investment (Alemu & Bishnu, 2011). Political stability in the host country is really important since foreign firms are reluctant to invest their capital in areas of high uncertainty. According to the World Bank governance indicator (WBI, 2021), this variable has an estimate value ranging from approximately -2.5 to 2.5, in units of a standard normal distribution. Minus 2.5 indicates worst political system and violence while 2.5 indicates there is stable political system and no more violence in the host county. A positive link with FDI inflows is hypothesized.

Government effectiveness **-** This indicates the freedom and quality of public and civil services, and the quality of the government of the host country to formulate policies and implement them (Alemu & Bishnu, 2011). According to the World Bank governance indicator (WBI, 2021), the variable government effective has an estimate value ranging from approximately -2.5 to 2.5, in units of a standard normal distribution. Minus 2.5 indicates weak governance system while 2.5 indicates good or strong governance system. In this thesis, the researcher define governance effectiveness as 'GE', and having the current situation of Ethiopia in mind, we assume that this factor is negatively related with inward FDI to Ethiopia.

Table 1: Summary of Determinants of FDI inflow to Ethiopia

Variables	Proxy	Descriptions	Data Sources	Expected Sign (SR/LR)
FDI (Dependent Variable)	**FDI**	**Annual Net FDI inflows (% GDP)**	**WDI database**	
Trade openness (Predictor Variable)	**OPP**	**Ratio of Trade (Imports plus Exports) to GDP**	**NBE**	**+/+**
Domestic Market Size (Predictor Variable)	**MRZ**	**Real GDP per capita (Current US $)**	**WDI database**	**+/+**
Human Capital (Predictor Variable)	**HC**	**School enrollment ratio, secondary (% gross)**	**WDI database**	**+/+**
Inflation Rate (Predictor Variable)	**INFR**	**Annual inflation rate**	**IMF, World Economic Outlook Database**	**-/-**
Infrastructure (Predictor Variable)	**INFS**	**Electric power consumption (kWh per capita) of host country**	**WDI database**	**+/+**
Political stability and the absence of violence (Predictor Variable)	**PSAV**	**Political stability & Absence of violence**	**World bank governance indicators online database**	**-/-**
Government Effectiveness (Predictor Variable)	**GE**	**Government Effectiveness,**	**World bank governance indicators online database**	**-/-**

3.5. ARDL Model Estimation and Testing

In examine the relationship between the explanatory variables and FDI inflow to Ethiopia, this study has employed unit root test to check the stationarity of the variables, co-integration test to check long run relationship, stability test and other tests such as normality, heteroscedasticity and serial correlation tests.

3.5.1. Unit Root Test

Usually macroeconomic time series variables are found to be a victim of non-stationarity problem. If the mean and variance of a time series data are constant over time, the series is said to be stationary series. While the covariance between two time periods depends only on the gap between the periods and not the actual time at which this covariance is considered (Charles & Richard, 2018). If one or both of these conditions are violated, then the series has a unit root. The stationarity of a time series data can be investigated using the Augmented Dickey-Fuller (ADF) test, Phillips-Perron test, or the KPSS test. The ADF test of stationarity, which is used in this study, is based on the following the hypothesis:

$$\boldsymbol{H_0}: \boldsymbol{The\ series\ has\ unit\ root}$$

$$\boldsymbol{H_a}: \neg\, \boldsymbol{H_0}$$

Then, we reject H_0 if the calculated ADF test statistics is greater than that of the critical value and conclude as the series is stationary.

3.5.2. Maximum Lag and ARDL Model Selection

Besides to unit root test, it is essential to choose the appropriate lag length before the application of the ARDL bound test. On the other hand, the estimation of equation 3.3 below requires information on the maximum lag order for both the dependent and independent variables based on their first difference. Thus, to help determine the maximum lag level, this study employed VAR lag order selection technique through the Akaike Information Criterion (AIC).

3.5.3. The Bound Testing Approach

To examine the relationship between the dependent and independent variables used in this study, deploying an appropriate econometric model is necessary. Using Vector Error Correlation Methods (VECM), and Eagle- Granger co-integration tests to find both the long run and short run

relationships between variables of interest may not hold always because the variables may not be integrated of the same stationarity level. On the other hand, the ARDL model can be used whether the variables of interest are in I(0), I(1) or a combination of both except that the variables are in I (2) and above levels of stationarity. Therefore, to take advantage of the above conditions and assess the existence of relationship level between the dependent and independent variables, this study adopted the autoregressive distributed lag (ARDL) as developed by Pesaran et al. (2001).

In addition to the above advantage, the bounds testing method is preferable for small sample sizes estimation. The bounds testing method requires the modeling of equation (3.2) above into an adjusted Error Correction Model (Pesaran et al., 2001). In this study, a certain steps were followed to apply the ARDL estimation model.

Firstly, the long run associations between the dependent and independent variables were estimated by testing the significance of the lagged values of the variables in the adjusted ECM below.

$$\Delta FDI_t = \beta_0 + \sum_{i=1}^{m} \delta_i \Delta FDI_{t-i} + \sum_{i=0}^{n} \beta_{1i} \Delta OPP_{t-i} + \sum_{i=0}^{r} \beta_{2i} \Delta GDPC_{t-i} + \sum_{i=0}^{s} \beta_{3i} \Delta HC_{t-i} + \sum_{i=0}^{u} \beta_{4i} \Delta INFR_{t-i} + \sum_{i=0}^{v} \beta_{5i} \Delta PSAV_{t-i} + \sum_{i=0}^{x} \beta_{6i} \Delta INFS_{t-i} + \sum_{i=0}^{y} \beta_{7i} \Delta GE_{t-i} + \gamma_i FDI_{t-i} + \theta_{1i} OPP_{t-i} + \theta_{2i} GDPC_{t-i} + \theta_{3i} HC_{t-i} + \theta_{4i} INFR_{t-i} + \theta_{5i} PSAV_{t-i} + \theta_{6i} INFS_{t-i} + \theta_{7i} GE_{t-i} + \varepsilon_t \dots\dots\dots\dots \mathbf{3.3}.$$

In determining the maximum lagged order of the above equation (eq. 3.3), it could be determined mainly by the Akaike Information Criterion (AIC). F-Bounds with an upper and lower bound critical value were used to determine the existence of the long-run relationship between FDI and the independent variables. Both the null and alternative hypotheses for the F-bound tests are stated below.

$$H_0: \ There\ is\ no\ co-integration\ between\ variables$$
$$H_a: \neg H_0$$

If $F_{calculated}$ value is greater than the upper bound critical value (UBCV), then we reject the null hypothesis and conclude that there exist co-integration between the variables, or if $F_{calculated}$ value is less than lower bounds critical value (LBCV), then we do not reject the null hypothesis and conclude that there is no co-integration between the variables under study (Pesaran et al., 2001). Else the result is inconclusive and the analysis requires further investigation.

Following this test, if the result depicts existence of long-run relationships between the dependent and explanatory variables employed in this study, then the next step involves estimation of the long-run model as indicated below. Unfortunately both the long-run model and bounds tests are jointly estimated in EViews.

$$FDI_t = \beta_0 + \sum_{i=1}^{m} \delta_i \Delta FDI_{t-i} + \sum_{i=0}^{n} \beta_{1i} \Delta OPP_{t-i} + \sum_{i=0}^{r} \beta_{2i} \Delta GDPC_{t-i} + \sum_{i=0}^{s} \beta_{3i} \Delta HC_{t-i} + \sum_{i=0}^{u} \beta_{4i} \Delta INFR_{t-i} + \sum_{i=0}^{v} \beta_{5i} \Delta PSAV_{t-i} + \sum_{i=0}^{x} \beta_{6i} \Delta INFS_{t-i} + \sum_{i=0}^{y} \beta_{7i} \Delta GE_{t-i} + \varepsilon_t \dots\dots 3.4.$$

As the last stage of the ARDL model, the Error Correction Model (ECM) is estimated as bellow.

$$\Delta FDI_t = \mu_0 + \sum_{i=1}^{m} \delta_i \Delta FDI_{t-i} + \sum_{i=0}^{n} \beta_{1i} \Delta OPP_{t-i} + \sum_{i=0}^{r} \beta_{2i} \Delta GDPC_{t-i} + \sum_{i=0}^{s} \beta_{3i} \Delta HC_{t-i} + \sum_{i=0}^{u} \beta_{4i} \Delta INFR_{t-i} + \sum_{i=0}^{v} \beta_{5i} \Delta PSAV_{t-i} + \sum_{i=0}^{x} \beta_{6i} \Delta INFS_{t-i} + \sum_{i=0}^{y} \beta_{7i} \Delta GE_{t-i} + \rho ECM_{t-1} + \varepsilon_t \dots\dots\dots\dots 3.5$$

Where:

- Δ - Represents the difference operator
- $\delta_i, \beta_{ji}, j = 1, 2, \dots 7$ - Represents the short-run dynamic parameters
- **m, n, r, s, u, v, x, y** - Represents the optimal lag lengths
- ECM_{t-1} - Represents the error correction term, and
- ρ - Represents the speed of the adjustment

3.5.4. Serial Correlation (LM) Test

Serial correlation occurs, in running a regression, when the error terms are correlated with their lagged values Gujarati (2004). The existence of serial correlation implies that our ARDL model is not efficient in estimating a regression, the standard errors will be incorrect, and then the model estimates are biased and inconsistent (Mukherjee & Laha, 2019). To check the existence of serial correlation, this research used the Breusch-Godfrey Serial Correlation LM test using EViews-10 software. The hypothesis of LM is that:

H_0: $residuals\ are\ not\ serialy\ corellated$

H_a: $\neg\ H_0$

3.5.5. Heteroscedasticity test

As part of the opening analysis of the ARDL regression model, the errors of the specified equations were tested for heteroscedasticity. Heteroscedasticity occurs when the variance of the error terms from an estimated regression is not constant (Gujarati, 2004). If we run the ARDL regression in the presence of heteroscedasticity, the output produced from the analysis might be misleading because the estimates becomes less precise, far from the correct population value, and variance of the coefficient estimates become large enough, p-value become smaller than it should be, and as a result the F and t-values will be smaller and the conclusion will be wrong. In this study, Breusch-Pagan- Godfrey test will be employed in order to detect the problem of heteroscedasticity using EViews 10 software.

The hypothesis of the test states that:

$$\boldsymbol{H_0}: \boldsymbol{No\ heteroscedasticity}$$

$$\boldsymbol{H_a}: \neg\, \boldsymbol{H_0}$$

3.5.6. Normality Test

A key assumption of the analysis is related to the symmetry of data distribution (i.e., data should be normally distributed) and improving the symmetry of data distribution, i.e. to minimize or eliminate other potential problems associated with heteroscedasticity (Sekaran & Bougie, 2016, and Wooldridge, 2016). Furthermore, so as not to lose important information from the data, the distribution of error terms with in the analysis should be normally distributed with mean zero and variance δ^2.

The null hypothesis for Jarque-Bera test of residual normality is:

$$\boldsymbol{H_0}: \boldsymbol{The\ residuals\ are\ normally\ distributed}$$

$$\boldsymbol{H_a}: \neg\, \boldsymbol{H_0}$$

3.5.7. Stability and Reset Test of the Model

In order to ensure the stability of the ARDL model adopted for this study, Brown et al. (1975) Cumulative Sum (CUSUM) and Cumulative Sum Squares (CUSUMSQ) stability tests are checked. Based on these test results, if the plot of both CUSUM and CUSUMSQ falls within the five percent critical values, it implies the model is stable; else the ARDL model is not stable, whereas the Ramsey *RESET* test tells us that whether the model is correctly specified or not.

The null hypothesis for the RESET test is that:

$$H_0: \textit{Specification of the model is well specified}$$

$$H_a: \neg H_0$$

As a bottom line, this researcher employed the serial correlation, heteroscedasticity, normality, CUMSUM and CUMSUMSQ, and other basic tests to ensure the goodness of fit and stability of the selected model.

CHAPTER FOUR

4. RESULT AND DISCUSSION

Introduction

In this chapter, the researcher has discussed the main results of the analysis using data collected on both the dependent and explanatory variables. In line with this, the main sub topics discussed in this chapter includes descriptive analysis, econometric analysis, pre-estimation tests, model estimation, and post-estimation tests or model diagnostic tests.

4.1. Descriptive Analysis

Descriptive analysis are carried out and provided pattern of FDI inflow (% GDP) to Ethiopia, and summary statistics for the mean, standard deviation, minimum and maximum of the variables considered in the study.

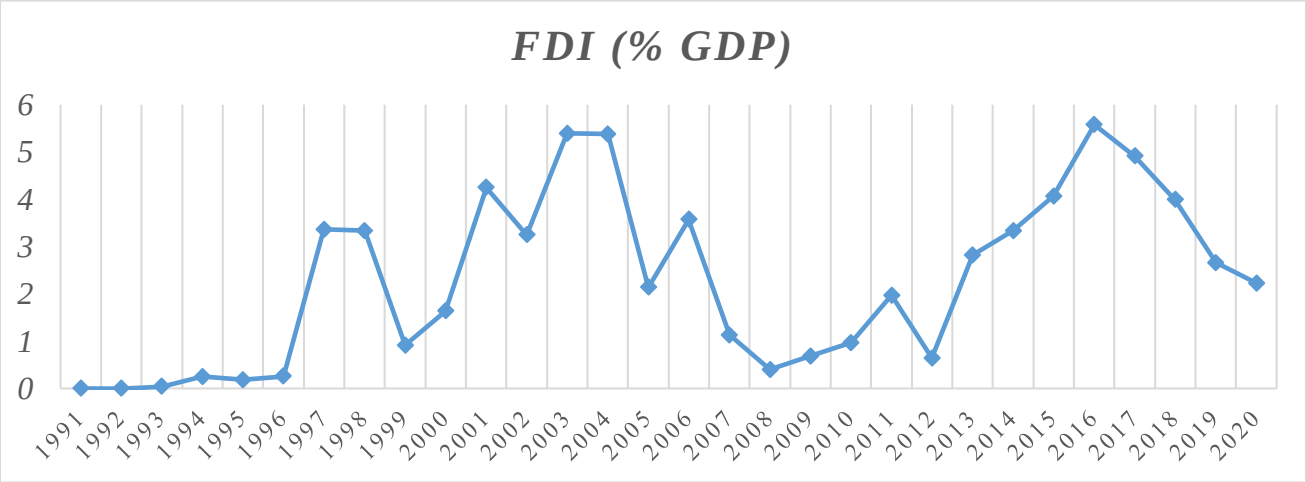


Figure 2: FDI Inflow (% GDP)

The share of foreign direct investment in GDP and its contribution to the development process of the country has been at it extreme low level. Its contribution to GDP has never been above 6 percent. In the period considered, its highest contribution to GDP was recorded to be 5.58% in 2016 while its lowest was almost 0% in 1991 and 1992. Figure 3 above displays the fluctuation of the percentage share of foreign direct investment to GDP around its flat time-trend with a rise in its contribution since 1996.

Based on the above figure, although FDI has started to play some role in the capital formation of Ethiopia following the 1992 liberalization programme such as the introduction of investment guarantee schemes and incentives helped to raise the share of inward FDI in total GDP (Getinet & Hirut, 2006) form 0.04% in 1992 to 3.36% in 1997, the war with Eritrea (i.e. Ethio-Eritrea war) in particular has disrupted the rising trend of FDI inflows. Together with the war, the fragmentary nature of the reform process and limitations associated with it, the expanding culture of corruption, the expansion of parastatals, and particularly since 1998, the growing of political uncertainty in the country were also to blame for the drop in FDI. Hence, due to this prolonged Ethio-Eritrea war and major challenges, the inflow of FDI to Ethiopia had been declining from 1998 to 2000. Before the happening of the war, the government has taken a number of important measures like national currency devaluation, foreign exchange market liberalization, lowering of maximum import duties from 230% to 60%, simplification of export licensing regulation and procedure, etc. to promote the export sector and to improve the inflow of foreign direct investment immediately after he come to power (Getinet & Hirut, 2006). As a result of those measures, the inflow of FDI to Ethiopia began to rise to a maximum of 5.39% in 2003, with a certain oscillations, immediately after the end of the civil war.

The unique event in 2005, i.e. the national election held on May, 2005 resulting in an exceptional vote-claiming, political turbulence and internal instability that lingered for the subsequent few years. Thus, the decline in the share of the stock of FDI in GDP was attributed to the consequences of the political unrest and related challenges caused by the result of the 2005 national election in Ethiopia (Ambachew, 2010). These challenges have affected and weaken the inflow of FDI to Ethiopia since this national election for the next few years. In 2012, the government of Ethiopia has given due attention to the case (EIR, 2019), and the share of FDI in GDP began to rise and reached its maximum value of 5.58%. Despite some incentive packages that the government has set to attract and encourage the interest of foreign investors, the inflow of FDI to Ethiopia has been declining since 2017 due to internal instability like civil war, political unrest and other critical factors such as covid-19, etc.

Moreover, based on the summary statistics in appendix VIII below, the mean indicates the average values of the variables taken in the study. The average FDI inflow over the period of 1991-2020 in Ethiopia was 2.31%. This relatively small figure suggests that Ethiopia need to strengthen its effort in improving FDI inflows in the country to match other regions in the world. Appendix VIII further displays that the average GDP per capita and electric power consumption per capita were $342.45 and 41.77 metric tons respectively over the same period. Moreover, the average inflation rate was estimated to be around 11.36% while the average human capital development rate of the country for a year between 1991 and 2020 was estimated to be 25.24%. Besides, the average annual political stability of Ethiopia from 1991 to 2020 was estimated to be -1.26 whiles the average value for trade Openness was estimated to be 14.22, and also the average governance effectiveness of the country Ethiopia was estimated to be -0.68.

On the other hand, the standard deviation is a measure of how the variables are spread out around their various means. The range is also an indicator of the level of fluctuations in the variables. The larger the range values the higher the level of fluctuations in a variable. Governance effectiveness and political stability had the lowest fluctuation among the variables whiles GDP per capita and electric power consumption per capita had the highest within the study period. The minimum and maximum values can also be served as a measure of the best and worst performance of the country. For instance, it can be seen from appendix VIII that Ethiopia was able to increase FDI inflow to 5.58% of GDP while once up on a time, the net FDI inflow was as low as 0.0% of GDP.

4.2. Econometric Analysis

4.2.1. Pre-Estimation Tests

Unit root test

The unit root test result of the dependent and explanatory variables considered in the study is presented in the following table.

Table 2: Augmented Dickey-Fuller Unit Root Test

Null Hypothesis: The data is not stationary (have a unit root)		
Method	Statistic	Prob.**
ADF - Fisher Chi-square	136.182	0.0000
ADF - Choi Z-stat	-9.46653	0.0000

Source: Own computations using EViews-10.

As depicted by ADF test result above in table 2 and PP test result in appendix–II below, the probability values of all the variables are closer to zero, indicates that the variables are stationary at 5% level of statistical significant. Hence, the null hypothesis of the test is rejected, and it could be concluded that there are no unit roots in the first difference of the variables. This, in turn, confirms that the variables are integrated of either at I(0) or I(1) which is the enabling condition to adopt the ARDL modeling approach for an empirical analysis of the data.

Maximum lag and ARDL model selection

Table 3: VAR Lag Order Selection Criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-36.37396	NA	3.29e-09	3.169568	3.550198	3.285931
1	179.8551	293.4538	7.52e-14	-7.703938	-4.278269	-6.656677
2	***345.4798***	***130.1336****	***2.08e-16****	***-14.96284****	***-8.492133****	***-12.98468****

Source: Own computations using EViews-10

As shown by the output of the VAR lag order selection presented above in table 3, the maximum lags of the variables under consideration is two.

Furthermore, the choice of the right lag order was confirmed by the VAR polynomial graph as shown in Figure 4 below. In this graph, all the dots (blue dots) are within the circle, which assures that the choice of lag order of two for the model is good.

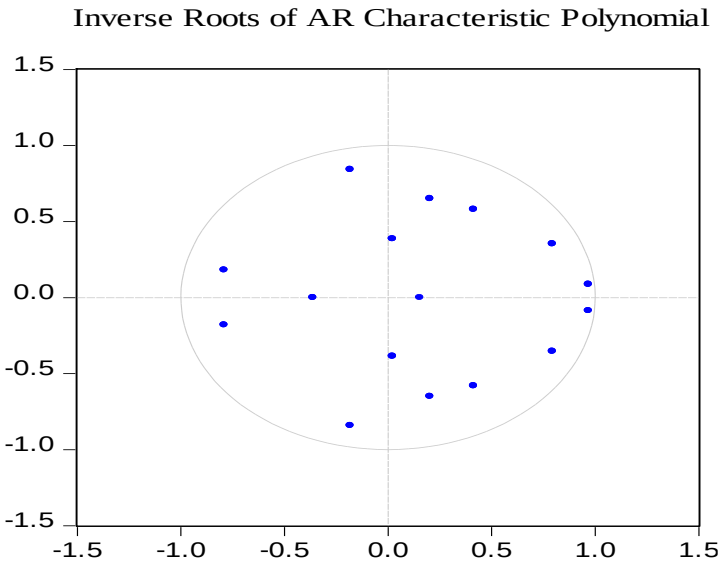


Figure 3: Optimal Lag Selection criterion under VAR Model in Polynomial Graph

Bounds test for Co-integration

The test statistics result for the ARDL long run form and bound test is presented in the following table.

Table 4: ARDL Long Run Form and Bound Test

F-Bounds Test			*Null Hypothesis: No levels relationship*	
Test Statistic	*Value*	*Signif.*	*I(0)*	*I(1)*
F-statistic	***12.94307***	*10%*	2.03	3.13
k	***7***	***5%***	**2.32**	**3.50**
		2.5%	2.60	3.84
		1%	2.96	4.26

Source: Own computations using EViews-10

As per the result in table 4 above, the F-statistics for the bounds test shows a value of 12.94 which falls beyond the upper bound critical values I(1) of 3.50 at 5% level of statistical significance. This implies we can reject the null hypothesis stating that no co-integration between the variables under consideration, meaning that we do not reject the alternate hypothesis that assumes the existence of long-run relationships between the dependent and explanatory variables considered in this study. Hence we can conclude that FDI and the regressor variables have long run relationships.

4.3. ARDL Model Estimation

4.3.1. Long-Run Estimation Results and Discussion

The ARDL long run coefficient estimation result of the model is presented hereunder the table.

Table 5: ARDL long run coefficient estimates

Long run coefficients with unrestricted constant and no trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOPP	1.71	0.201	8.488	0.0001
LGDPC	6.63	0.354	18.738	0.0000
LHC	0.21	0.406	0.516	0.6240
LINFR	-1.07	0.072	-14.902	0.0000
PSAV	-1.45	0.331	-4.382	0.0047
LINFS	9.55	0.569	16.780	0.0000
GE	0.04	0.245	0.166	0.8737

Source: Own computations using EViews-10

As depicted in Table 5 above, the estimated coefficients of trade openness, market size, human capital, inflation, political stability and absence of violence, and infrastructure development show the expected sign, and also statistically significant at 5% level of significance except human capital. Although government effectiveness is statistically insignificant at 5% level of significance, it positively associated to FDI inflows in the long run. This result, however, suggested a deviation from the expectation set in chapter two and three of the paper.

As to expectations, infrastructure facility development (electric power consumption service (kWh per capita)) seemed to have a positive and statistical significant effect on the inflow of FDI to the host country, Ethiopia in the long-run. UNCTAD (2002) pointed out that one of the specific economic and enabling factor identified by investors in Ethiopia is accessibility of good and quality infrastructure facilities. Hence; development of a quality and moderate level infrastructures will result in an increased level of investment inflow from abroad because it creates a convenient working environment in doing business. Having held other things constant, a one percent increase in an infrastructure facility development (electric power consumption service (kWh per capita)) will result in an increased FDI inflow to the host country, Ethiopia by 9.55% in the long run. This finding is consistent with the finding of the research conducted by Anyanwu (2012), and Linh and Winai (2020). However, Getinet and Hirut (2006) and Habtamu (2019) pointed out that development of poor infrastructure service could hinder the inflow of foreign direct investment to the host country.

The impact of inflation (macroeconomic instability) on the inflow of FDI to Ethiopia is evidenced by a negative estimated coefficient and a statistically significant effect. Given those other things held constant, a one percent increase in the country's inflation rate will result in a decreasing of FDI inflow by 1.07% in the long-run. Based on this finding, since inflation (macroeconomic instability) leads to an increase in transaction costs and a decline in the expected rate of return for investors, it is necessary to put in place the right measures that minimize the effect of inflation on FDI inflow. This result is consistent with the results of research conducted by Getinet & Hirut (2006), Workman (2014), Osemene et al. (2017), and Neha & Monica (2018). While, it contradicts the findings of Vijayakumar (2010), Jones and Jacob (2016), Visansack et al. (2018), and Van and Quang (2021) who's finding reveals that foreign direct investment and inflation rate have direct and positive relationship.

In the long-run, market size and trade openness have a statistical significant, and positive effect on FDI inflow to the country at 5% level of statistical significance. Both these variables demonstrate statistical significant relationships with the dependent variable. Given those other things being held constant, a one percent increase in the country's market size and trade openness will result in an improvement of inward FDI by 6.63% and 1.71% respectively in the long-run. As stated earlier, countries with larger market size could receive more FDI inflows than countries having less market size because they provide more opportunities for sales and profits, and likewise, the country with more open to international trade could attract the interest of foreign investors. This finding is consistent with the research findings conducted by Vijayakumar (2010) and Visansack et al. (2018) only for market size, and Anyanwu (2012) and Oludayo (2020) for both variables. On the other hand, it contradicts with the finding of Getinet and Hirut (2006) who stated that due to export oriented nature of FDI in Ethiopia, market size is not an important determinant factor in Ethiopia.

Whereas, in the long run the effect of human capital on foreign direct investment inflow to Ethiopia is positive, but statistically insignificant. This could be due to foreign investors may not be interested on the long run effect or advantage of host countries' human capital because they only stay in the host country for a certain and reasonable period of time. On the other hand, an economy with high fraction of skilled workers is likely to be much more productive and attractive to foreign investors. This finding is consistent with the findings of Getinet & Hirut (2006), whereas it contradicts with the findings of Mariam et al., (2019), and Husam et al. (2017). They point out that, as the level of literacy rate among the labor force increases, the inflow of FDI increases. Moreover, the existence of knowledgeable and skilled personnel among the labor force raises investors' confidence that their investments would be effectively managed Husam et al. (2017).

In contrast to the expectation, the estimated coefficient of government effectiveness turned out to be positively correlated with FDI inflow to Ethiopia, but statistically insignificant relationship at a 5% significance level. This result, in turn, implies that the good quality of public services, civil services and its political dependability, good quality of policy formulation and implementation, and government's commitment to such policies may positively affect the inflow of FDI to the country. Besides, this result supports that effective governments facilitate the inflow to the country as investors might have the confidence to invest in the country that is leads by effective governance systems. This result supports the findings of Yorsa et al. (2013), and Alemu and Bishnu (2011) who have found that a positive and statistically insignificant association between government

effectiveness and FDI inflow to developing countries. On the other hand, this result contradicts the findings of Sabir et al. (2019). However, it supports the theoretical concepts that ineffective governments deter FDI inflow to host countries.

Furthermore, in the long-run, the country's political stability shows negative and statistically significant relationships with FDI inflow at 5% significance level. Hold other things constant, for a unit decrease in the political stability index of Ethiopia, i.e. the political situation getting worst, it result in 145% decreases in foreign direct investment inflow to Ethiopia. This series and harmful viruses of economic performance could be a reflection of tendency of government failure. It may also leads to a more frequent changing of policies and creates volatility in the host country, Ethiopia. Besides, political instability is prominently contributing towards underdevelopment and corruption. The results of this study are consistent with research conducted by Vijayakumar (2010), Ajide & Raheem, (2016), Ngô et al. (2018), Tania & Samsubar (2021), and Rania & Samar, (2022).

In summary, in the long-run, the variables trade openness, market size, and infrastructure facility positively influences the inflow of FDI to Ethiopia. However, inflation (macroeconomic instability), and condition of political stability and absence of violence in Ethiopia are the deterrent factors of FDI inflow to Ethiopia. The remaining determinant variables, i.e., government effectiveness and human capital development found to be statistically insignificant even at 10% level of significant, but positively associated with FDI inflow to Ethiopia.

4.3.2. Short Run Estimation Results and Discussion

The short run estimation output of the statistical analysis is depicted in the following table, Table 6.

Table 6: ARDL Error Correction Regression

ECM regression with unrestricted constant and no trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.59	0.087	-6.740	0.0005
D(LINFS)	-1.10	0.705	-1.565	0.1685
D(LINFS(-1))	-12.25	1.670	-7.335	0.0003
D(GE)	2.18	0.237	9.202	0.0001
D(GE(-1))	1.58	0.216	7.314	0.0003
D(LINFR)	-1.03	0.063	-16.435	0.0000
D(LINFR(-1))	0.40	0.052	7.708	0.0002
D(LGDPC)	4.11	0.445	9.233	0.0001
D(LGDPC(-1))	1.79	0.385	4.644	0.0035

D(LOPP)	0.97	0.181	5.338	0.0018
D(LHC)	2.16	0.752	2.873	0.0283
D(LHC(-1))	1.77	0.817	2.165	0.0736
D(PSAV)	-0.81	0.212	-3.828	0.0087
D(PSAV(-1))	1.31	0.210	6.270	0.0008
CointEq(-1)*	-0.79	0.156	-14.978	0.0000

R-squared	0.990770	F-statistic	99.67171
Adjusted R-squared	0.980829	Prob. (F-statistic)	0.000000

Source: Own computations using EViews-10

The presence of co-integration between the dependent and independent variables requires the estimation of the error correction model to study the speed of error adjustment. As presented above in table 6, it can be concluded that, based on the adjusted R^2 value of 98.08%, the behavior of FDI inflow to Ethiopia is sufficiently captured in the ARDL model of order (1, 2, 2, 2, 2, 1, 2, 2). Hence, the independent variables account about 98.08% of the variations in the inward inflow of FDI to Ethiopia. The remaining 1.92% variations in the FDI inflow are due to other factors that are not considered in this study but captured by the error term.

Whereas the error correction term, represented by CointEq(-1)* in table 6 above, is negative and statistically significant at 5% level of significance. This result, besides confirms the presence of a long-term relationship between FDI inflow into Ethiopia and the independent variables. Both the coefficient of the error correction variable and its corresponding p-value may necessitate studying the fit of the two variables and the speed of adjustment. By looking at the coefficient of the error correction term and its significance level at a 5%, it can be concluded that the speed of adjustment in the disequilibrium is fast, i.e. it is about 79% of any move into disequilibrium is corrected within the next period.

Regarding the relationship between FDI and the independent variables in the short-run, except infrastructure facility development (electric power consumption per capital), all other variables significantly affect the inflow of FDI to Ethiopia. Although infrastructure facility development relates negatively, it has no significant impact on FDI inflow in the short-run. This is most likely due to the fact that electric power generation capacity of developing countries, particularly Ethiopia is generally low and characterized by inefficiencies. Thus, foreign investors may not give due

attention to the host country's electric power service rather they focus on other key determinant factors like domestic market size and openness of the host country.

Concerning trade openness, it affects foreign direct investment directly and significantly in the short-run at 5% level of statistical significant. The regression coefficient value of Trade Openness is 0.97, which means, held other things constant, for every 1% improvement in trade openness of Ethiopia, it increase foreign direct investment inflow by 0.97%. Trade openness is created from the presence of an open economy. The open economy itself is an economy that can interact freely with other economies in various parts of the world (Mankiw, 2008). The impact of trade openness will open up economic paths between countries so that it will open up opportunities for foreign investors to enter into the country; therefore, foreign investors prefer to invest in countries that have a high level of trade openness. This result supports the findings of Husam et al. (2017), Habtamu (2019), Abdu (2020), Linh and Winai (2020), and Tania and Samsubar (2021). On the contrary, Vijayakumar (2010), Osemene et al., 2017 and Visansack et al. (2018) found trade openness as a deterrent of FDI inflow.

Domestic market size on the other hand affects foreign direct investment directly and significantly in the short-run at 5% level of statistical significant. The regression coefficient of domestic market size is 4.11, which means, ceteris paribus, when the domestic market size increases by one unit in percent, foreign direct investment (FDI) will increase by 4.11%. A larger market will increase commodity demand. Thus, the increase in sales in the country's market reflects that the government can already compete to attract foreign investors. Investors who enter the market will benefit, so foreign investors are interested in investing in that country, i.e. Ethiopia. This result supports the findings of Vijayakumar (2010), Husam et al. (2017), Abdu (2020), Visansack et al. (2018), and Linh and Winai (2020).

The effect of inflation on foreign direct investment is as expected which is negative and statistically significant at 5% level of significance. The regression coefficient value of inflation rate of Ethiopia is negative, which depicts that other things held constant, for one percent increase in an inflation rate of the host country, Ethiopia will leads to the decrement of foreign direct investment inflow by 1.03% in the short run. When the inflation rate getting higher and higher, FDI inflows to the host countries will be greatly affected as it reduces the expected profit on investment by investors and

hence the volume of investment becomes diminished because as the home currency will be depreciated by inflation in such a way that the same amount invested will mean less value in terms of the currency of the host economy, lower purchasing power and capacity in the host country. This result is consistent with the results of research conducted by Osemene et al. (2017), Neha and Monica (2018). On the contrary, this finding contradicts the findings of Vijayakumar (2010), Visansack et al. (2018), and Van and Quang (2021) whose findings imply that inflation (macroeconomic stability) is an important determinant of foreign direct investment inflow to Ethiopian.

Moreover, in the short-run, the country's political stability shows negative and statistically significant relationships with FDI inflow at 5% significance level. Held other things constant, for a unit decrease in the political stability index of Ethiopia, i.e. the political situation getting worst, it result in 81% decreases in foreign direct investment inflow to Ethiopia. Besides, political instability is prominently contributing towards underdevelopment and corruption. The result supports the finding of Alemu and Bishnu, (2011), Ngô et al. (2018), Tania and Samsubar (2021), and Rania and Samar, (2022), etc. whereas the impact of effective governance, which refers the ability of the state to implement sound policies, on foreign direct investment inflow to Ethiopia is positive and statistically significant at 5% critical value. Thus, freedom and quality of public and civil services, the quality of the government to formulate policies and implement them plays an important role in attracting huge FDI inflow to Ethiopia. This finding is also consistent with the finding of Denning (2003), Alemu and Bishnu, (2011), Bissoon, (2011), and Van and Quang (2021).

At the end, the coefficient of human capital development (gross secondary school enrolment ratio) is positively related to FDI inflow to the host country. This depicts that production of skilled and knowledgeable man power in the host country; Ethiopia could facilitate the inflow of FDI since knowledge is considered as a new factor of production, innovation and growth. For a host country having large stock of skilled human capital implies that it can absorb new products or ideas that have been discovered elsewhere, invent new technologies, adapt and implement technologies developed somewhere else, etc. This in turn contributes to the economic growth and development of the host country. Having held other things constant, for one percent improvement in human capital of Ethiopia, the inflow of foreign direct investment will increase by 2.16% in the short run. This finding is in line with the findings of Husam et al. (2017) and Mariam et al., (2019). They

point out that presence of knowledgeable and skilled man power is a critical factor to attract the interest foreign investors.

4.4. Post Estimation Diagnostic Tests

To confirm the reliability and goodness of fit of the ARDL model, five diagnostic tests were conducted and the results are presented below. Explicitly, the tests were conducted to address issues of autocorrelation, heteroscedasticity, normality of the residual terms and model specification test. Furthermore, the stability of the model is ascertained through both Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests. Those tests are presented as follow with respect to the decisions taken about the test hypothesis. All the test results are included in the appendix section of this study.

4.4.1. Serial Correlation LM Test

Based on the result under Table 7 shows below, a probability value of 10.36% which is greater than 5% level of statistical significance, we do not reject the null hypothesis and can conclude that the error terms are not serially correlated, and then the result of the analysis is good enough. Hence, the result is good, and the conclusion will be meaningful.

Table 7: Breusch- Godfrey Serial Correlation LM Test

F-statistic	4.213479	Prob. F(2,4)	0.1036
Obs.*R-squared	18.98734	Prob. Chi-Square(2)	0.0001

Source: Own computations using EViews-10

4.4.2. Heteroscedasticity Test

As per the result here under the table below, the probability value for the test is greater than 5% level of statistical significance. Thus, we do not reject the null hypothesis and can conclude that the error terms are homoscedastic.

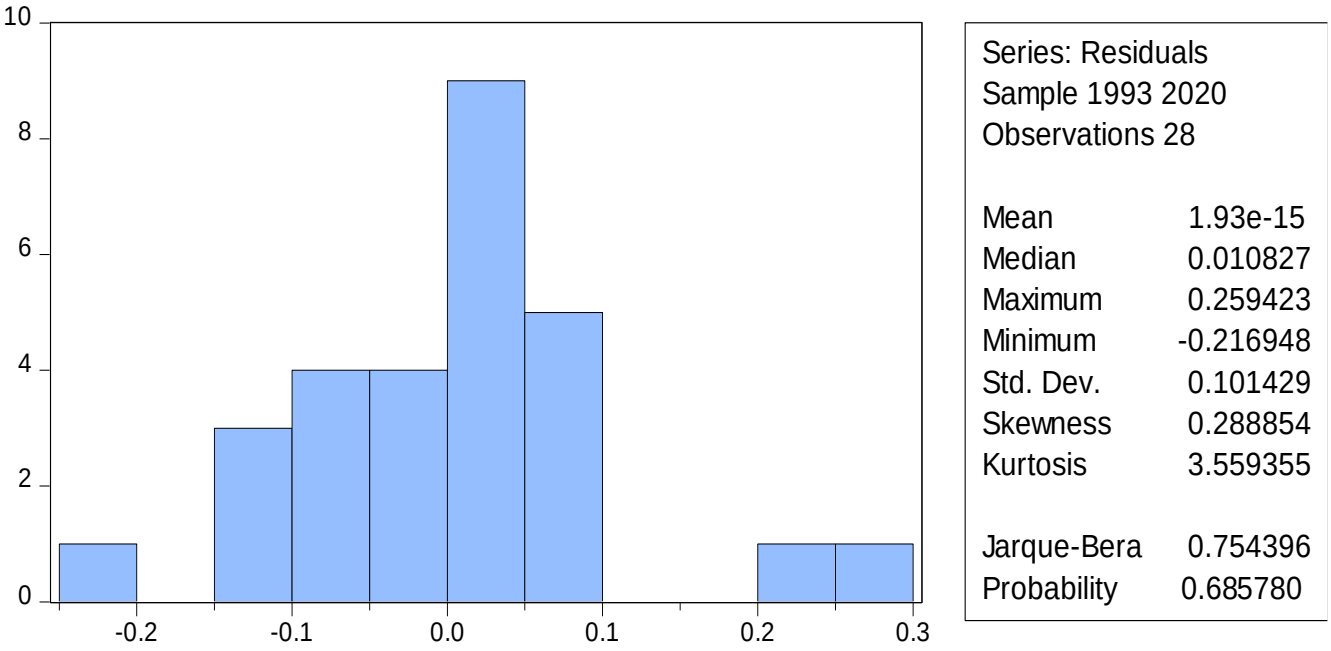
Table 8: Heteroscedasticity Test: Breusch-Pagan- Godfrey test

F-statistic	1.535889	Prob. F(15,13)	0.3110
Obs.*R-squared	23.60827	Prob. Chi-Square(15)	0.3124
Scaled explained SS	1.387238	Prob. Chi-Square(15)	1.0000

Source: Own computations using EViews-10

4.4.3. Normality Test

The residuals normality is tested using the Jarque-Bera test, and the result suggests that the residuals of the model are normally distributed with the probability value of 68.58%. The result is presented in Figure 5 below.

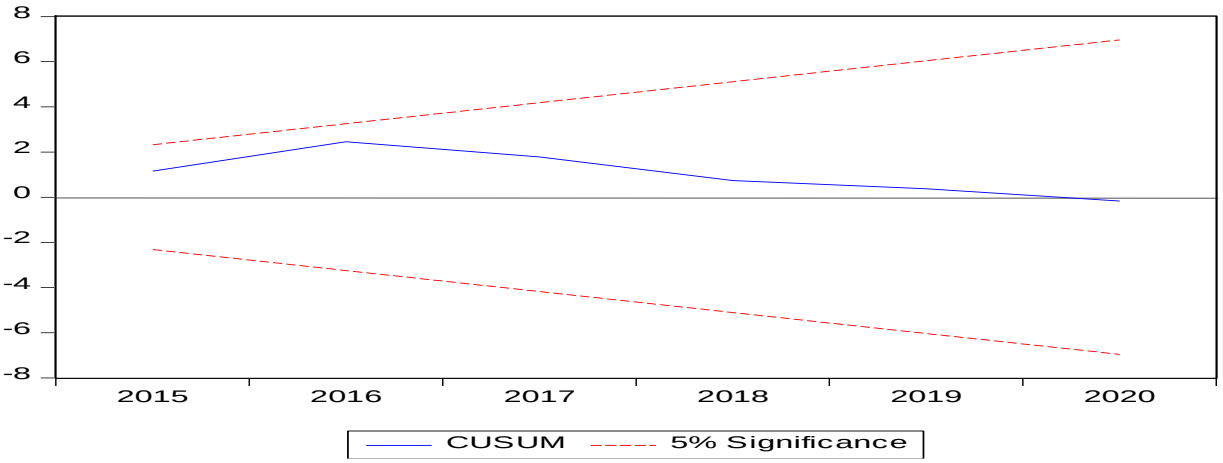


Source: Own computations using EViews-10

Figure 4: Jarque-Bera Normality Test

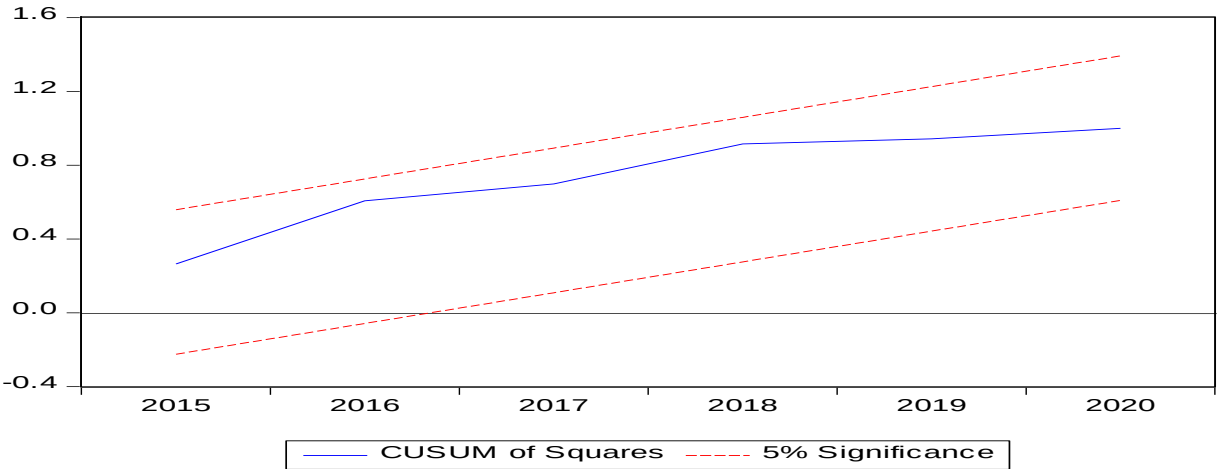
4.4.4. Model Stability Tests

To ensure the stability of the ARDL model, as suggested by Pesaran (1997), the researcher employed Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) test based on the Cumulative Sum of Recursive Residuals and Cumulative Sum of Squares of Recursive Residuals respectively. As observed from Figures 6 and 7 below, both plots lie within the 5% level of statistical significance. The result, thus suggests the estimated coefficient of the model is stable within the specified period of time.



Source: Own computations using EViews-10

Figure 5: The plot of the CUSUM Test



Source: Own computations using EViews-10

Figure 6: The plot of the CUSUMSQ Test

4.4.5. Model Specification Test

The Ramsey *RESET* test for misspecification of model is depicts that no sign of misspecification as the p-value of the model is greater than the critical value of 5% level of statistical significance. Based on this output from table 9 below, it can be conclude that the dependent and independent variables considered in this model are linearly related and the ARDL model is properly specified.

Table 9: Ramsey RESET Test

	Value	Df.	Probability
F-statistic	0.154697	(1, 5)	0.7103

Source: Own computations using EViews-10

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter deals with the summary of the findings, conclusions, and recommendations areas where further research could be conducted, based on the findings of this study. Accordingly, this chapter is organized into four sub-sections. The first section presents the summary of the findings, the second presents conclusions whereas the third and fourth sections presented the recommendations and area suggestion for further research respectively.

5.1. Summary of Findings

This study aimed at examining the determinant factors of FDI inflow to Ethiopia by considering a time series data for the period of 1991-2020. The study particularly sets out to find the significance of domestic market size, trade openness, macroeconomic stability (Inflation rate), human capital, political stability and absence of violence, infrastructure facility development, and government effectiveness in influencing FDI inflows to Ethiopia. These variables were drawn from previous research outputs and empirical gaps in the literature that dealt with the determinant factors of FDI inflow to Ethiopia and other parts of the world.

Consistent with econometric theories, before moving to estimation of the model, the stationarity of the variables considered in this study was tested by deploying the Augmented Dicky Fuller and Philipps Perron tests. The result of both tests confirmed that the variables are stationary at level or at their first difference. Hence, the variables are either integrated of order-level I (0) or order I (1). Following this test, we checked for the co-integration of the dependent and independent variables using the ARDL Bounds testing approach.

Based on the F-statistics of the ARDL bound test result, the foreign direct investment and the regressor variables considered in this study are co-integrated at 5% level of statistical significant, and hence the ARDL Long Run and ARDL Error Correction models were deployed so as to estimate the long and short run coefficients of the model. Based on the ARDL long-run result, domestic market size, trade openness, inflation rate, infrastructure facility (electric power consumption per capital), and political condition of the host country affects the inflow of FDI to

Ethiopia significantly (statistical) at 5% level of significance. Among these, domestic market size, trade openness, and infrastructure facility (electric power consumption per capital) affects FDI inflow to the country positively, whereas other variables like inflation and condition of political stability and absence of violence affect the inflow of FDI to Ethiopia negatively.

In the short-run, as shown in the ARDL Error Correction model above, domestic market size, human capital, government effectiveness, and openness of the country's economy to worldwide trade affect FDI inflow usefully. While determinant variables like infrastructure facility (electric power consumption per capital) (statistically insignificant), inflation, and condition of political stability and absence of violence have a negative and significant influence on FDI inflow to Ethiopia. In line with this, previous inflation rate has positive and significant effect on FDI inflow to Ethiopia. This is also most likely an indicator of demand for goods and services in supply side constrained economy. The other observation from the Error Correction model is that the adjustment towards the equilibrium was fast, i.e. about 79.08%. This result, further confirms that the presence of a long-run relationship between FDI inflow and the independent variables.

5.2. Conclusion

Based on the findings of this study, it can be concluded that domestic market size proxied by real GDP per capital of Ethiopia, trade openness measured in the ratio of total trade to GDP, inflation rate measured in annual consumer price index, and political stability and absence of violence are the statistical significant variables that affect the inflow of foreign direct investment (% GDP) to Ethiopia both in the short and long-run, while human capital and government effectiveness have no effect on foreign direct investment (% GDP) inflow to Ethiopia in the long run. Likewise, only infrastructure facility proxied by electric power consumption per capital (in KWh) has negative and insignificant effect on foreign direct investment (% GDP) inflow to Ethiopia in the short run. Moreover, all the diagnostic, stability and functional form tests confirms the fitness of the ARDL model.

5.3. Recommendations

Nevertheless the finding of this study that indicates a strong relation between the dependent and independent variables taken together, the researcher recommend the government of the country:

- ✓ To make a huge improvements on infrastructure facilities (like electric power production), and the education system of the country so as to produce efficient and effective manpower on both practical and theoretical bases.
- ✓ To formulate policies, like creating conducive and investment attracting environment so that foreign investors are interested in investing their capital. One way could be just dealing with quality and accessibility of infrastructure facilities, quality of education system which most likely encourage the inflow of foreign direct investment (% GDP) to Ethiopia.
- ✓ To increase the degree of economic trade openness to international market by reducing trade barriers, and increase the per capital income.
- ✓ On the other hand, it is better for the central bank of the country to formulate and manipulate effective monetary policy particularly targeting on inflation rate in the economy.
- ✓ To improve the condition of political stability, and more effectiveness of the government, which are critical conditions of investors in looking for an investment friendly environment, etc.

5.4. Suggestion for Future Research

Irrespective of previous empirical studies conducted here in Ethiopia concerning foreign direct investment determinant factors, this study attempted to identify key determinant factors of foreign direct investment inflow to Ethiopia. As such, this study may serve as a point of reference for future studies that may target to examining the determinant factors of foreign direct investment inflow to the Ethiopia. It is noticed that this study has not included all determinant factors that affect the decision of MNC to invest in Ethiopia. So, future studies may include variables such as the effect of industrial parks development, corruption, external debt, remittance, etc. as an explanatory variable for FDI inflow to Ethiopia. In line with this, the study found that human capital, infrastructure facility, and government effectiveness are contradicting to the expectations set in chapter three of this study. According to the analysis result, the latter is found to be statistically insignificant and positively related to foreign direct investment in the long short run, whereas, human capital and infrastructure facility are statistically insignificant to attract foreign direct investment or foreign investors towards Ethiopia. Therefore, the researcher recommend for future researchers to make further investigation on those determinant factors of foreign direct investment.

REFERENCES

Abdu, S. (2020), "Motive of foreign direct investment in Ethiopia: an empirical analysis", *International journal of commerce and finance,* 6(1): 1-13.

Abdoul, G.M. (2015), "What Drives Foreign Direct Investment in Africa? An Empirical Investigation", *African Development Review,* 27(4): 392–402.

Adugna, L., and Sisay, A. (2001), "Foreign Direct Investment and Uncertainty: Implications for Ethiopia", *International Conference on African Development Archives*, 20(1): 1-13.

Ajide, K.B., and Raheem, I.D. (2016), "Institutions-FDI nexus in ECOWAS countries", *Journal of African Business,* 17(3): 319-341.

Alemu, A., and Bishnu, K. (2011), "Does good governance matter for FDI inflows? Evidence from Asian economies", *Journal of Asia Pacific Business Review,* 17(3): 281–299.

Amanuel, M. (2014), "Factors Affecting FDI Flow in Ethiopia: An Empirical Investigation", *European Journal of Business and Management*, 6(31): 297 - 302.

Ambachew, M. (2010), "Determinants of Private Investment in Ethiopia, A Time Series Study", *Ethiopian Journal of Economics,* 19(1): 76-117.

Amsalu, K. (2020), "The role of foreign direct investment in economic development of Ethiopia since 2012", *Journal of Asia and Africa today*, 1(8): 36-43.

Anna, D., Time, R., and Dora, T. (2020), "Country-specific determinants of FDI inflows to the MENA region: A systematic review and future research directions", *Multinational Business Review,* 28 (1): 1-38.

Anyanwu, J.C. (2011), "Determinants of Foreign Direct Investment Inflows to Africa, 1980-2007", *African Development Bank Group*, Working Paper No. 136: 5-23.

Anyanwu, J.C. (2012), "Why Does Foreign Direct Investment Go Where It Goes?: New Evidence From African Countries", *Annals of Economics & Finance*, 13(2): 425-462.

Ashraf, A., and Herzer, D. (2014), "The effect of Greenfield investment and M & As on domestic investment in developing countries", *applied Economic Letters*, 21(14): 997–1000.

Alon, I., Elia, S., and Li, S. (2020), "Greenfield or M&A? An institutional & learning perspective on the establishment mode choice of Chinese outward investments", *Journal of International Management, 26(3):* 100-758.

Barro, R. J. (1980), "A capital market in an equilibrium business cycle model", *Journal of Econometrics*, 48(1): 1393–417.

Bissoon, O. (2011), "Can better institutions attract more foreign direct investment (FDI)? Evidence from developing countries", International Conference on Applied Economics: 59-70.

Brown, R.L., Durbin, J., and Evans, J.M. (1975). Techniques for Testing the Constancy of Regression

Relationships over Time, Journal of the Royal Statistical Society, Vol. 37, No. 2, pp. 149-192

Bryman, A., and Bell, E. (2007), Business research strategies. *Business research methods:* 226-238.

Burns, N., and Grove, S. (2007), Understanding research: building an evidence-base.

CDRC (2019), Ethiopia zero poverty and hunger strategic review, Ethiopia country strategic plan (2020–2025).

Charles, K., and Richard K.A. (2018), "A Study of the Effect of Inflation and Exchange Rate on Stock Market Returns in Ghana", *International Journal of Mathematics and Mathematical Sciences,* vol. 1(1): 1-8.

Cheshta, K., and Neha, S. (2019), "Determinants of sustainable FDI: a panel data investigation", *Journal of management decision,* 59(4): 877-911.

CSA (2013), Census report on population projections for Ethiopia from 2007 to 2037.

CSA (2014), Ethiopian mini demographic and health surveys for 2000, 2005, 2011, 2014 and 2016

Dessalegn, G., Jema, H., Belayineh, L., and Mengistu, K. (2020), "Determinants of Export Performances of Major Spices (Turmeric and Korarima) in Ethiopia", *East African Journal of Sciences,* 14 (2): 121-130

Dunning, J.H (1993), "Multinational Enterprises and the Global Economy", Wokingham, England: Addison-Wesley.

Dunning, J. (2000), "The eclectic paradigm as an envelope for economic and business theories of MNE activity", *International business Review*, 9(2): 163–190.

Dunning, J.H. (2003), 'Determinants of foreign direct investment: globalization-induced changes and the role of FDI policies', *Conference on Development Economics in Europe, Oslo, mimeo, Toward Pro-Poor Policies Aid, Institutions, and Globalization*: 279-290.

Edward, M. (2005), "Multinationals and Foreign Investment in Economic Development", *International Economic Association conference*, 141(1): 1-23.

Edward, N.A., Nicholas, A., and Mohammed, A. (2018), "Effect of Electricity Consumption on Foreign Direct Investment in Selected Sub-Saharan African Countries", *The Empirical Economics Letters*, 17(4): 471-479.

EIC (2017), Ethiopian investment guide on how to do business and invest in Ethiopia.

EIC (2019), Annual investment report on trend in FDI inflow to Ethiopia.

Emeka, N., and Aham, K. Uko (2016), "Autoregressive Distributed Lag (ARDL) co-integration technique: application and interpretation", *Journal of Statistical and Econometric Methods*, 5(4): 63-91.

Getinet, H., and Hirut, A. (2006), "Determinants of Foreign Direct Investment in Ethiopia; a time series econometric analysis", *West Minister research institute, London, UK. Paper prepared for the 4th International Conference on the Ethiopian Economy*, 10-12 June, Addis Ababa, Ethiopia.

Gujarati, D.N. (2004), Basic Econometrics Fourth Edition. McGraw-Hill/Irwin, New York.

Habtamu, L. (2019), "Determinants of foreign direct investment in Ethiopia: systematic review, Ethiopia", *International journal of Business and Economics development*, 6(3): 1-11.

Husam, R., Mehmet, A., Ahmad, A.A., and Murad B. (2017), "Financial Reforms and Determinants of FDI: Evidence from Landlocked Countries in Sub-Saharan Africa", *Journal of Economics*, 5(1): 1-12.

Hymer, S.H. (1976), The International Operations of National Firms: International monetary fund (1998), Balance of payment manual, IMF publication, 5th Ed.

Johansen, S., and Juselius, K. (1990), "Maximum Likelihood Estimation and Inference on Co-Integration - With Applications to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, 52(2): 305-9049.

Jones, S., and Jacob, M. (2016), "Investigating the Determinants of Foreign Direct Investment in Namibia", *European Journal of Business, Economics, and Accountancy*, 4(5): 93-104.

Kinuthia, B.K., and Murshed, S.M. (2015), "FDI determinants: Kenya and Malaysia compared", *Journal of Policy Modeling*, 37(2): 388-400.

Krugman, P.R., and Obstfeld, M. (2006), Pearson Education, Inc., International Economics: Theory and Policy, United States of America.

Linh, H., and Winai, W. (2020), "FDI determinants: dynamic extreme bounds analysis", *international journal of emerging markets,* 16(6): 1126 – 1149.

Mankiw, N. (2008). Principle of Macroeconomics. Boston: Cengage Learning.

Mariam, C., Laura, M., and Cecilio, T. (2019), "Determinants of FDI for Spanish regions: evidence using stock data", *Journal of Empirical Economics*, 59(1): 2779-2820.

ME (2019), Ethiopia Education Sector Development Programme-4, Midterm Review.

Mhlanga, N., Blalock, G., and Christy, R. (2010). "Understanding foreign direct investment in the southern African development community: an analysis based on project-level data", *Agricultural Economics*, 41(3-4): 337-347.

Minh, N., Huy, H., Long, N., and Thuc, N. (2020), "Determinants of foreign direct investment evidence from Vietnam", *Journal of Asian finance, economics, and business,* 7(6): 1-11.

Muijs, D. (2011), Doing Quantitative Research in Education with SPSS: Experimental and quasi-experimental research, Sage Publications Ltd.

Mukherjee, A.K., and Laha, M. (2019), "problem of autocorrelation in linear regression detection and remedies", *International Journal of Multidisciplinary Research and Modern Education (IJMRME),* 5(1): 105–110.

MWIE (2018), Development of sustainable water supply, sanitation and hygiene program in drought prone areas of Ethiopia.

Nazmi, Z., and Hykmete, B. (2016), "Foreign Direct Investment (FDI) Types and Theories: The Significance of Human Capital in Konso", *Book of International conference on management, business and Economics,* Proceedings 23: October 28-30, 2016.

Neha, S., and Monica, S. (2018), "Determinants of FDI in developed and developing countries: a quantitative analysis using GMM", *Journal of Economic Studies,* 45(2): 342- 382.

Ngô, V.D., Đào, T.B., and Nguyen N.T. (2018), "Economic and non-economic determinants of FDI inflows in Vietnam: a sub-national analysis Post-Communist Economies", Post-Communist Economies Journal, 30(5): 1-20.

Oludayo, E.A. (2020), "The Short and Long Run Determinants of Foreign Direct Investment in Nigeria", *Journal of Management & Economics Research,* 2(4): 45-65.

Omanwa, S.M. (2013), "Determinants of Foreign Direct Investment in Kenya: An Empirical Study", *Vilakshan; the XIMB Journal of Management*, 10(1): 47-66.

Osemene, O., Kolawole, K., and Olanpeleke, I. (2017), "Determinants of Foreign Direct Investment and its Causal Effect on Economic Growth in Nigeria**",** *KCA Journal of Business Management,* 8(1): 39-50.

Pesaran, M. H., Shin, Y., and Smith, R. J. (2001), "Bounds testing approaches to the analysis of level relationships", *Journal of Applied Econometrics,* 16(3): 289–326.

Portilla, G.P., Maza, A., and Hierro, V.M. (2016), "Foreign direct investment in the Spanish regions: What are the influencing factors?" *Journal of Regional Research*, 35(1): 67-82.

Punch, K.F. (2013), Introduction to social research: Quantitative and qualitative approaches, Sage Publications Ltd.

Rania, K., and Samar, H. (2022), "Political Instability and Economic Growth in Ethiopia: An Empirical Analysis", *Journal of Social and Political Sciences*, 5(1): 20-28.

Sabir, S., Rafique, A., and Abbas, K. (2019), "Institutions and FDI: evidence from developed and developing countries", *Journal of Financial Innovation,* 5(1): 1-20.

Sekaran, U., and Bougie, R. (2016), Research methods for business: A skill building approach, John Wiley & Sons.

Sherif, A., and Dalia El M. (2016), "Determinants of FDI Flows to Developing Countries: An Empirical Study on the MENA Region", *Journal of Finance and Economics,* 4(1): 30-38.

Singhania, M., and Gupta, A. (2011), "Determinants of foreign direct investment in India", *Journal of International Trade Law and Policy,* 10(1): 64-82.

Tania, M., and Samsubar, S. (2021), "The Determinant of FDI Inflows in OIC Countries", *International Journal of Islamic Economics and Finance (IJIEF),* 4(1): 31-50.

Todaro, P., and Smith C. (2012), Economic Development, United States of America: Pearson Education, Inc., Rights and Contracts Department.

Tung, S.H., Mai, T.T., Dung, H.T., and Anh, N.T. (2021), "The impact of Greenfield investment on domestic entrepreneurship", *Journal of Innovation and Entrepreneurship,* 1(1): 1-16.

UNCTAD (2018), Investment and new industrial policies, world investment report.

UNDP (2019), Human development reports: Ethiopia human development indicators.

UNHCR (2020), Operational portal: refugee situations in Ethiopia since 2005.

Van, C.D., and Quang, K. N, (2021), "Determinants of FDI attractiveness: Evidence from ASEAN-7 countries", *Journal of Cogent Social Sciences,* 7(1): 1-15.

Vijayakumar, N., Sridharan, P., and Rao, K.C.S. (2010), "Determinants of Foreign Direct Investment in BRICS Countries: A panel analysis", *International Journal of Business Science & Applied Management*, *5*(3): 1-13.

Visansack, K., Enjun, X., and Khaysy, S. (2018), "Determinant of FDI inflow from Asian Economies to Lao PDR", *IOP Conference Series: Earth and Environmental Science,* 146(1): 1-7.

WDI (2021), UNESCO Institute for Statistics (http://uis.unesco.org/). Data as of September 2021, Accessed on May 2022.

WFP (2020), Ethiopia country strategic plan of 2020 to 2025.

WIR (2007), Transnational corporations, extractive industries and development, New York, July 2007, United Nation Publication.

Wooldridge, J. M. (2016), Introductory econometrics: a modern approach. Nelson Education.

Yorsa, S., Anis, O., and Houria, G. (2013), "Governance and FDI Attractiveness: Some Evidence from Developing and Developed Countries", *Global Journal of Management and Business Research Finance,* 13(6): 2-11.

APPENDIXES

Appendix I: Covariance Analysis

Table I: Covariance Analysis

Covariance Analysis: Ordinary
Date: 07/24/22 Time: 17:40
Sample: 1991 2020
Included observations: 30

Correlation	FDI	OPP	GDPC	HC	INFS	PSAV	INFR	GE
FDI	1.000000							
OPP	0.333267	1.000000						
GDPC	0.292345	0.917688	1.000000					
HC	0.300062	0.894829	0.816080	1.000000				
INFS	0.387117	0.952107	0.982177	0.864698	1.000000			
PSAV	-0.277553	-0.497136	-0.464862	-0.747285	-0.493148	1.000000		
INFR	-0.310142	0.261626	0.272660	0.428883	0.246917	-0.438194	1.000000	
GE	-0.206720	0.363098	0.243166	0.362301	0.280530	0.145906	0.281477	1.000000

Source: Own computations using EViews-10

Appendix II: Phillips- Perron Unit Root Test

Table II: pp Test

Null Hypothesis: Unit root (individual unit root process)
Series: LFDI, LINFS, GE, LGDPC, LINFR, LOPP, LHC, PSAV
Date: 06/30/22 Time: 21:49.
Sample: 1991 2020, Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 224
Cross-sections included: 8

Method	Statistic	Prob.**
PP - Fisher Chi-square	176.521	0.0000
PP - Choi Z-stat	-10.9583	0.0000

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Intermediate Phillips-Perron test results D(UNTITLED)

Series	Prob.	Bandwidth	Obs.
D(LFDI)	0.0000	3.0	28
D(LEPC)	0.0025	3.0	28

D(LINFR)	0.0000	8.0	28
D(LGDPC)	0.0324	8.0	28
D(LOPP)	0.0010	2.0	28
D(LHC)	0.0305	1.0	28
D(PSAV)	0.0000	17.0	28

Source: Own computations using EViews-10

Appendix III: ARDL Long Run Form and Bound Test

Table III: ARDL Long Run Form and Bounds Test

Dependent Variable: D(LFDI)
Selected Model: ARDL (1, 2, 2, 2, 2, 1, 2, 2)
Case 3: Unrestricted Constant and No Trend
Date: 06/30/22, Time: 22:18
Sample: 1991 2020
Included observations: 28

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.585054	1.229149	-0.475983	0.6509
LFDI(-1)*	-2.329765	0.268948	-8.662520	0.0001
LINFS(-1)	22.25148	3.052477	7.289647	0.0003
LINFR(-1)	-2.503524	0.375459	-6.667903	0.0006
LGDPC(-1)	15.44839	2.048042	7.543003	0.0003
LOPP(-1)	3.979022	0.759579	5.238459	0.0019
LHC(-1)	0.488264	0.968322	0.504237	0.6321
PSAV(-1)	-3.383118	0.997239	-3.392483	0.0146
D(LINFS)	-1.104161	1.617080	-0.682812	0.5202
D(LINFS(-1))	-12.25050	2.742456	-4.466979	0.0043
D(GE)	2.178441	0.582426	3.740290	0.0096
D(GE(-1))	1.581160	0.493571	3.203507	0.0185
D(LINFR)	-1.033131	0.194909	-5.300590	0.0018
D(LINFR(-1))	0.404390	0.103250	3.916615	0.0078
D(LOPP)	0.968596	0.388580	2.492656	0.0470
D(LHC)	2.160552	1.527211	1.414705	0.2069
D(LHC(-1))	1.768797	2.230275	0.793085	0.4579
D(PSAV)	-0.813255	0.457379	-1.778078	0.1257
D(PSAV(-1))	1.313685	0.394601	3.329145	0.0158

* P-value incompatible with t-Bounds distribution.

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFS	9.550955	0.569172	16.78044	0.0000
GE	0.040683	0.245325	0.165832	0.8737
LINFR	-1.074582	0.072109	-14.90225	0.0000
LGDPC	6.630879	0.353865	18.73845	0.0000
LOPP	1.707907	0.201217	8.487884	0.0001
LHC	0.209576	0.405792	0.516463	0.6240
PSAV	-1.452129	0.331403	-4.381755	0.0047

EC = LFDI - (9.5510*LINFS + 0.0407*GE + 6.6309*LGDPC + 1.7079*LOPP
+ 0.2096*LHC -1.4521*PSAV -1.0746*LINFR)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	12.94307	10%	2.03	3.13
k	7	5%	2.32	3.50
		2.5%	2.60	3.84
		1%	2.96	4.26
		Finite Sample:		
Actual Sample Size	28	n=35		
		10%	2.3	3.606
		5%	2.753	4.209
		1%	3.841	5.686
		Finite Sample:		
		n=30		
		10%	2.384	3.728
		5%	2.875	4.445
		1%	4.104	6.151

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-8.662520	10%	-2.57	-4.23
		5%	-2.86	-4.57
		2.5%	-3.13	-4.85
		1%	-3.43	-5.19

Source: Own computations using EViews-10

Appendix IV: ARDL Error Correction Regression

Table IV: ARDL Error Correction Regression

Dependent Variable: D(LFDI)
Selected Model: ARDL(1, 2, 2, 2, 2, 1, 2, 2)
Case 3: Unrestricted Constant and No Trend
Date: 06/30/22 Time: 22:56
Sample: 1991 2020
Included observations: 28

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.585054	0.086807	-6.739730	0.0005
D(LINFS)	-1.104161	0.705326	-1.565463	0.1685
D(LINFS(-1))	-12.25050	1.670100	-7.335186	0.0003
D(GE)	2.178441	0.236745	9.201632	0.0001
D(GE(-1))	1.581160	0.216179	7.314138	0.0003
D(LINFR)	-1.033131	0.062862	-16.43500	0.0000
D(LINFR(-1))	0.404390	0.052463	7.708032	0.0002
D(LGDPC)	4.106721	0.444771	9.233331	0.0001
D(LGDPC(-1))	1.787698	0.384953	4.643934	0.0035
D(LOPP)	0.968596	0.181460	5.337786	0.0018
D(LHC)	2.160552	0.751910	2.873418	0.0283
D(LHC(-1))	1.768797	0.817088	2.164757	0.0736
D(PSAV)	-0.813255	0.212450	-3.827982	0.0087
D(PSAV(-1))	1.313685	0.209534	6.269545	0.0008
CointEq(-1)*	-0.790765	0.155544	-14.97820	0.0000

R-squared	0.990770	Mean dependent var	0.258046
Adjusted R-squared	0.980829	S.D. dependent var	1.055728
S.E. of regression	0.146174	Akaike info criterion	-0.703864
Sum squared resid	0.277769	Schwarz criterion	0.009817
Log likelihood	24.85410	Hannan-Quinn criter.	-0.485685
F-statistic	99.67171	Durbin-Watson stat	3.163686
Prob(F-statistic)	0.000000		

* P-value incompatible with t-Bounds distribution.

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)

F-statistic	12.94307	10%	2.03	3.13
k	7	5%	2.32	3.5
		2.5%	2.6	3.84
		1%	2.96	4.26

t-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-14.97820	10%	-2.57	-4.23
		5%	-2.86	-4.57
		2.5%	-3.13	-4.85
		1%	-3.43	-5.19

Source: Own computations using EViews-10

Appendix V: Serial Correlation LM Test

Table V: LM Test

Breusch-Godfrey Serial Correlation LM Test.

F-statistic	4.213479	Prob. F(2,4)	0.1036
Obs*R-squared	18.98734	Prob. Chi-Square(2)	0.0001

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 06/30/22 Time: 23:27
Sample: 1993 2020
Included observations: 28
Pre-sample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDI(-1)	0.036753	0.233359	0.157495	0.8825
LINFS	0.191841	1.140039	0.168276	0.8745
LINFS(-1)	1.541984	1.997262	0.772049	0.4832
LINFS(-2)	-0.173193	2.408634	-0.071905	0.9461
GE	-0.067077	0.405362	-0.165474	0.8766
GE(-1)	0.497073	0.460688	1.078981	0.3413
GE(-2)	-0.060861	0.377129	-0.161379	0.8796
LGDPC	1.299884	0.859464	1.512436	0.2050
LGDPC(-1)	-0.350509	2.198100	-0.159460	0.8810
LGDPC(-2)	0.674640	0.738549	0.913467	0.4127
LINFR	-0.048845	0.147202	-0.331821	0.7567
LINFR(-1)	0.071162	0.141133	0.504218	0.6406

LINFR(-2)	0.098947	0.079443	1.245512	0.2809
LOPP	0.045172	0.270455	0.167021	0.8755
LOPP(-1)	0.083704	0.560228	0.149411	0.8885
LHC	0.604363	1.115356	0.541857	0.6167
LHC(-1)	0.696158	1.926822	0.361299	0.7362
LHC(-2)	-0.749434	1.629697	-0.459861	0.6695
PSAV	-0.023640	0.324187	-0.072922	0.9454
PSAV(-1)	-0.642113	0.545961	-1.176115	0.3048
PSAV(-2)	0.106946	0.327908	0.326145	0.7607
C	0.889531	0.924159	0.962531	0.3903
RESID(-1)	-1.376166	0.496833	-2.769876	0.0503
RESID(-2)	-0.883363	0.685201	-1.289203	0.2668

R-squared	0.678119	Mean dependent var	1.93E-15
Adjusted R-squared	-1.172696	S.D. dependent var	0.101429
S.E. of regression	0.149506	Akaike info criterion	-1.194581
Sum squared resid	0.089409	Schwarz criterion	-0.052691
Log likelihood	40.72413	Hannan-Quinn criter.	-0.845494
F-statistic	0.366389	Durbin-Watson stat	2.483817
Prob (F-statistic)	0.946016		

Source: Own computations using EViews-10

Appendix VI: Heteroscedasticity Test

Table VI: Breusch-Pagan-Godfrey

Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.535889	Prob. F(21,6)	0.3110
Obs*R-squared	23.60827	Prob. Chi-Square(21)	0.3124
Scaled explained SS	1.387238	Prob. Chi-Square(21)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/30/22 Time: 23:38
Sample: 1993 2020
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016831	0.077566	0.216985	0.8354
LFDI(-1)	0.001197	0.016972	0.070541	0.9461
LINFS	-0.083587	0.102047	-0.819102	0.4440
LINFS(-1)	-0.107427	0.170423	-0.630351	0.5517
LINFS(-2)	0.145238	0.173064	0.839213	0.4335
GE	0.024601	0.036754	0.669324	0.5282

GE(-1)	-0.007145	0.029322	-0.243674	0.8156
GE(-2)	0.040557	0.031147	1.302128	0.2406
LGDPC	0.072076	0.065941	1.093042	0.3163
LGDPC(-1)	0.111395	0.152654	0.729722	0.4931
LGDPC(-2)	-0.137752	0.062162	-2.216024	0.0686
LINFR	0.006687	0.012300	0.543697	0.6062
LINFR(-1)	-0.009419	0.010405	-0.905258	0.4002
LINFR(-2)	-0.012895	0.006516	-1.979064	0.0951
LOPP	-0.041073	0.024522	-1.674991	0.1450
LOPP(-1)	-0.013701	0.044121	-0.310539	0.7667
LHC	0.104127	0.096375	1.080434	0.3215
LHC(-1)	-0.036707	0.169302	-0.216812	0.8355
LHC(-2)	0.172639	0.140743	1.226627	0.2659
PSAV	0.000645	0.028863	0.022347	0.9829
PSAV(-1)	0.017906	0.035882	0.499031	0.6355
PSAV(-2)	-0.037315	0.024902	-1.498517	0.1847

R-squared	0.843152	Mean dependent var	0.009920
Adjusted R-squared	0.294185	S.D. dependent var	0.016162
S.E. of regression	0.013578	Akaike info criterion	-5.729759
Sum squared resid	0.001106	Schwarz criterion	-4.683027
Log likelihood	102.2166	Hannan-Quinn criter.	-5.409762
F-statistic	1.535889	Durbin-Watson stat	3.283710
Prob(F-statistic)	0.311039		

Source: Own computations using EViews-10

Appendix VII: Ramsey RESET Test

Table VII: RESET Test

Ramsey RESET Test
Equation: UNTITLED
Specification: LFDI LFDI(-1) LINFS LINFS(-1) LINFS(-2) GE GE(-1) GE(-2) LINFR LINFR(-1) LINFR(-2) LGDPC LGDPC(-1) LGDPC(-2) LOPP LOPP(-1) LHC LHC(-1) LHC(-2) PSAV PSAV(-1) PSAV(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.393315	5	0.7103
F-statistic	0.154697	(1, 5)	0.7103

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.008336	1	0.008336
Restricted SSR	0.277769	6	0.046295
Unrestricted SSR	0.269433	5	0.053887

Unrestricted Test Equation:
Dependent Variable: LFDI
Method: ARDL
Date: 06/30/22 Time: 23:47
Sample: 1993 2020
Included observations: 28
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic):
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LFDI(-1)	-1.352034	0.295635	-4.573318	0.0060
LINFS	-1.624655	2.189755	-0.741935	0.4915
LINFS(-1)	11.53221	3.109388	3.708836	0.0139
LINFS(-2)	12.55010	3.055270	4.107690	0.0093
GE	2.272835	0.672641	3.378972	0.0197
GE(-1)	-0.470047	0.508047	-0.925205	0.3973
GE(-2)	-1.565431	0.534005	-2.931491	0.0326
LGDPC	4.067062	1.131858	3.593261	0.0157
LGDPC(-1)	-10.00649	2.852196	-3.508345	0.0171
LGDPC(-2)	-1.601381	1.163547	-1.376293	0.2272
LINFR	-1.081836	0.244037	-4.433091	0.0068
LINFR(-1)	-1.067344	0.177920	-5.999024	0.0018
LINFR(-2)	-0.394711	0.114080	-3.459955	0.0180
LOPP	1.010904	0.432812	2.335665	0.0667
LOPP(-1)	3.190199	0.881995	3.617027	0.0153
LHC	2.203004	1.651212	1.334173	0.2397
LHC(-1)	4.253475	3.555864	1.196186	0.2852
LHC(-2)	-2.714421	3.401498	-0.798008	0.4611
PSAV	-0.910085	0.551462	-1.650314	0.1598
PSAV(-1)	-1.229347	0.617232	-1.991711	0.1030
PSAV(-2)	-1.450322	0.549482	-2.639436	0.0460
C	-0.191159	1.661780	-0.115033	0.9129
FITTED^2	0.035639	0.090612	0.393315	0.7103

R-squared	0.993479	Mean dependent var	0.439266
Adjusted R-squared	0.964784	S.D. dependent var	1.237010
S.E. of regression	0.232135	Akaike info criterion	-0.162906
Sum squared resid	0.269433	Schwarz criterion	0.931405
Log likelihood	25.28068	Hannan-Quinn criter.	0.171636
F-statistic	34.62303	Durbin-Watson stat	3.197517
Prob(F-statistic)	0.000465		

*Note: p-values and any subsequent tests do not account for model selection.
Source: Own computations using EViews-10

Appendix VIII: Summary of Descriptive Analysis

Table VIII: Summary of Descriptive Statistics

Date: 06/20/22
Time: 03:26

Sample: 1991
- 2020

	FDI (% GDP)	OPP	GDPC	HC	INFR	PSAV	INFS	GE
Mean	2.310108	14.21693	342.4458	25.23647	11.35540	-1.261291	41.77305	-0.676363
Median	2.181724	8.973116	224.1681	27.16601	9.779500	-1.374709	32.15509	-0.642716
Maximum	5.576213	33.92015	936.3405	41.71674	44.37100	-0.051122	85.57461	-0.076438
Minimum	0.000000	1.666522	111.9272	10.45979	-8.238000	-1.803412	21.72155	-1.238413
Std. Dev.	1.816802	10.05630	258.0647	11.42390	10.89024	0.468707	21.76502	0.298237
Skewness	0.280104	0.483778	0.957391	-0.100581	0.891863	1.113579	0.838194	0.039911
Kurtosis	1.814072	1.657661	2.560580	1.310224	4.493186	3.419425	2.215055	2.395081
Jarque-Bera	2.150324	3.422550	4.824352	3.619762	6.764102	6.420189	4.283022	0.465374
Probability	0.341243	0.180635	0.089620	0.163674	0.033978	0.040353	0.117477	0.792402
Sum	69.30324	426.5079	10273.37	757.0941	340.6620	-37.83872	1253.192	-20.29089
Sum Sq. Dev.	95.72237	2932.747	1931324.	3784.661	3439.325	6.370900	13737.77	2.579409
Observations	30	30	30	30	30	30	30	30

Source: ***Own computations using EViews-1***

እሰመ ኦልቦ ነገር ዘይሳኖ ለእግዚአብሔር

Δόξα στον κόσμο της ιατρικής!!!