Determinants of Foreign Direct Investment: Evidence from Ethiopia

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Abstract

This study examined how the Foreign Direct Investment inflows in Ethiopia is determined by, the financial sector development, domestic investment, lending interest rate, exchange rate, human capital development ,trade openness and domestic market potential in Ethiopia. In doing so, the study used a VECM with co-integration based on secondary data from 1975-2014 collected from various sources. The study revealed that, FDI in Ethiopia is highly determined by domestic investment, lending interest rate, exchange rate depreciation, domestic market potential and trade openness. However, human capital development and financial sector development are found to be an insignificant effect on FDI in Ethiopia. So that, the government of Ethiopia needs to work towards increasing the countries market potential by further enhancing the economic growth. Besides, it needs to continue the existing managed floating exchange rate regime, modifying the existing lending interest rate based on the kind of investment and kind of benefit the government and the country will have got, work towards encouraging the import substituting foreign direct investment.

Keywords: Vector Error Correction Model, FDI, Depreciation, Co-integration

1. Introduction

All countries regardless of being developed, developing, emerging or in transition are increasingly using Foreign Direct Investment (FDI) as a source of their economic growth and development. Understanding its benefits, countries are designing various policies that enable and encourage those foreign investors to invest in their respective countries.

Given those appropriate policies and enabling atmosphere, various researches conducted in the area of FDI revealed that it promotes the host country's economy. Among those benefits explained in these researches are; its ability to support the human capital formation, its contribution in relation to technology transfer, productivity and employment creation are mentioned.

In this era of globalization, countries like Ethiopia couldn't have the capacity to grow and eradicate poverty simply by means of their domestic resources rather; they are always in need of foreign sources such as foreign loan, foreign aid, remittances and foreign direct investment to finance and compliment the effort towards growth. Currently, figures from various sources reveled that, Ethiopia is in a continuous growth path registering a double-digit growth in GDP. This continuous growth is explained by the incessant growth of the flow of FDI in recent periods among other things. For instance, an attractiveness survey made by the Ernst and Young (a multinational professional service organization) in 2015 indicates that Ethiopia has emerged as the eighth largest recipients of FDI projects in Africa in year 2014, up from the fourteenth position in 2013. There were thirty-two projects launched in the country at the end of 2014 accounted for about 4.4% of the African total (i.e. the total FDI projects all over Africa). The United Nations Conference on Trade & Development (UNCTAD, 2014) on the other hand discovered that in year 2013, Ethiopia was the third largest recipients of FDI in East Africa. The FDI inflow has increased to 953 million dollars in 2014 significantly from the 279 million dollars registered in the preceding year. As indicated in (UNCTAD, 1998) there are commonly four motives for foreign firms to invest in the host country. The primary motive of Resource Seeking Investment in this regard is to exploit the natural resource endowment of host countries. Market Seeking Investment on the other hand aims to access new markets that are attractive in size, growth or both. Thirdly, the primary objectives of efficiency seeking investors is production cost effectiveness which is related to labour cost, skilled work force, quality of infrastructure and administrative related costs. Eventually, Strategic Asset Seeking Investors needs to invest in the host country aiming at man-made assets that take the form of mergers and acquisitions where a foreign firm takes over a domestic company that possesses such assets.

1.1.   *Statement of the Problem*

For a long period, the growth of FDI in Ethiopia was not as such promising, rather recognized by its volatility for instance, data from the UNCTAD shows that the value of FDI in Ethiopia was below 140 million Birr before year 1996 and it is after this year the FDI in Ethiopia counts in Billion of Birr. Among the possible factors leading to the sluggish growth of FDI inflows was lack of knowledge on what principally affect the inflow of FDI in the country's context and perform in view of it.

Currently, understanding the contributions of FDI to the nation's economic growth and development, the government of Ethiopia has been working towards increasing its inflow by designing various suitable policy

grounds. It is understood that, early before approving any policy grounds, it is necessary to know what determine the current inflow of the country's foreign direct investment. It is also equally important to know what are the bottle necks to deteriorate its inflow, in what order does the government interfere, which area of the macroeconomic variable require improvement to boost the FDI and hence the economic growth and development in the long run. To deal with these listed questions, it is indispensable to know the real determinants of FDI in the existing economy. Besides, knowing the very motives of current and potential investors leads in creating a suitable working environment, which helps to produce stability and discover other policy grounds, which relish those investors having other motives than the existing. Various researches were conducted on the determinant of FDI in Ethiopia. However, some of them are very descriptive in nature, others are done long years before. In addition, almost none of them incorporated the immense contribution of financial sector development for the nation economic growth through private sector development, improved infrastructure and human capital development of a nation, which are all the corner stone to attract inward foreign direct investment. Besides, the vast majority of researches attempt to find how inward foreign direct investment crowed in or crowed out the domestic investment then the reverse. Consequently, the consequence of domestic investment when dealing with foreign direct investment is not premeditated. This research is therefore, typically different in incorporating these crucial variables and become the recent contribution in the area.

2.   Review of Related Literatures

The works of, (Hymer, 1976), (Vernon, 1966), (Johansson& Vahlne, 1977) and (Dunning, 1996) are commonly cited under the discussion of the theory of Foreign Direct investment in many researches like (Dinkar Nayak R. N., 2014), (Denisia V., 2010), (Gichamo T., 2014), (Vlysidis, 2008) and more others. These theories have been used as a foundation for various researches about FDI. This section confers about the various concepts such as theories and determinants of FDI.

2.1.   *Theories of FDI*
2.1.1.   Production Life Cycle Theory of Vernon

Vernon (1966 & 1993) as cited on (DenisiaV., 2010), develops its theory on how export will be replaced by a Foreign Direct Investment based on his product life cycle approach. According to Vernon, enterprises developed a technologically new product and introduced to the domestic market at the initial stage of the cycle. Through time, the domestic demand of the newly introduced product will boost up. When the product matures and their production volume increases in the second stage of the cycle, those enterprises start exporting their product in to other developed countries. Until this stage, the enterprises, which innovates the new product, enjoy the profit earned from the domestic sales and exports because they are the only holder of the newly introduced production technology. Subsequently, when the domestic and export demand for the product increases the product will be standardized. At the latter stage of the cycle, rival enterprises start to imitate the product and start to provide it to the market. At the advanced stage, where the product is standardized, the enterprise, which innovate the product, will see other market alternatives and then decide to invest in other less developed countries thinking that governments who import their product will promote import substitution strategy and start to produce the product domestically to promote growth and increase their domestic employment. Besides, thinking that the labour and material cost in less developed countries are less significant as compared to its original location, it will favor the enterprise to upgrade its economies of scale so that they prefer to go abroad to the less developed countries.

2.1.2.   The Eclectic FDI Theory of Dunning

(Dunning, 1993) as cited on various authors such as (Vlysidis, 2008), (Dinkar Nayak R. N., 2014) and (John H. Dunning, 2000) based his presentation on three circumstances which has to be fulfilled so that a firm participate in international investment called an Ownership,Location and Internalization (OLI) paradigm. According to Dunning, the first condition that has to be under consideration is the ownership advantage the enterprise has as compared to other competitor firms. By ownership advantage Dunning mean that, those tangible or intangible advantages such as trademarks, patents and good will that are specific to the firm over other domestic and foreign competitors, which enable a firm to compete in the host country without a difficulty.

Ownership advantage in Dunning context arises when an enterprise in a certain country acquire a certain asset which is not available at all or with the same extent in the firm by the enterprises in other country. These advantages have the ability to reduce the costs of productions of a firm to participate in foreign country. Ownership advantages in Dunning context includes, advantages in technology, in management knowhow, access to finance and economies of scale.

The second advantage pointed out by Dunning is the Location advantage. The location advantage in this regard includes the entire factors including cultural, legal, political and institutional factors, which enable a firm to earn a higher profit by producing and selling in the host country than producing at home and exporting to the rest of the world. Since it is planted in the host country, the firm becomes free from various trade barriers such as tariffs, quotas, transport costs and market imperfections such as those originated from uncertainty.

Unlike the ownership advantages that are specific to the firm, these advantages are country specific advantages. The Internalization advantage in the OLI paradigm of Dunning is the third advantage a firm has to take in to consideration to participate in the international investment. In this regard, a firm becomes more successful and profitable if it carry out some transactions with in the firm than to depend up on external firms. In other words, in their experience under operation, firms usually develop new skills and expertise in product differentiation and related issues and develop an exclusive rights specific to the firm. These monopolistic advantages developed by these firms should compensate the additional costs of operating in un-familiar business environment. Therefore, it is more beneficial to the firm to possess those unique assets for the purposes of their investment abroad than sell, the rights to use them to other firms through licensing.

2.1.3.   The FDI Theory of Hymer

Cited in the works of (Gichamo T., 2014), (Hymer, 1976) explain its theory of Foreign Direct Investment in comparison with Foreign Portfolio Investment. Hymer deduced that in Portfolio Investment, capital moves from the location where there is low interest rate to the location of high interest rate until the interest rate in all corners will be equal assuming there is no barriers in capital movement. However, this investment (Portifolio Investment) according to him, does not explain control. Investors' in Portfolio Investment are not subjected to control over the enterprises in which they invest their money in foreign countries.

2.2.   Types of FDI

Different scholars list various kinds of Foreign Direct Investment, mainly based on their objective and prior orientation to invest in host country. (Dunning and Lundan, 2008) as cited on (Ibid, 2014), in this respect has classified MNE's activity in to four. These are:
- ✓   Natural resource seekers;
- ✓   Market seekers;
- ✓   Efficiency seekers and
- ✓   Strategic asset (capability) seekers.

2.2.1.   Natural Resource Seekers:

These are enterprises; their main aim is to obtain high quality resources at a lower cost so as to increase their profit and to be more competent in the market. Accordingly, three kinds of resource seeking FDI do exist. The first are those primary producers and manufacturing enterprises looking for raw materials and physical resources such as fuels, minerals, and agricultural products. The second resource seeking FDI are those enterprises, which are looking for cheap unskilled or semi skilled labor, known as "labor seeking investment." These MNEs usually look for cheep labour force particularly by the time the labour cost in their home country becomes too expensive. The third types of resource seeking FDI are those MNEs that need to gain access to management and organizational skills, technology, information and marketing expertise.

2.2.2.   Market Seekers:

These MNEs are those in which their primary objective is to exploit the existing huge market and the future prospects of the existing market including the neighboring countries. Fewer production and transaction cost, the opportunity to adopt local tests and preferences and being familiarized with the local languages, legal requirements and market procedures are some of the advantages of Market Seeking FDI. In addition, they have an advantage of being free from the various trade barriers such as Tariffs In investing in the host countries.

2.2.3.   Efficiency Seeker

(Dunning, 1993) as cited on (Chiara Franco et.al, 2008) explained that this kind of FDIs are thought to occur in two occasions. Firstly, firms "take advantage of differences in the availability and costs of traditional factor endowments in different countries", while secondly, they "take advantage of the economies of scale and scope and of differences in consumer tastes and supply capabilities" According to Dunning, efficiency-seeking investments are normally undertaken in countries with broadly similar economic structures and income levels. The main attractions of these kinds of investments according to (Wilska, 2002) as cited on (Hannula , 2005) are low labour costs and incentives to local production. Skilled or less expensive labour force or cheaper assets and infrastructure that may offer foreign firms possibilities to increase their efficiency.

2.2.4.   The Strategic Asset Seeker

The main aim of strategic asset seeker MNEs is sustaining and strengthening their competitiveness to dominate global market,(Dunning and Lundan 2008) as cited in the works of (Gichamo , 2014). These multinational enterprises are usually engaged in FDI through obtaining the properties of foreign corporations so as to promote their long-term strategic objectives. "The motives of strategic asset seeking investment are less to exploit specific cost or marketing advantages over their competitors and more to augment the acquiring firm's global portfolio of physical assets and human competences which they perceive will either sustain or strengthen their ownership specific advantages".

Further classification of FDI has been viewed in different other authors from various directions this classifications are also discussed in the following manner.

2.2.5.   Risk Reduction-Seeking FDI

Risk reduction-seeking FDI projects are designed to reduce the corporate risk associated with unfavorable changes in macroeconomic variables, changes in supply and demand among national markets and the moves of competitors and of national and regional governments. Minimizing the firm's exchange rate exposure is an important goal for risk reduction seeking FDIs. For instance, firms may handle exchange rate risk by moving production from unfavorable to favorable locations. Furthermore, because of the supply and demand fluctuations among national markets, firms may undertake FDI projects designed to diversify the market risk by having production at multiple locations. Another way for firms to reduce risk is to undertake FDI projects that are designed to broaden the product line. Firms may also undertake FDI projects because of the risks associated with the actual or potential moves of competitors. The purpose of the project could be to prevent competitors from exploiting new profit opportunities as well as to create better opportunities for responding to competitors in the future (Ekström, 1998) cited on (Mehmed E. &Osmani A., 2004)

2.2.6.   Export-Oriented Investment

Export-oriented investment is described by Reuber (1973) as cited in the works of (Asafo-Adjei., 2007) as the type of investment that reflects a wide range of considerations such as the desire to develop secondary and more diversified sources of supply by way of obtaining lower-cost products to be used either as inputs or for sale elsewhere. The World Investment Report of year 1999 advocates that this type of investment is made with the intention of the investor to improve its competitive position at home or internationally. This is undertaken by taking advantage of the lower cost of production that host countries offer, where lower cost is indicated by some of the following, amongst others: incentives from the host country, abundance of skilled and semi-skilled labour with concurrent relatively lower wages, and political and monetary stability. With this type of investment, investors attach little significance to host countries' markets. The major factors with regard to the determination of the location of the investments are cost, as explained above, and the reliability of production.

2.2.7.   Market-Development Investment

Unlike the export-oriented type of FDI, the objective of making a market-initiated type of FDI is to sell the final output in the host country's market. However, a common feature of both types is that they thrive on feasibility of reduction in production cost. Another key consideration by the investor is the potential growth in the size of the host country's market in the long term. Although in the short to medium term the investment may not yield the expected return, if the long-term view is that the host country's market will grow in size and hence become profitable, the investment may then be undertaken.

The growth in the host country's market is, however, dependant on the general economic outlook of the host country and hence the macroeconomic variables. Besides, the effectiveness of the economic reform policies, other policy directives like tariffs, trade controls, taxes, subsidies and so forth, as well as various regulations imposed on foreign investors by the host country, become fundamental to the decision to invest (Reuber, 1973; Bosworth, 1999; Collins, 1999; Aschauer, 1999) (Ibid., 2007).

2.2.8.   Government-Initiated Investment

In comparison with the export-oriented and market-development types of FDI, government-initiated type of FDI occurs through the provision of substantial incentive structures to investors by a host country's government. These are suitable to investors however; market as well as cost conditions may have precluded them from investing in the host country under normal or "no-incentive" circumstances. To protect the host country and make the option of providing incentives to foreign investors efficient, such incentives usually directed at specific projects or industries. Additionally, host country governments provide incentives in order to attract foreign investors to operate in either less-developed regions or regions, which require improvement in certain sectors. Host-country governments have historically played an important role in attracting or excluding FDI through subsidies, which is one of the most effective ways of stimulating the flow of FDI. Subsidies take a number of different forms. They serve to reduce the risk premium of locating abroad and so they may directly influence firm's cost structure.

3.   Methodology and Model Specification

This research used a deductive technique based up on the underlined theories on FDI. It employed a quantitative technique. Besides, it applied a multivariate econometric model of Vector Error Correction Model with co-integration. This model has some good features in that the researcher does not need to worry about which variable is endogenous and which is exogenous.

3.1.   Model Specification

The equations in the VAR model estimation can be represented in reduced, structural form or recursive form (Stock & Watson, 2011). A reduced form of VAR expresses each variable as a linear function of its own past values, the past values of all other variables, and a serially uncorrelated error term. A reduced form representation in this study indicates each of the eight variables as a function of its own lag, the lag values of all other variables and an uncorrelated error term. Note that, all the eight equations are estimated using the ordinary

least square (OLS) regression method. In this section, the model used in verifying the determinants of Foreign Direct Investment in Ethiopia is specified using the kinds of Foreign Direct Investors discussed in the literature section as a foundation.

3.1.1.   Natural Resource Seeking FDI

The functional relationship of the three motives of the Natural Resource Seeking FDI which are Physical resource availability, availability of cheap semi-skilled and unskilled labour force and management, technology and marketing is presented in equation one.

FDI=f (physical resource, human capital, cheap labour force[1])……………………………………....1

3.1.2.   Market Seeking FDI

The primary motive of these kinds of investors is to exploit the domestic and neighboring nations market potential. Therefore, the functional specification of Market Seeking FDI is depicted in equation two.

FDI= f (domestic market potential, market potential of neighboring nations)……………………...….2

The growth of the market potential is mainly a function of the economic growth of the hosting nation. As economic growth in once nation improve, so does the per capita income of the population in the country and hence the purchasing power and the demand for goods and services of the citizens. The functional relationships in equation two therefore incorporate the growth of the hosting nation.

FDI= f (domestic market potential, market potential of neighboring nations, economic growth)…….…...3

3.1.3.   Efficiency Seeking FDI

The Presence of skilled and less expensive labor force or cheaper assets and Quality of infrastructure may offer Efficiency Seeking foreign firms' possibilities to increase their efficiency so that the functional relationship in this scenario looks like:

FDI=f (Cheap labour force, human capital, quality of infrastructure)……………………………….….4

3.1.4.   Strategic Asset Seeker:

As explained in the literature section, the main aim of strategic asset seeker MNC is sustaining and strengthening their competitiveness to dominate the global markets. So as to strengthen the global competitiveness and dominate the international market, a nation opens to the international trade and having lower production cost is essential for the investment decision they make. In relation to this, for Export Oriented investment, the presence of lower production cost in addition to trade openness is essential and this functional relationship is depicted in equation five as follows.

FDI=f (lower production cost, trade openness)…………………………………………………....5

3.1.5.   Risk Reduction-Seeking FDI

The macroeconomic stability of the country is a crucial element for these investors for their investment decision. Because the higher the unstable the economy is the riskier the existing market situation to invest and force investors to shift their investment to those economies having a stable macroeconomic atmosphere.

FDI= f (macroeconomic stability)……………………………………………………………….…...6

3.1.6.   Financial Sector Development

The advancement of financial sectors in once nation is a crucial element that determines its economic growth and hence the improvement in the domestic market potential and macroeconomic stability which in fact is used to promote Inward Foreign Direct Investment. However, it is hardly examined in almost all of the researches conducted in the area of the Determinants of FDI in Ethiopia. While, studies such as those conducted by (Alfaro, Chand, & kalemli-Ozeam, 2003) had shown the growth impact of FDI depends on the extent of the financial sector development of the host countries. Besides, (Levine, 2004) as cited on (Juzhong Zhuang, 2009) identified that the presence of a well-developed financial sectors can hugely contributes for the growth and development of a nation. In relation to this host countries lending interest rate also determine the flow of FDI. Research conducted in the area by (Siddiqui & Aumeboonsuke, 2014) signifies that bank lending interest rate negatively affect the inflow of FDI. However,(Ibid,2014) also cited the findings of (Chakrabarti, 2001) for positive relationship between lending interest rate and FDI in India while no significant relationship found between the two in Zimbabwe

FDI= f (financial sector development, lending interest rate)…………………………………….……7

3.1.7.   Domestic Investment

Similar to financial sector development, the vast majority of literatures have provided how FDI is beneficial in catalyzing domestic investment than the reverse. To this end, it is highly exigent to find studies on how domestic investments determine the inflow of FDI not only in Ethiopia but also elsewhere. However, studies such as the one conducted by (Marc & Moreaub, 2012), ascertain that domestic investment has a strong influence on FDI inflows in the host country. Conversely, (McMillan, 1998), justified how domestic investment deter FDI. So that, it is one of the intention of this research to verify how the domestic investment in Ethiopia deals with the inflow

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[1] Cheap labour force in this case only includes the unskilled and semi skilled labour force, which is identified with relatively cheap wage rate as the skilled labour force, is included under the human capital variable representing quality of labour force.

of FDI and fill the gap in this regard.

In general, though various foreign investors have different motives to invest abroad the above listed kinds of foreign direct investors are used as a foundation in this research and the combined functional relationship of the above listed equations is shown in equation eight.

FDI= f (physical resource, human capital, cheap labour force, domestic market potential, market potential of neighboring nations, economic growth, quality of infrastructure, lower production cost, trade openness, macroeconomic stability, financial sector development, domestic investment, lending interest rate, exchange rate)………………………………………………………………………….8

Data scarcity and to give a space for those variables that did not get an attention in previous researches in place of those that have frequently considered, the primary motive of this research is to investigate only how FDI deals with seven of the above variables. Therefore ,how financial sector and human capital development, domestic market potential, trade openness, domestic investment, lending interest rate and exchange rate in Ethiopia deals with Inward foreign Direct Investment is the center of attention in this research. Hence, the following functional relationship is applicable.

FDI= f (financial sector development, human capital, lending interest rate, trade openness, nominal exchange rate, domestic market potential, domestic investment)…………………………………………..10

In addition, for the consumption of this research proxy variable GDP per capita representing domestic market potential, secondary school enrolment for human capital, and bank credit to private sector representing financial sector development are used.

The simplest bivariate VECM model where there are only two variables "Y" and "X" each of whose current values depend on different combinations of the previous "k" values of both variables and the error term as indicated is presented as follows.

$$\Delta y_t = \beta_{y0} + \beta_{yy1}\Delta Y_{t-1} + \beta_{yx1}\Delta x_{t-1} + \lambda_y(Y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + v_t^y \ \ldots\ldots\ldots 11$$

$$\Delta x_t = \beta_{x0} + \beta_{xy1}\Delta Y_{t-1} + \beta_{xx1}\Delta x_{t-1} + \lambda_x(Y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + v_t^x \ \ldots\ldots\ldots 12.$$ The parameters incorporated in this particular research and their expected signs are presented in the following table.

Table 1: Variables Incorporated In the Study

Var. Name	Representation	To Measure	Data Source	Expected sign
fdi	Foreign Direct Investment	Inflow	UNCTAD	
di	Domestic Investment	Gross capital formation less FDI	NBE	+/-
open	Trade Openness	Export plus import to GDP ratio	NBE/MOFED	+/-
dcp	Domestic Credit to Private Sector	Financial Sector Development	NBE	+
ex	Nominal Exchange rate	Depreciation of local Currency	NBE	+
air	Average Lending Interest Rate	Lending interest rate	NBE	-
hc	Human capital	Human Capital Development	World Bank	+
gdpc	GDP per Capita	Domestic Market potential	NBE/W. bank	+

4.   Results and Discussion

4.1. Optimum Lag Length Selection

Selecting the optimal lag length is a common practice in VAR/VECM. Many criterias are used in selecting a lag length. However, AIC (Akaike Information Criterion), HQIC (Hannan-Quinn Information Criterion) and SBIC: (Schwarz Bayesian Information Criterion) are the most frequently used. In this research, the AIC and HQIC criteria has offered a lag length of three, whereas, the SBI criteria select a lag length of one. Too long a lag length will distort the data and lead to a decrease in power of explaining the dynamic behavior of the variables. Besides, the SBIC has the ability to reach in to a correct model with a small lag length, because it adds a larger penalty that increases with the number of regressors and tends to favor more parsimonious models than the others do (Verbeek, 2004), (Brooks, 2008). Besides, applying a three-lag length under the selected number of variables leads to inflating the number of co-integrating vectors. Therefore, this research applied the lag length selected by SBI criteria.

4.2. Test of Stationarity and Co-integration

The study uses Philips Peron and ADF tests to decide whether the variables under study are integrated of order zero or one. As depicted in table below both the ADF and Philips Peron tests signifies that the variables under study are stationary at their first difference or integrated of order one.

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Table 2: Stationary Test

	Philips Peron Test with Trend				ADF Test with Trend			
	level	p-value	1st difference	p-value	level	p-value	difference	p-value
logfdi	-3.321	-0.0629	-8.841	(0.0000)*	-2.325	-0.4202	-5.703	(0.0000)*
logdcp	-1.606	-0.7901	-6.487	(0.0000)*	-1.777	-0.7157	-3.753	(0.0191)*
loggdpc	0.385	-0.9966	-5.623	(0.0000)*	0.218	-0.9959	-6.491	(0.0000) *
loghc	-2.13	-0.529	-8.337	(0.0000)*	-1.599	-0.793	-4.774	(0.0005)*
logdi	-0.236	-0.9909	-7.272	(0.0000)*	0.141	-0.9954	-3.671	(0.0243)*
logopen	-1.14	-0.8581	-6.035	(0.0000)*	-1.468	-0.84	-2.988	(0.1356)*
logex	-2.101	-0.5457	-4.187	(-0.0050)*	-2.591	-0.2839	-3.82	(0.0156)*
logir	-2.388	-0.3862	-5.645	(0.0000)*	-2.525	-0.3154	-4.144	(0.0054)*

Source: Own estimation

4.3. Johansson Co-Integration Test

Verifying that all the variables under consideration are I(1),it is possible to carry on in to the co-integration analysis. In order to verify whether the variables have a long run association ship or not, the Johansson co-integration test is applied using trace test and Eigen value method all together. As depicted in table below, the results of the Johansson co-integration test based on the trace test and Maximum statistics revealed the rejection of the null hypothesis of "No co-integrating Vector" at 5% and 1% critical values. It would rather confirm the presence of at least one co integrating vector at 1% critical value.

Table 3: Johansson Co-integration test

MaximumRank	parms	LL	Eigen value	Trace Statistic	5% critical Value	1% critical Value
0	8	116.2624		185.4201	156	168.36
1	23	146.4637	0.78749	**125.0175**	124.24	**133.57**
2	36	170.5458	0.70916	**76.8534**	**94.15**	103.18
3	47	182.4169	0.45598	53.1111	68.52	76.07
4	56	191.8015	0.38199	34.3421	47.21	54.46
5	63	200.9576	0.37471	16.0298	29.68	35.65
6	68	205.0457	0.18913	7.8536	15.41	20.04
7	71	208.5387	0.164	0.8676	3.76	6.65
8	72	208.9725	0.022			

Maximum Rank	parms	LL	Eigen value	max Statistic	5% critical Value	1% critical Value
0	8	116.2624		60.4026	51.42	57.69
1	23	146.4637	0.78749	**48.1641**	45.28	**51.57**
2	36	170.5458	0.70916	**23.7423**	**39.37**	45.1
3	47	182.4169	0.45598	18.769	33.46	38.77
4	56	191.8015	0.38199	18.3122	27.07	32.24
5	63	200.9576	0.37471	8.1763	20.97	25.52
6	68	205.0457	0.18913	6.986	14.07	18.63
7	71	208.5387	0.164	0.8676	3.76	6.65
8	72	208.9725	0.022			

Source: Own Estimation

4.4. Vector Error Correction Model: The Long Run Dynamics Equilibrium

As depicted above, the Johansson co-integration test verified the existence of one long run equation or one co-integrating vector; so that, it is feasible to run the error correction model. The long run dynamics of the VECM, as depicted in next table, shows how responsive FDI in Ethiopia is for the changes in financial sector development, domestic market potential, human capital development, domestic investment, trade openness, exchange rate and lending interest rate in the long-run. Inorder to understand and interprate the out put dipicted in the table more easily,the normalized long-run relation ship on logfdi is written as:

Logfdi=49.62-2.09logdi-3.20logair+6.11logex-0.32loghc+2.78loggdpc+1.362ogopen+0.59logdcp+Ce1

Where, all the coefficents of the variables under study, except the coeficients of human capital and domestic credit to the private sector, as shown in the table, are statistically significant and the results are discussed taking "other things remains the same" presumption. In addition, as all the variables under consideration are expressed in

logarithms, the coefficients are interpreted as long run elasticities.

Table 4: Long Run Dynamics

Co integrating Equations							
Equation	**Parms**	**chi2**	**P>chi2**				
_ce1	7	1736.82	0				
Identification: beta is exactly identified							
Johansen normalization restriction imposed							
beta		**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf.**	**Interval]**
_ce1							
logfdi		1					
logdi		2.09055	0.47517	4.4000	0.00000	1.159241	3.021857
logair		3.20091	0.43399	7.3800	0.00000	2.350313	4.051513
logex		-6.1055	0.58814	-10.3800	0.00000	-7.258235	-4.952762
loghc		0.32436	0.33139	0.9800	0.32800	-0.325154	0.973877
loggdpc		-2.78107	0.75333	-3.6900	0.00000	-4.257561	-1.304576
logopen		-1.36247	0.60441	-2.2500	0.02400	-2.54708	-0.177851
logdcp		-0.05904	0.29127	-0.2000	0.83900	-0.629911	0.511837
_cons		-49.621					

Source: own estimation

As illustrated in the table, domestic investment, which is the sum of private and public investment negatively determine the inflow of FDI in the long run. Consequently, a percentage increase in the domestic investment likely leads to a 2.09% decrease in the FDI stock in the longrun. Since, the data taken under this research incorporates both domestic private and public investment all together, the result is based on the net effects of the two variables to the FDI jointly. Albeit, the infrastructural expansion by the government in Ethiopia can have a positive impact to the inflow of FDI, as supported by many studies, the researcher's thought is that the existance of private investments adding to the presence of many government owend investments on top of infrastractural development may have played a role for this result. Besides,as compared to the increase in the private and government owned investments, as dipicted in the graph below the FDI is found to be still at the early stage.

The finding in this respect complements the one made by (McMillan, 1998), Moreover, the graph below may emphasize how foreign direct investment in Ethiopia is still in its infant stage as compared to the domestic investment.

Figure 1: FDI and Domestic Investment in Ethiopia (1975-2014 in million of Birr)
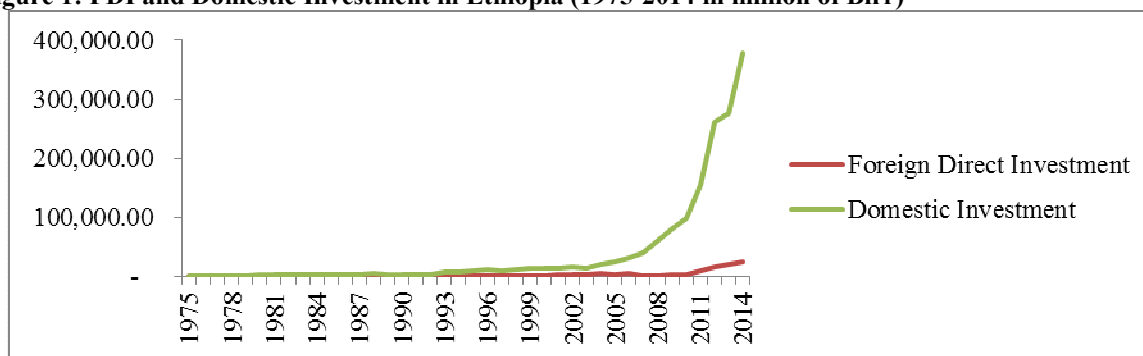
Source: based on the data from NBE and UNCTAD

It is also revealed that, in the long run lending interest rate and inward FDI in Ethiopia moves in opposite direction. As a result, a percentage increase in lending interest rate leads to a 3.2% decrease in FDI. For the reason that, lending interest rate is an outlay for borrowing to investors and has a consequence of escalating the total cost of investment,its negative impact on FDI is levelheaded.

Exchange rate depriciation, on the other hand is found to influence FDI positively. The longrun out put signifies that,a one percentage increase in exchange rate or alternatively the depriciation of local currency (the value of Birr) interms of US dollar in this research context by a single percent results a 6.1% increase in FDI. This result warranted that,the higher the appriciation of the value of US dollar interms of Birr will encourage foreign investors to come and invest in the Ethiopian economy. Similar result was also found in the works of (Bilawal, Ibrahim, Abas, & Shuaib, 2014) and (Rhodham, 2012),concluding that exchnage rate can predict inward FDI in the long run.

However,the coeficient of human capital development is found to be insignificant and negative. This may entail that education at the secondary level in Ethiopia is too ineffectual to meet the skilled labour requirements of foreign investors. This may vigor foreign direct investors to rely on expatriates in key areas of

jobs and only hire Ethiopian citizens for workes which do not require a technical know how and expertice. The result ,besides,revaled that though the presence of cheap labour force in Ethiopia is a veracity,the existance of skilled labour force in a level that satisfy the expectation of foreign direct investors is in still question.

GDP per capita, a measure of domestic market potential in this particular research, shows how the domestric market potential magnetize foreign investors to operate in Ethiopia. The figure from the long run dynamics revaled that, a unit percentage increase in the GDP per capita guides to a 2.78 percentage increase in FDI. Same result was found under (Lankes and Venables, 1996; Resmini, 2000; Duran, 1999; Garibaldi, 2002; Bevan and Estrin, 2000; Nunes et al., 2006; Sahoo, 2006) as cited on the works of (Vijayakumar, 2010). One can conclude that,the domestic market potential in Ethiopia is one of the motivation of international investors to maneuver in the country.

Similarly, trade openness also has a positive and significant long run contribution in attracting FDI.The result indicates that, the more open the country to external trade ,the higher the foreign investors are being attracted. This is discovered from the fact that,a one percentage increase in trade openness will result in to 1.36 percentage increase in FDI. Similar results were obtained by, (Demirhan & Masca, 2008), (Ravinthirakumaran, Selvanathan, Selvanathan, & Singh, 2015) and (Anyanwu J. , 2012).

However,domestic credit to the private sector is found to have positive and insignificant effect in attracting FDI. The result may point out that, the financial sector development in Ethiopia is ahead of the requirements of foreign investors.

4.5. Error Correction Model: The Short Run Dynamics Equilibrium
Table 5: Short Run Dynamic Equilibrium

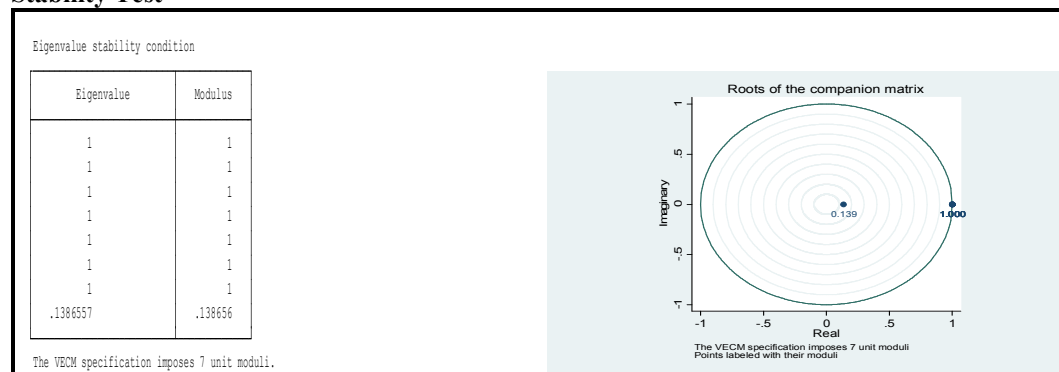|	Coef.	Std.error	z	p>/z/	[95% conf. Interval]	
Ce1_L1	-0.43208	0.15905	-2.72	0.007	-0.74382	-0.12034
D_logdi	0.01353	0.03855	0.35	0.726	-0.06202	0.08908
D_logair	-0.02148	0.03225	-0.67	0.505	-0.08469	0.04173
D_logex	0.05904	0.02121	2.78	0.005	0.01746	0.10061
D_loghc	-0.05832	0.03128	-1.86	0.062	-0.11962	0.00298
D_loggdpc	-0.01888	0.01017	-1.86	0.064	-0.03882	0.00106
D_logopen	0.05122	0.02764	1.85	0.064	-0.00295	0.10538
D_logdcp	-0.1333	0.0419	-3.18	0.01	-0.21542	-0.05117

source: Own Estimation

As indicated in the table, the coefficient of the error correction term or the speed of adjustment has the expected sign. It implies that any short run deviation of FDI from its long run equilibrium will gradually converges back to its long run equilibrium position. Specifically, the error correction term or the coefficient of the speed of adjustment of -0.43208 signifies that,43.2% of the deviation of the actual FDI from its equilibrium value eliminated every year and hence full adjustment would require a period of less than three years. Regarding the short run effects of the variables,domestic investment has a positive pressure on FDI in the short run but not significant. similarly trade openness has also a positive influence on FDI ,however it is found insignificant. On the other hand, GDP per capita,average lending interest rate and human capital have a negative influence on FDI in the sort run but they are not significant. Exchnage rate ,however affects FDI positively and significantly in the short run. Hence, exchange rate affects FDI both in the long run and short run positively. Conversely, domestic credit to the private sectors affets FDI negatively and significantly in the short run. However, it has a positive coeficient in the long run time horizon, even if its coeeficent was found insignificant.

4.6. Post Estimation Results
Following the long run and short run results, in order to substantiate the consistence of the model results, the study has made the following post estimation tests.

Stability Test

Eigenvalue stability condition

Eigenvalue	Modulus
1	1
1	1
1	1
1	1
1	1
1	1
1	1
.1386557	.138656

The VECM specification imposes 7 unit moduli.

Roots of the companion matrix

The VECM specification imposes 7 unit moduli
Points labeled with their moduli

Other Tests

		ch^2	prob>ch^2
Hetroscedasticity Test	**Breush-Pagon/Cook- weisberg test**	**0.01**	**0.9117**
Residual Normality Test	**Jarque-bera Test**	**30.265**	**0.01668**
Autocorrelation test	**Lagrange Multiplier Test**	**69.9518**	**0.88854**

5. Conclusion

The findings of the Determinants of Foreign Direct Investment inflows in Ethiopia based on VECM with co-integration using a time serious secondary data from 1975-2014 showed that, FDI in Ethiopia is highly determined by domestic investment, lending interest rate, exchange rate depreciation, domestic market potential and trade openness. However, human capital development and financial sector development are found to have an insignificant effect to the inflow of FDI.

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