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## RESEARCH ARTICLE

### FACTORS AFFECTING FDI FLOW IN ETHIOPIA: AN EMPIRICAL INVESTIGATION

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#### ABSTRACT

This paper examined the determinants of foreign direct investment in Ethiopia. Five variables including market size, level of trade openness, inflation rate, infrastructure, and human capital were used. Time-series data covering a 21-year period (1990-2011) were obtained from the World Bank and analyzed using multivariate ordinary least square regression. The findings show that level of trade openness and inflation rate of Ethiopia have had a significant impact on the flow of foreign direct investments to Ethiopia. No clear relationship was obtained for market size, infrastructure, and human capital.

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## INTRODUCTION

### Foreign Direct Investment in Ethiopia

According to the Foreign Agricultural Investment report (2011) Ethiopia is among the fastest growing non oil dependent countries in Africa. Though, not consistent, foreign direct investment (FDI) flows into Ethiopia have gradually increased in the last two decades (World Bank, 2012). As shown in Figure 1 the inflow of FDI rose from \$ 150 thousand in 1990 to \$288 million in 1997. After decreasing to \$70 million in 1999, it resumed its increase in the year 2000 and reached \$550 million in the year 2006. The global financial crises caused its rapid plunge in the year 2007 and 2008 to \$222 million and \$109 million respectively, but since then it has again been increasing and exceeded \$600 million in the year 2011. The Ethiopian Investment Agency (EIA), which was established in the year 1992, is responsible for facilitating investment both domestic and foreign. According to the EIA, the areas with the most promising potential for investment are agriculture, agro-processing, textiles and garment, leather and leather products, tourism, mining, and hydropower. Of all the FDI projects licensed by the year 2003, 46.6 percent were in manufacturing and processing, 40.7 percent were in trade, hotels and tourism, and 12.7 percent were in agriculture and mining (UNCTAD, 2002).

According to the same document source China, India, Sudan, Germany, Italy, Turkey, Saudi Arabia, Yemen, the United Kingdom, Israel, Canada and the United States are currently the major sources of FDI into Ethiopia.

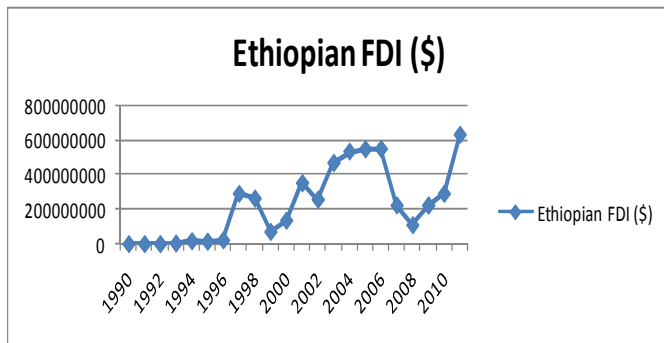
### Statement of the Problem

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

Foreign direct investment has an increasingly important role in the development of capital deficient developing countries. This is because, it is not only a stable source of capital inflows, but it also helps in technological transfer and employment generation (Getinet and Hirut, 2006). FDI also provides a viable way for developing countries to increase their savings and achieve economic growth. However, flows of FDI have varied across developing countries. The rapid growth in FDI over the last few decades has initiated a large body of empirical literature to examine the determinants and the growth enhancing effects of FDI.

Many studies have been conducted over time looking for factors affecting FDI into a given country. Singh and Jun (1995) empirically analyzed various factors including political risk, business conditions, and macroeconomic variables that have influenced FDI flows to developing countries.

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Note: own computation from World Bank: World Development Indicators data.

**Figure 1.** Ethiopian foreign direct investment data between the years 1990-2011

**Blomstrom and Kokko (2003)** studied the rationale behind providing incentives for attracting FDI. **Miyamoto (2003)** studied the role of human capital formation and skills development both in attracting FDI and in influencing the impact of FDI. **Banga (2003)** reviewed determinants and trends of FDI flows to Asia. Chan and **Gemayel (2004)** investigated the risk of instability and the pattern of FDI in the Middle East and North Africa Region. **Nonnenberg and Mendonca (2004)** explored the determinants of FDI in developing countries. **Onyeiwu and Shrestha (2004)** considered the determinants of FDI in Africa and **Coupet and Mayer (2005)** investigated the institutional FDI, and re-evaluated the role of the quality of institutions on FDI. In Ethiopia, **Getinet and Hirut (2006)** studied the nature and determinants of FDI in Ethiopia over the period 1974-2001. The study gives an extensive account of the theoretical explanation of FDI and reviews the policy regimes, the FDI regulatory framework and institutional set up in the country over the study period. It also undertakes empirical analysis to establish the determining factors of FDI in Ethiopia. This paper's findings show that growth rate of real GDP, export orientation, and liberalization has a positive impact on FDI. On the other hand, macroeconomic instability and poor infrastructure have a negative impact on FDI.

According to the researchers these findings imply that liberalization of the trade and regulatory regimes, stable macroeconomic and political environment, and major improvements in infrastructure are essential to attract FDI to Ethiopia. As for the research in this area little or no study has been conducted other than **Getinet and Hirut's (2006)** research into the determinants of FDI in Ethiopia. **Getinet and Hirut's (2006)** data did not include the years beyond 2001. Therefore, this paper uses data between 1990 and 2011 there by filling the gap in their research. The findings of this study will be significant to both academicians and policymakers in the following way: first, it will add to the knowledge of the researchers in this field of study and secondly, it will serve as a guide to both policy makers and academicians.

## Literature Review

### Foreign Direct Investment

According to World Bank World Development Indicators (2012) FDI are defined as "the net inflows of investment to

acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors." According to various researches and studies FDI has the following three broad purposes.

### Market seeking or (horizontal) FDI

In this case the main aim of FDI is to provide goods and service to local and district market. The motive for horizontal FDI is market size and market growth. The investors who are seeking market size for investment need to have host countries which have a large market size, high potential of market growth and high per capital income.

### Resource (asset seeking) FDI

This type of FDI is carried out when the investing firm's aim is to get access to the resources in the host country which are not obtainable in home country. Examples of these resources are natural resources, raw materials or low cost labor.

### Efficiency seeking FDI

Under this type of foreign direct investment the investor will invest to get an advantage when there is a common governance of geographically dispersed activities, especially in the presence of economies of scope and scale and diversification of risk.

## Empirical Literature Review

The impact of FDI on economic development has been discussed numerous times and debate is still going on. Many studies have been conducted about FDI. Most of the studies are focusing either on the impact of FDI on the domestic economy of a given country or factors affecting foreign direct investment. In the literature there are many determinants of FDI. Among these the following are the major ones: market size of the host country, economic growth, technological capability, and government policy. FDI plays an important role in helping economic development and growth, increasing a country's technological level and creating employment opportunities. FDI works as a means of incorporating under developed countries into the global market and improving capital availability for investment. Many structures have evolved for examining the determinants and effects of FDI. **Gastanga et al. (1998)**, studied the effects of various policies on FDI flows from the perspective of the eclectic theory of international investment and hence the advantages of foreign ownership, host country location, and internationalization. **Asiedu (2002)**, investigated the effect of natural resources, market size, host country's investment policy, corruption and political instability on FDI flow **Asiedu (2006)**, studied the determinants of FDI to Africa. She found that efficient legal system and low inflation promotes FDI but corruption and political instability have negative effect on FDI of Africa.

Using vector-error correction model Nadu (2009), investigated the determinants of FDI of Nigeria between the years 1970 and 2006. Under this study, endowment of natural resources, openness, and macroeconomic risk factors; such as inflation and exchange rate are significant determinants of FDI flow of Nigeria. In Ethiopia also **Getinet and Hirut (2006)**, investigates the determinants of FDI by using time series analysis for the years between 1974 and 2001. This study provides an extensive account of the theoretical explanation of FDI as well as reviews the policy regimes, FDI regulatory framework and institutional set up in the country over the study period.

It also attempts empirical analysis to find the determining factors of FDI in Ethiopia. The output shows that export orientation, growth rate of real growth domestic product and trade liberalization have positive impact on FDI flow of Ethiopia. However, macro - economic instability and poor infrastructure have negative impact on FDI of Ethiopia. Based on the above studies we might face some difficulties in identifying what are the determinants of FDI flow of Ethiopia by considering latest data.

Therefore, using time series econometric technique on annual data of Ethiopia between the years 1990 and 2011, this study examines factors affecting the FDI flow of Ethiopia. In conclusion, based on many literatures FDI has the following motive market seeking, resource or asset seeking, and efficiency seeking. In addition various literatures also identified the determinants of FDI. Among these, market size of the host country, economic growth, technology capability, and government policy are the major ones. Many studies have been conducted to identify the determinants of FDI in different countries. Most of these studies show that high inflation rate, and corruption have negative impact on FDI while, economic growth and high technology level have positive impact for flow of FDI.

## MATERIALS AND METHODS

This study used a quantitative methodology. It employed a multiple regression model to estimate factors that affect FDI flow in Ethiopia. **The World Bank World Development Indicators (2012)** defined FDI as “the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.

This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors”. Data are in current U.S. dollars. In line with the approach used in the FDI literature, the dependent variable used in this study is the net FDI inflows as a percentage of GDP. Based on the availability of data, the following variables have been selected: market size, trade openness, inflation rate, infrastructure, and human capital. The model expressed FDI as a function of the market size of the host country (GDP), inflation rate of the host country, openness of the host country,

infrastructure development, and human capital. This study used time series data between the years 1990-2011 and it was obtained from World Bank: World Development Indicator and World Investment Report, and Ethiopian statistical agency website as well.

### Definition of Variables

**FDI: The World Bank World Development Indicators (2012)** defined Foreign Direct Investment as the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. In line with the approach used in the FDI literature, the dependent variable used in this study FDI is measured as the net foreign direct investment inflows as a percentage of GDP.

**Market size:** It is believed to be one of the significance determinants that have been used in empirical studies to explicate the inflow of FDI to a host country. Because if the host countries have large market size it will have investment opportunities that will in turn to generate high profit for the foreign firms. Besides, the market size hypothesis states that multinational firms are attracted to a larger market in order to utilize resources efficiently and exploit economies of scale (**Chakrabarti, 2001**). Usually the proxies to measure market size are Real GDP per capita and Real GDP growth rate, but in order to maintain consistency with **Chakrabarti, (2001)** this study use Real GDP growth rate. FDI is expected to have positive relationship with Real GDP growth rate.

**Trade Openness:** Trade openness promotes FDI and it is measured as the ratio of export to GDP. (**Singh and Jun, 1995**). FDI is expected to have positive relationship.

**Inflation rate:** Inflation rate is one of the variables which measures the given countries macro-economic stability. There is a widespread perception that macro-economic stability shows the strength of an economy and provides a degree of certainty of being able to operate profitably (**Balasubramanyam, 2001**). Low inflation rates are expected to have a positive impact on FDI.

**Infrastructure:** Infrastructure covers many dimensions ranging from roads, ports, railways and telecommunication systems to the level of institutional development (**Getinet and Hirut 2006**). The availability of well-developed infrastructure will reduce the cost of doing business for foreign investors and enable them to maximize the rate of return on investment (**Morriset, 2001**). Therefore countries with good infrastructures are expected to attract more FDI. Gross fixed capital formation (percent of GDP) has been included to proxy infrastructure development. FDI is expected to have positive relationship with infrastructure of the host countries.

**Human capital:** Human capital is considered to be an important factor for location strategies of multinational companies. When investing for the long term in another country, multinational companies have in mind the human resources in the host country. Large, efficient, and educated population is a requirement for an attractive investment (**Getinet and Hirut, 2006**).

The more educated the population is, the more likely it is for a country to attract more FDI (Lewis, 1999). In this study, human capital is measured by adult illiteracy rate (percent of people aged 15 and above). Adult illiteracy rate is expected to have negative relationship with FDI.

**Specification of the Model**

This study use a model which is developed by Chan and Gemayel, (2004) to examine the determinants of FDI in Ethiopia over the period of 1990 – 2011 by using Multiple Linear Regression Model. This model analyzes the effect of number of variables on FDI and is presented as follows.

$FDI = f(X)$ ,  
Where X includes market size, trade openness, inflation rate, infrastructure and human capital

$$FDI_t = f(RGDPGR_t, REXPDP_t, INFR_t, GFCF_t, IllIrt_t) \dots \dots \dots (1)$$

where, FDI is, the net foreign direct investment inflow as a percentage of GDP (measure of FDI).

- RGDPGR = Real GDP growth rate (measure of market size)
- REXPDP = Ratio of export to GDP (measures of openness)
- INFR = Annual rate of inflation based on consumer price index.(measure of inflation)
- GFCF = Gross fixed capital formation (percent of GDP) (measure of Infrastructure)
- IllIrt = Illiteracy rate (percent of people aged 15 and above) (measure of human capital)

$$FDI_t = + 1 RGDPGR_t + 2 REXPDP_t - 3 INFR_t + 4 GFCF_t - 5 IllIrt_t + t \dots \dots \dots (2)$$

$$\ln-FDI_t = + 1 \ln\_RGDPGR_t + 2 \ln\_REXPDP_t - 3 \ln\_INFR_t + 4 \ln\_GFCF_t - 5 \ln\_IllIrt_t + t \dots \dots \dots (3)$$

The stationarity and co-integration tests that have been conducted suggest that model (II) should be estimated using the first difference variables. The final short run model estimated therefore has the following form

$$\ln\_FDI_t = + 1 \ln\_RGDPGR_t + 2 \ln\_REXPDP_t - 3 \ln\_INFR_t + 4 \ln\_GFCF_t - 5 \ln\_IllIrt_t + \dots \dots \dots (4)$$

**RESULTS AND DISCUSSION**

In this part, the data set is tested for presence of econometrics problems, presented and analyzed. Additionally, in each subsection brief interpretations are enclosed to explain the results obtained. Table 2 reports some descriptive statistics for the variables incorporated in this study (1990-2011). It appears that the mean of FDI as a ratio of GDP is 1.81 over the period; the mean of real GDP is 5.68; the mean of ratio of export to GDP ratio is 10.64; the mean of inflation rate over the period is 8.5 percent; the mean of gross fixed capital formation as percentage of GDP is 20.05; and the mean of illiteracy rate of Ethiopia over the period is 67%.

The basic OLS assumption results show the following. The results of unit root test are presented in the Appendix 2. All variables didn't fulfill the stationarity assumption. For this the researcher used the first order difference of all variables and they fulfilled the stationarity assumption. The researcher conducted Breusch-Pagan/Cook-Weisberg test for heteroskedasticity to test whether a systematic pattern in the errors exists and whether the variances of the errors are constant or not. The result on Appendix 3 showed no heteroskedasticity problem. Ramsey RESET test, using powers of the fitted values were conducted to see if the coefficients of higher order terms added to the regression are zero (i.e. whether the model specification used is correct or not). The results on Appendix 4 showed that the model has no model specification problems. Durbin's alternative test for autocorrelation was used to test whether the error terms are serially uncorrelated and the result on Appendix 5 shows that the error terms are uncorrelated each there. In Table 3 the regression result shows that the independent variables explained approximately 67 percent of FDI flow of Ethiopia. The value of the F-statistic shows that the equation has a good fit, that is, the explanatory variables are good explainers of changes in FDI in Ethiopia. The t-statistics and (p-value) show that the explanatory variable such as trade openness and inflation rate are variables which can affect FDI flow of Ethiopia at 5 percent and 10 percent level of significance. In contrast, market size, infrastructure, and illiteracy rate do not have statistically significant relationship with Ethiopian FDI flow.

Trade openness of the host country was found to be significant in attracting FDI into Ethiopia positively, and the variable has the same sign with the predicted one. Given other thing constant, a 1 percent increase change in trade openness of the host country causes the inflow of change in FDI to increase approximately 4.60 percent. This finding may put forward evidence that the investor invest in Ethiopia with the motive of searching low cost input and exporting it to other countries as a raw material, semi-processed product, and processed product. Looking at the areas which Ethiopian Investment Agencies prioritize for foreign investors might as well be proof of this. These areas are agriculture, agro-processing, textiles and garment, leather and leather products, tourism, mining, and hydropower. The above areas are usually related with the natural resources of the host countries. This is consistent with the findings in Singh and Jun (1995), Chan and Gemayel (2004), Getinet and Hirut (2006), and Nadu (2009).

Another finding from the estimation is that inflation rate of the host country is negatively related to FDI flows, and the variable is significant at 10 percent level of significance. A one percent increase change in inflation rate will cause change in FDI flows to decrease by approximately 2.5 percent assuming that other variables are constant. This finding implies that macro-economic stability is an important determinant of FDI inflows to Ethiopia. This finding is consistent with Balasubramanyam (2001), Getinet and Hirut (2006), and Nadu (2009).

**Table 1. The Proxy and Expected Sign of Independent Variables**

Variables	Proxy	Expected Sign
Market size	Real GDP growth rate (RGDPGR)	+
Openness	Ratio of export to GDP (REGDP)	+
Inflation rate	Annual inflation rate (INFR)	-
Infrastructure:	Gross fixed capital formation (percentage of GDP) (GFCF)	+
Human capital	Illiteracy rate (percentage of people aged 15 and above) (Illlitr)	-

Note: own computation

**Table 2. Descriptive Statistics for the Variables of Study**

Variables	Mean	Std.Dev
FDI \$	1.809	1.802
Real GDP growth rate	5.68	6.47
Ratio of export to GDP	10.64	4.157
Inflation rate	0.0849	0.65
Gross fixed capital formation (percent of GDP)	20.05	4.41
Illiteracy rate	0.67	4.4

Note: Stata output from World Bank data.

**Table 3. Results of the Regression Dependent Variable *lnfdi* Method: Least square**

Number of obs. 20  
 F(5, 14) 5.68  
 Prob> F= 0.0046  
 R-squared= 0.6697  
 Adj R-squared= 0.5518

Variables	Coefficients	Std.Err.	t-statistics	p-value
<i>drdpgr</i>	-0.034192	0.0295995	-1.16	0.267
<i>ln_rexpdp</i>	4.606367**	1.364735	3.38	0.005
<i>lnfrate</i>	-2.481077*	1.337445	-1.86	0.085
<i>ln_gfcf</i>	1.715304	2.070911	0.83	0.421
<i>ln_illirt</i>	-5.130249	5.448119	-0.94	0.362
constant	-0.1312643	0.2492776	-0.53	0.607

\*and \*\* significant at 5% and 10% respectively

Note: Stata output from World Bank data.

However, the result illustrates that market size and illiteracy rate of the host country are statistically insignificant but negatively related to FDI. The finding of market size is not consistent with the existing literature and different past studies finding. This might be because of using only 20 years data for this study might not be sufficient. Similarly, the results show that infrastructure development has an insignificant effect on FDI in Ethiopia but it has positive relationship with FDI flow of Ethiopia.

### Conclusion and Policy Implication

Applying multiple regression models, this study empirically investigates factors that affect FDI of Ethiopia during 1990-2011. This study suggests that trade openness and inflation rate are significant factors affecting Ethiopian FDI during 1990-2011, while market size, infrastructure and human capital are found to be statistically insignificant factors for FDI of Ethiopia during the year 1990-2011. The positive and significant trade openness coefficient signifies the importance of implementing a more outward looking growth strategy. The negative and significant inflation coefficient indicates the importance of a more focused macro-economic policy environment that supports the economy and builds confidence for potential investors. Necessary steps have to be taken to contain inflation through the adoption of sound fiscal policies. This study has several limitations. For a good piece of econometric research, 21 years data is not enough. Having this in mind the researcher tried to include at least 30 years data but, it was not possible to get the intended data set.

The researcher also tried to change the study from time series to panel data study but time was not enough to consider this option. Although, it has the data set limitation this policy paper helps the researcher to dig deep and come up with future study plan. The researcher future study will be on *An Econometric Analysis of Determinants of Foreign Direct Investment: A Panel Data study for Africa*. It will hopefully overcome the limitation of this policy paper.

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## Appendices

### Appendix 1. Regression Output

```
. reg dlndfdi drgdpggr dln_rexpdp dinfrate dln_gfcf dln_illirt
```

Source	SS	df	MS	Number of obs =	20
Model	19.605799	5	3.92115979	F( 5, 14) =	5.68
Residual	9.66921024	14	.690657875	Prob > F =	0.0046
				R-squared =	0.6697
				Adj R-squared =	0.5518
Total	29.2750092	19	1.54078996	Root MSE =	.83106

dlndfdi	Coeff.	Std. Err.	t	P> t	[95% Conf. Interval]
drgdpggr	-.034192	.0295995	-1.16	0.267	-.0976767 .0292926
dln_rexpdp	4.606367	1.364735	3.38	0.005	1.679302 7.533432
dinfrate	-2.481077	1.337445	-1.86	0.085	-5.349612 .3874581
dln_gfcf	1.715304	2.070911	0.83	0.421	-2.726358 6.156965
dln_illirt	-5.130249	5.448119	-0.94	0.362	-16.8153 6.554804
_cons	-.1312643	.2492776	-0.53	0.607	-.6659116 .4033829

**Appendix 2.**

Variables	Critical Value	Test- statistics	Decision
Ln_FDI	1% = -3.750	-5.398	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		
Rgdpr	1% = -3.750	-3.783	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		
ln_rexpdp	1% = -3.750	-3.910	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		
Infrate	1% = -3.750	-4.066	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		
ln_gfcf	1% = -3.750	-4.578	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		
ln_illirt	1% = -3.750	-3.853	Stationary at 1 <sup>st</sup> difference
	5% = -3.000		
	10% = -2.630		

**Appendix 3 Test of Heteroskedasticity**

hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H<sub>0</sub>: Constant variance

Variables: fitted values of dlndi

chi2(1) = 1.21  
 Prob > chi2 = 0.2718

**Appendix 4 Test of Model Specification**

Ramsey RESET test using powers of the fitted values of dlndi

H<sub>0</sub>: model has no omitted variables

F(3, 11) = 1.12  
 Prob > F = 0.3832

**Appendix 5 Test of Autocorrelation**

estat durbinalt

Durbin's alternative test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	0.020	1	0.8885

H<sub>0</sub>: no serial correlation

\*\*\*\*\*