

The Impact of Foreign Direct Investment (FDI) on Export Growth: Evidence from Ethiopia

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Abstract

This study attempts to examine the impact of foreign direct investment on export growth in Ethiopia over the period 1991-2016. In order to achieve the stated objectives, we separate the effects of FDI into supply capacity-increasing effects and FDI specific effects and estimated by using Engle Granger two step procedures of cointegration and error correction model. Accordingly, the result shows that a FDI inflow has supply-increasing and positive FDI-specific effects on export growth in the long run. The error correction modeling approach found that the coefficient of error term has a correct sign (-0.67) and statistically significant at 5 percent level. This means that export converges to its long run equilibrium value at the speed of 67 percent per annum. The result also found a positive FDI-specific effect in the short run. This revealed that specific efforts aimed at attracting further FDI would be justified. Therefore, to increase export growth, government should attract inward FDI by providing special incentives to foreign firms and designing other appropriate policies and reforms, devaluated birr (on a real trade-weighted basis) against foreign currency, boosting potential output and expanding exports destinations.

Keywords: Exports • Foreign direct investment • Cointegration • Error correction • Ethiopia

Introduction

There is an inherent and strong linkage between FDI and export-driven economic growth. Multinational corporations (MNCs, or multinational enterprises: MNEs) that engage in FDI particularly export-oriented helps generate export growth as well as induce local firms in the host country to make use of the technology spillovers and market linkages to export their own products. FDI inflows contribute to host countries' export expansion. In particular, owing to the MNCs superior technology, existing marketing channels, etc. the foreign firms create positive externalities on domestic producers' exporting decision –they induce local firms to export. This positive externality on local firm's exporting status is known as MNCs export spillover. Such spillovers, however, are not automatic, and will take place under favorable policy environments. It is straightforward to see that the effectiveness of positive externality or spillovers is depending upon appropriate strategies of the foreign investors and suitable trade policies of the host country. In order to promote export and utilize FDI spillover on local firms in particular and improve aggregate export growth in general, the Ethiopia government did a lot so far by identifying a number of economic sectors as priority FDI areas and also has made a broad range of policy reforms in order to create conducive investment environment in the country. As result of this,

the inflow of FDI to the country has been shown an improvement over time.

In empirical studies however; there are contrasting views about the benefits of FDI to the host country particularly in export growth. Some studies argue that the benefits derived from FDI to recipient countries can only be realized when the host countries reached a certain level of development and sufficient absorptive of advanced technologies that FDI brings is available in the host country. While the other argue that although FDI has a positive impact on export growth, the size of its impact are influenced by many country specific factor such as the level of human capital, domestic investment, infrastructure, openness in trade, competitive level of domestic firms, macroeconomic stability and investment policies. In addition to country specific factor; the authors' perspectives, sample selection, measurement of variables, inclusion of other variables, econometric models, and analytical tools applied in studies are responsible to have these controversial results [1]. Such contrasting view in empirical studies is not exception to Ethiopian economy. Besides, limited studies the effect of FDI on export in the country's, the empirical finding shows that FDI is not significantly affect export whereas the recent studies indicates that FDI is positively associated with export.

Moreover, most empirical research in examines whether inward FDI improve host country export performance fail to separates the potential effects of FDI into supply-increasing effects (capacity

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effects) and FDI-specific effects on exports. The supply increasing effects arise when FDI inflows induce increases in the host country's production capacity, which, in turn, increase export supply capacity. The FDI-specific effects arise because foreign capital inflows may incorporate different competitive advantages, such as superior knowledge and technology and thus, higher productivity, or better information about export markets as compared to local firms. Hence, it is important to distinguish between these types of effects, since the supply-increasing effects may arise as a consequence of domestic investment as well, making an FDI promoting policy reluctant in the absence of FDI-specific impact. On the word, such fail to distinguish it result in little knowing about the potential effect of FDI on export and less information for policymakers could increase exports through alternative means such as promoting domestic investment in addition to FDI. Importantly as far as my knowledge is concerned, all studies which have been conducted to investigate the effect of FDI in Ethiopia export so far did not capture FDI as supply-increasing effects and specific effects. For these reasons, this paper is contributed to a better understanding of the roles of FDI influences on a country's aggregate export growth by capturing the two type effect of FDI. The aim of this paper, therefore, focused on examining the impact of foreign direct investment on export growth in Ethiopia.

The rest of the paper is structured as follows. Section two briefly reviews the related literature on the impact of foreign direct investment on export growth. Section three discusses the methodological aspect of the study which includes: model specification, and estimation producer. In section four contain econometric results of the study. In this section, the relation between FDI and export is drawn. Finally, provides the conclusion and policy recommendation emanating from the study.

Literature Review

In order to obtain the evidence to support the theoretical relationship between inward FDI and the recipient country export performance, various empirical studies undertakes to show the relationship host country aspect. Since the findings vary across different geographical location depending on regional, social and economic settings. As result to of this the findings are mixed especially developing countries. The empirical result in this section is discussed in the order of the year of publication.

Examines the causal relationship among inward FDI, export and import in Mexico by using the granger causality test. The result indicates the existence of linkages bidirectional Granger causality—between exports, imports and FDI. Investigate the effect inward FDI on Chinese's export performances based a whole industries and labor-intensive industries and capital-intensive industries data. The result point out FDI seems to have the predominant influence on China's export performance at industrial level. Furthermore, the effect of FDI on exports is clearly larger in labor-intensive industries than capital-intensive industries. Examines the impact inflows FDI on Croatian manufacturing export performance using the panel data approach for 21 manufacturing industry sectors over the period between 1996 and 2002. The result reveals that inward FDI positively affected Croatian manufacturing export performance, but the extent of this impact relatively low.

Demonstrate the determinate of exports of 75 developing countries over the period 1970-2004 by using fixed effects estimation. The study finds that inward FDI has not significant impact on export growth the developing countries. The reason is might be developing countries focuses inward-oriented policy regime attracts FDI mainly to capture domestic rather than exports markets.

Investigates the causal relationship between of inward FDI and Taiwanese export performance from 1952 to 2005 by using the granger causality test. And also conduct comparative studies of the American-type FDI and Japanese-type FDI in Taiwan export performances. The major finding point out that there is one way causality FDI and export which running from inward FDI to export in Taiwan. Furthermore, unidirectional causality exits in American-type FDI in Taiwan and Taiwan export which flow from export to FDI, while there is no causal relationship between Japanese-type FDI in Taiwan and Taiwan exports. This findings contrast result. The possible effects of FDI inflows on exports in 12 Central and Eastern European economies (through separate the effects of

FDI into supply capacity-increasing effects and FDI-specific effects) by using the Generalized Least Square method on pooled data over the period 1996 to 2004. The findings indicate that for all their sampled countries, FDI has increased domestic supply capacity and exports. However, FDI-specific effects on exports are observed only in the new member states of the European Union.

Re-examine the relationship between FDI and China's exports using panel data including 14 main FDI receiving and exporting manufacturing sectors from 1995 to 2005. In contrast to most previous studies that used more aggregated data, this studies assume that the effect of FDI on trade varies across different sectors [2]. The finding suggests that FDI has positively affect China's exports. More specifically, this effect remains positive in 13 out of 14 sectors. The causal relationship between export and FDI inflows in Malaysia by employing Vector Error Correction Model (VECM) approach allows us to distinguish between short run and long run Granger causality from 1970 to 2003. The result indicates that existences of one-way directional causality which flows from FDI to exports in the long run, while no causal relationship between FDI inflows and exports in the short run. The potential effects of FDI inflows on export growth in Cameroon over the 1980-2003. The study try to capture the two effects of FDI which are supply capacity-increasing effects and FDI-specific effects on export by using autoregressive order (p) or AR(P) and the Engle-Granger two-step co-integration procedure. The result suggest that FDI inflows contributed to higher supply capacity and spillover effects in Cameroon, leading to higher export growth.

The influences of FDI on firm-level export decisions in Thailand at three separate groups of firms: the resource-intensive (food), the labor-intensive industry (clothing and textiles), and the capital-intensive industry (electronics and electrical appliances) by employing Logit and Probit model respectively. The result reveals that in textiles and clothing industries FDI is significant and positively influence Thailand's firms export decision in both Logit and Probit estimation. Similarly in the food industries existences FDI positively impact firms export decision but, only in the Logit estimation. Furthermore, the existence of FDI in a firm is not significantly affecting the capital-intensive industry (electronics and electrical appliances) firms export decision. This result may be explained

country's comparative advantage in being resource-abundant and having relatively cheap labor wages. The causal relationship between export, FDI and GDP for six emerging countries of Chile, India, Mexico, Malaysia, Pakistan and Thailand by using Vector Error Correction Models (VECM) from 1970 to 2005. The results suggest that in South Asia countries like India, Malaysia and Thailand shows no causality relationship between inward FDI and export both in long run and short run, while Pakistan shows bidirectional causality in the short run only. The Latin American countries Mexico show one way causal relationship which running from export to FDI in short run and in long run, whereas in Chile unidirectional causality found which flow from FDI to export in short run only.

The relationship between inward FDI and trade balance (import and export) of African countries for the period 1980 to 2007 for 16 African countries by using Fixed Effect – Ordinary Least Square (FE-OLS) regression method. The result reveals that inward FDI has positively affect the export performance of African countries. The impact of inward FDI on the total manufactured exports and high technology manufactured exports of India from 1991 to 2007. The result indicates that FDI inflows into India have led to significant increase in both total and high-technology manufactured exports. This implies that inward FDI has improved India's export performance. Demonstrate the causal relationship between inward FDI, economic growth and trade (including export and import) in Pakistan from 1998 to 2009 on quarterly basis by using Granger-causality test. The result suggests that there is bidirectional causality between FDI and Pakistan's export. Investigate the influence of inward FDI on the export performance of nine CIS (Commonwealth Independent State) countries over 1995-2008 time interval by applying Pooled Ordinary Least Square (POLS), Fixed Effects (FE), and First Differences (FD) estimation methods. The POLS estimation suggest that inward FDI positively influences export of CIS countries, while the FE method exhibits that inward FDI is not significantly influences the export performances these countries. This exists due to the presence of serial correlation in the sample. To overcome this he use FD estimation the result indicates that however, inward FDI is negatively related to the export performances in CIS countries.

The effect of FDI on export performance in Austria during the period 1970-2005 by using autoregressive order (1) or AR (1) and the Engle-Granger two-step co-integration procedure.. The studies try to capture the two effects of FDI which are supply capacity-increasing effects and FDI-specific effects on export. The result shows that only FDI-specific effects significantly affect Austria's exports performances. In other word; FDI did not contribute in increasing the supply capacity. This due to most FDI was directed to the service sector while most Austrian exports were from the manufacturing sector. The causal link between FDI and in Nigeria from 1970 to 2008 by using granger causality tests. The finding point out that there is a unidirectional causality between FDI and export which running from FDI to export.

Investigate the influence of FDI, trade openness, domestic demand, and exchange rate on the export performance of Bangladesh over the period of 1980–2009 by applying a vector error correction model. The result indicates that inward FDI is found to be an important factor that improves in Bangladesh's exports performance both in the short run and long-run. The impact of FDI on export performance of pharmaceutical firms in India firm level data for

103 firms' from 1998 to 2005 by using pooled cross sectional time series analysis. The results show that unlike other industries inward FDI has a significant negative impact on export performance of pharmaceutical industries in India. The reason is suggested that in pharmaceutical industry foreign owned firms export less and focus more on domestic demand and host country specific advantages.

The causal relationships between FDI and trade in India and China over the period of 1976-2011 by employing Granger causality test. The results for China show unidirectional causality running from FDI to exports, while India gives the results which are not similar to China where bidirectional causality between FDI and exports has been found. The causal of relationship between export and FDI in India over the period 1980-2010 by using Granger causality based on Vector Error Correction Model (VECM). The VECM result shows that there is unidirectional causal relation runs from export to FDI however; in the short run, there is no causality in India. The dynamics of co-integration between FDI, GDP and exports in the Indian economy from 2000-2012 by framing simple regression and multiple regression models. The result reveals that a positive correlation between FDI, GDP and exports is found.

The relationship between FDI, exports, and economic growth in Croatia for 1994-2012 on annually basis by applying the bounds testing Autoregressive Distributed Lag (ARDL) approach and the ECM-ARDL model. This result reveals that inward FDI has not significant impact on Croatia's export performances either in the short run or in the long run period and FDI do not lead to growth in Croatia. This result is consistent partially with the result mentioned in the study of, that FDI do not play an important role in the forwarding of exports and thus in the growth of the Croatian economy. The role of FDI to the growth of exports in Asian countries for 1990-2012 by using Fixed Effect (FE) model to estimate the error correction model. The result shows that there exists a long run positive relationship between exports, FDI and GDP. Furthermore, the result indicates that there is a bilateral relationship between Exports and FDI in Asian countries. The relationship between exports, Foreign Direct Investment (FDI) and the economic growth in Malaysia for 1971 to 2013 by using the Auto Regressive Distributed Lag (ARDL) model. The result shows that there is a strong correlation between Malaysia's growth performance, exports and FDI. The impact of foreign direct investment on export growth in Zimbabwe for the period 1980 to 2011 by using the Ordinary Least Squares method. The results show that inward FDI has a positive impact on Zimbabwe's export growth.

Demonstrate nature of the relationship be it complementary or substitutive - between exports and FDI across 10 countries (Tunisia, Morocco, Egypt, Finland, Hungary, Poland, Portugal, Czech, Ireland, and Slovenia) for 1988 to 2012 by using random effect model. The result suggests that there is a complementarities effect between total exports and total FDI. This effect was accompanied by a significant impact of economic activity on total FDI. Similar results were found between manufacturing exports and manufacturing FDI and between nonmanufacturing exports and non-manufacturing FDI. The estimated results show that exports have positive impact on FDI significantly. Furthermore, the findings show that the complementary effect or ripple effect on exports is predominant at the macro level for manufactured exports relative to non-manufacturing export.

FDI and Product Quality in Host Economics both at overall and firm level (China's beverage industry) by using a general equilibrium model with Melitz-type heterogeneous firms; we establish a link between FDI and the optimal quality of goods produced by domestic firms. The finding reveals that the presence of foreign-invested firms affects the product quality of domestic firms through (i) a direct channel via productivity spillovers in both goods and quality production and (ii) an indirect channel via its impact on cut-off capability. The overall impact of FDI on the product quality of domestic firms depends on the relative strengths of these two contrasting effects [3]. At firm level, the result suggests that presence of foreign firms leads to a positive spillover effect of in goods production and a negative spillover effect of in quality production China's beverage manufacturing industry.

The impact FDI has on export diversification in the Common Market for Eastern and Southern Africa (COMESA) by using the random effects regression model. The findings suggest that FDI does not help COMESA countries diversify at the intensive margin but has a significant positive impact on diversification at the extensive margin. The results can be explained as follows; even though FDI helps COMESA countries export new products, these products might still be a very small proportion of the export earnings. The effect of FDI inflows on exports in Africa by using the system-generalized method of moment's estimator for linear dynamic panel data on a sample of 53 African countries and five-year periods from 1970 to 2009. The study suggests that higher FDI inflows are positively linked with higher exports of goods and services. Importantly, a large part of the FDI effect is driven by its spillover effects on exports.

To sum up, empirical studies do not have consensus over the relationship between FDI and exports. These no consensus views are primarily attributed to the authors' perspectives, sample selection, measurement of variables, inclusion of other variables, econometric models, and analytical tools applied in studies. Besides, the country-specific characteristics such as the degree of technological, economical, infrastructural, and institutional developments are responsible to have these controversial results. Thus, this paper aims at accumulating empirical knowledge by investigating the nexus between FDI and exports in the context of Ethiopia, which is a growing economy in sub-Saharan.

Empirical studies the case in Ethiopia

Empirical studies that relation to FDI and exports in Ethiopia are few in number. The determinants of export performance of Ethiopia by applying a gravity model with panel data using 30 Ethiopia's trading partners for the period 1995-2007 and FDI is one the determinate. The result suggests that FDI is not significantly affecting the export performance the countries.

Investigates factors affecting export supply of Ethiopia by separate Merchandise exports equation and manufacturing exports equation, during the period 1981 to 2004 through using co integration analysis. Both equations reveal that Merchandise and Manufacturing Exports are not significantly affected by inward FDI.

The relationship of FDI flow to Ethiopia with economic growth, export both at aggregate and sectorial level (manufacturing and agriculture) for 1981 to 2010 and 1993 to 2010 respectively by applying OLS regression model, granger causality test and

correlations analysis. The regression result shows that FDI stock is found to be positively related to RGDP whereas FDI flow is negatively related. In causality analysis, shows there is bidirectional causality between FDI stock and aggregate export and also found unidirectional causality from economic growth to FDI stock. Furthermore, in examining the relationship between sectorial FDI flow and sectorial export share as percentage of merchandise export, for agriculture it is found to be moderate whereas for manufacturing it is not significant. Due to lack of sufficient sectorial data, he analyzed only the existence linear association between FDI flowing to the economic sectors and the corresponding sectorial export shares in a merchandise export which is not enough to accept the result. Determinants of export growth rate in Ethiopia for 1980 to 2010 by using co integration and error correction model analysis. However, the result reveals that FDI is insignificant in explaining the export growth rate of the country.

The relationship between FDI and economic development in Ethiopia for 1980-2015 by using both Econometrics and statistical methods. Economic development in this study is measured in terms of real GDP growth, export, and productivity as FDI is said to affect economic development through these channels. She use correlation statistical techniques in order to show the relationship between FDI to export and productivity, while OLS estimation is employing for the effect of FDI on economic growth. The result suggests that FDI inflow positively influences real GDP growth which contrasts the finding of shows a negative association between FDI and economic growth in Ethiopia, a moderate positive association between export performance and FDI, and insignificant association between FDI and productivity in Ethiopia.

The determinants of FDI in Ethiopia for 1980-2014 by using co integrated VAR approach and granger causality tests. The result reveals that exports have a positive and significant determinate of FDI, and as for Andale the causality test also show that the existence of bidirectional causality between FDI and export. A Study conducted on the relationship of FDI and export by distinguishing the effects of FDI into supply capacity-increasing effects and FDI-specific effects on export are untouched areas in Ethiopian context. Therefore, this study fills these gaps by considering the two effects FDI on export.

Research Methodology

Specification of the model

The study tries to capture the two effects of FDI by using a popular empirical model of exports. The first used this empirical model and then used. In this model, we include a proxy for the supply capacity of host countries that positively affect export supply capacity. We use FDI stock data to capture the FDI-specific effects. We propose to include both variables in the same specification to see whether FDI has an additional impact on exports beyond its impact on exports through the domestic supply capacity variable.

To test the impact of FDI on exports, it is important that we control for the other determinants of exports. We use a parsimonious integration and error correction model and include, besides a proxy for domestic supply capacity, demand and supply side determinants of Ethiopia's export. Accordingly, we employ the following model specifications:

X_t = Real export earnings at time t ;

$REER_t$ = Real Effective Exchange Rate at time t ;

$PGDP_{(t-1)}$ = potential output at time $t-1$;

TLI_t = trade liberalization index at time t ;

FMA_t = Foreign market access indicator at time t ;

$INFD_t$ = Public expenditure in transportation and communication as a ratio of GDP as a

proxy for infrastructural development at time t ;

$FDIs(t-1)$ = Stock of foreign direct investment inflow at time

$t-1$ ε_t = error term

Hence, allowing for changes over time or being in growth form and avoid heteroscedasticity problem parsimonious model turns out to be the logarithm form. The integration or long run analysis allows capturing the two effects of FDI on export through separating supply increasing and FDI-specific effects. Therefore, the long run model reduces in to three equations as follow;

For all variables we take natural logarithms. In equation 3.3 and 3.5 the dependent variable is the natural logarithm of real exports (X). Equation 3.3 is supply capacity equation (captured by GDP) or benchmark equation. As standard macroeconomic theory suggests, relative prices are important in explaining a country's exports through export competitiveness of the country. We believe that REER is a good measure that would capture the competitiveness of the Ethiopian export. Therefore, the empirical specifications include the natural logarithm of REER to capture the influence of relative prices. The index of real effective exchange rate is constructed in a way that an increase in REER denotes a real appreciation of the currency. Thus, it is expected that the sign of REER is negative ($1 < 0$). PGDP is the natural logarithm of potential output which is a trend of real domestic GDP, as a proxy for supply capacity. This variable is expected to capture the effect of FDI on export through increased supply capacity. The potential output variable enters the regression with one year lag since it may take some time before additional supply capacity is reflected in increasing exports. We expect the sign of PGDP to be positive. Whether, and to what extent, FDI contributes to increased supply capacity is tested using a supplementary regression of PGDP on FDI stock (as shown equation 3.4). Importantly, equation 3.4 indicates the simple supplementary regressions of potential output on FDI stock so as to assure supply-increasing effect of FDI.

TLI represents trade liberalization index. It is calculated as import ratio on total international trade volume. FMA represents the foreign market access indicator which is approximated by the growth rate of export penetration index, calculated as export ratio on total international trade. The reason for including these two trade-related variables is to account for the potential impact of the trade policy reform undertaken by both exporting and importing countries. We expect the sign of TLI and FMA are positive. INFD represents public expenditure in transportation and communication as a ratio of GDP as a proxy for infrastructural development. Economic theory states that the quality of infrastructure (road, power, communication, etc) is one of the key determinants of export growth the countries. Therefore, expanding infrastructure density of various types with an

acceptable level of quality or the increase in public investment in infrastructure to GDP ratio in Ethiopia will have positive impact on export growth. That is, the expected sign of INFD is positive ($\beta_5 > 0$).

Along with other variables described above, in the third model specification equation 3.5 or FDI-Specific effect equation (captured by FDI) we add the natural logarithm of the stock of FDI (FDIs) to Equation 3.3 to test the FDI-specific impact on exports with impact of increased supply capacity held constant. The FDI variable enters the model with a one-year lag as a measure for cumulated stock of FDI. This variable was used which show lags in the effect of FDI on acquired domestic companies. Also, even for an export-oriented Greenfield foreign investment, one can assume that building a new plant and achieving a desired level of production takes time. Importantly, cumulative stock variable is a better choice than FDI inflows is implied by the results which show that the sign and intensity of the effects of FDI on domestic producers changes as the number of foreign companies in the host economy increases. Thus, it is the cumulated FDI that matters. The same effect could possibly be achieved by using FDI inflows, but this would require using many lags of FDI variable, reducing the number of observations. Also, there is a potential endogeneity issue, when regressing exports on FDI. Hence, using FDI stock with a one year lag should alleviate this problem. We expected that the sign of FDIs is positive.

Unit root test

The first step in time series econometric analysis is to undertake unit root test on the variables of interest. The test identifies whether the data series is stationary or not. To conduct the test, the conventional Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) test has been used with and without a trend. Since the actual data generating process is not known a priori, the test of determining the orders of integration of the variables has conducted first by including a constant and adds a drift. The ADF test is based on the regressions run in the following forms.

$$\Delta Y_t = \alpha_1 + \beta Y_{t-1} + U_t \quad \dots\dots (3.6)$$

Where, U_t is a white noise error term? In each case the null hypothesis is that $\beta = 0$, that is, there is a unit root. The null hypothesis (H_0) is thus a series contains a unit-root (nonstationary) against the alternative hypothesis (H_1) stationary. Even though the individual time series are not stationary, a linear combination of these variables could be stationary i.e. they may be co-integrated. If these variables are co-integrated, then they have a stable relationship and cannot move "too far" away from each other. There are two common methods for testing co-integration and estimating the relationship among cointegrated variables. These are the Engle and Granger (1987) two-step procedure and the maximum likelihood methods.

In Johansen test we specified the relevant order of lags (p) of the VAR model similar. Engle-Granger test is employed in our study followed the similar procedure as in unit root test. It should be noted that, under cointegration test we estimated cointegrating regression

residual obtained in equation (3.3) and we employed Augmented Dickey-Fuller tests.

Error correction model

If the time series variable seems to be cointegrated, that is, there is a long-term, or equilibrium relationship. Of course, in the short-run there may be disequilibrium. Therefore, we can treat the error term in the following equation as the “equilibrium error.” The use of error correction () term helped to link the short run information (behaviors) of variables to its long run. The Error Correction Model (ECM) first used later on was popularized by Engle –Granger under name of “corrects for disequilibrium”. “Granger representation theorem” instituted Error Correction term in the Model. Granger representation theorem pointed out that, if two variables are cointegrated, then the relationship between the two can be expressed as error correction model or mechanism (ECM). Therefore, error- correction term () lagged one period () so as to capture short run dynamics in the long run equilibrium. Under error correction model we discuss only the FDI specific effects, since supply increasing effect only exist in the long run. Hence, we use real GDP (RGDP) rather than potential GDP, PGDP. The study specified a general error correction model (ECM) as follows:

Where error-correction term is lagged one period. It is expected a coefficient to have a negative sign. While is a white noise error term. Diagnosis tests on the estimation technique are performed at each stage of reduction to check parameter consistency.

Data source and type

Time series secondary data have been used in this study. The data set is collected from National Bank of Ethiopia, Ministry of Finance and Economic development and WB. For the purpose of analyzing impact of FDI on country's export growth, the export equation in this study is estimated using time series data for the period 1991-2016.

The time series data that are used in this study such as, export of goods and services valued in US dollar, potential output which is a trend of real domestic GDP valued USD, trend is obtained by applying a linear regression of the log of real GDP on a constant and a time trend, FDI stock valued USD, trade liberalization index, foreign market access calculated as import ratio on total international trade volume and export ratio on total international trade which are unit free respectively are collect from WB. Data for real effective exchange rate is collected from EEA statistical data base and NBE and check to WB data for consistency [4]. Government expenditure for transportation and communication is calculated by taking both capital and current expenditure for communication and transportation including road. Since the other researcher did not find data for such variables from IMF and WB, this variable is collected from both NBE and EEA statistical data base.

Results and Discussion

Unit root test

Before proceeding with our estimations, it is important to analyze the time series properties of the individual series. We first of all establish the order of integration (or stationary) of the variables using the Augmented Dickey-Fuller (ADF) unit root tests. The results of the tests and their level of significance for the unit root tests are displayed in (Table 1).

Variables at level	ADF statistics	test	Variables at first difference	ADF statistic	test
$L_n X_t$	-2.235		$DL_n X_t$	-4.512***	
$L_n REER_t$	0.614		$DL_n REER_t$	-3.742**	
$L_n PGDP_{t-1}$	0.129		$DL_n PGDP_{t-1}$	-38.330***	
$L_n TLI_t$	-5.015***		$DL_n TLI_t$	-7.876***	
$L_n FMA_t$	-0.759		$DL_n FMA_t$	-4.792***	
$L_n INFD_t$	-3.404**		$DL_n INFD_t$	-6.126***	
$L_n FDI_{t-1}$	-4.649***		$DL_n FDI_{t-1}$	-6.709***	

Source: own computation using stata software.

Note: Critical values are at 5 %=-3.000 and at 1%=-3.750. **= Indicates stationary at 5% level of significance, and *** =Indicate stationary at 1% level of significance.

Table1: ADF Unit root test result for level and differenced variables.

The engle–granger two step procedure of cointegration

Cointegration is the statistical implication of the existence of a long run relationship between economic variables. The idea behind cointegration analysis is that, although macro variables may tend to trend up and down over time, groups of variables may drift together. If there is some tendency for some linear relationships to hold among a set of variables over long periods of time, then cointegration analysis helps us to discover it.

In this study a unit root test to the retained residual was applied to determine its stationarity. The ADF test revealed that the retained residual is stationary at its level. This implies export is cointegrated with the other explanatory variables, and that there exists a linear combination of the variables that is stationary. This finding leads to a conclusion that there are long-run equilibrium relationships among the variables. The steps of conducting a cointegration analysis are as follows: In the first step the long run relationship among the variables has been estimated using OLS and the second step test for a unit root in the residuals of the estimated model.

Estimation of long run model

Supply-increasing effects of FDI on exports results

It contains the estimates of supply capacity equation to capture the effects of FDI via changes in the supply capacity of the host

economy. This provides evidence FDI have a supply-increasing effect on export. For this to be true, first in equation 1 the supply capacity or Potential output should be statistically significant and have positive signs. Second in the simple supplementary equation similarly FDI stocks should be statistically significant and have positive signs.

Real effective exchange is significant, with the expected sign. Potential output has a significant and positive effect on export. A foreign market accessibility index also has a significant and positive effect on export. The coefficient of Trade liberalization is positive but statistically insignificant at 5% level of significance. This may indicate the problems of competitiveness and effectiveness of Ethiopian enterprises which may include aging equipment, low utilization of existing capacities; high cost of inputs and transactions, etc. Insignificant Trade liberalization index result is similar with other studies (Table 2).

Dependent Variable (LnXt)				
Variable	Coefficient	Std. Err	t-Statistic	Prob.
L_nREER_t	-0.3972	0.0801	-4.96	0.000
L_nPGDP_{t-1}	1.5238	0.095	16.04	0.000
L_nTLI_t	0.1449	0.0742	1.95	0.065
L_nFMA_t	1.5257	0.2208	6.91	0.000
L_nINFD_t	0.1351	0.2094	0.65	0.526
Cons	-14.1653	1.9739	-7.18	0.000
R-squared 0.9809		F-statistic 395.52		DW Stat 1.545663
Adjusted R-squared 0.9694		Prob (F-stat) 0.0000		Observation 26

Table2:Supply-Increasing effects of FDI on exports.

The coefficient of infrastructural development is positive but statistically insignificant. It should be noted, however, that the positive sign of the coefficient of the infrastructural development variable in the export equation is consistent with the argument that the quality of infrastructure is one of the key determinants of export growth the countries. Given that the coefficient of the infrastructural development variable is statistically insignificant, this implies that public expenditure in transportation and communication as a proxy for infrastructural development has little to extend to affects the international trade of Ethiopia as compare to domestic trade.

The simple supplementary regression of potential output on FDI stock that FDI stocks significantly contributed to increasing potential output and this result justifies the supply increasing effects of FDI on exports (Table 3).

Dependent Variable (L_nPGDP_{t-1})				
Variable	Coefficient	Std. Err	t-Statistic	Prob.
L_nFDIS_{t-1}	0.1885	0.0189	9.96	0.000
Cons	14.6646	0.1827	80.25	0.000
R-squared 0.8053		F-statistic 99.25		

Adjusted R-squared 0.7972	Prob (F-stat) 0.000
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Table3: Supplementary regressions impact of FDI stock on potential output.

Supply-increasing and FDI-specific effects on exports results

Reports the results when FDI stock variable is added to the model. This provides evidence whether FDI has both supply-increasing and FDI-specific effects. For this to be occurring, both the supply capacity and FDI variable should be statistically significant and have positive signs.

The real effective exchange rate variable in table 4.3 continues to be significant with the expected sign. The supply capacity variable is also positive and significant, indicating supply increasing effects of FDI stocks on exports. Similarly foreign market access statistically significant and have positive signs. Trade liberalization and infrastructural development variables are still insignificant (Table 4).

Dependent Variable (L_nX_t)				
Variable	Coefficient	Std. Err	t-Statistic	Prob.
L_nREER_t	-0.5953	0.0858	-6.93	0.000
L_nPGDP_{t-1}	0.9943	0.1703	5.84	0.000
L_nTLI_t	0.0755	0.0627	1.20	0.244
L_nFMA_t	1.2609	0.1928	6.54	0.000
L_nINFD_t	0.1325	0.1680	0.79	0.440
L_nFDIS_{t-1}	0.0668	0.0192	3.48	0.003
Cons	-5.6732	2.9105	-1.95	0.066
R-squared 0.9839		F-statistic 514.38		DW Stat 1.738909
Adjusted R-squared 0.9819		Prob (F-stat) 0.0000		Observation 26

Table4: Supply-increasing and FDI-specific effects on exports.

The results imply that, FDI has significantly contributed to higher exports, through improvements in the supply capacity of the economy, i.e., rising potential output. When potential output is controlled for, the contribution of FDI is statistically significant at 1 percent level of significance. This implies that the positive impact of FDI goes beyond increasing supply capacity in that there are additional indirect, positive effects from inward FDI. As it can be seen from the results, a 1% increase in FDI stock leads to 0.0668% increase of exports in short term, and 0.0716% in long term, through FDI-specific effect only.

In the second step, the order of integration of residuals has been tested using ADF statistic and the result indicates that the null hypothesis of non-stationary of can be rejected. The result of ADF on residual, including the intercept is presented in the table below (Table 5).

t-Statistic			Prob.
Augmented Fuller te	Dickey-	-4.244***	0.0006
t statistic values:	Test critical	1% level	-3.750
		5% level	-3.000

Table5: ADF test on residual.

Therefore, Engle-Granger two-step procedure affirms that and are cointegrated. Since the residuals from the cointegration equation are stationary, which means that the regression on the levels of variables is meaningful (that is, not spurious).

Estimation of an error-correction model (ECM)

Having established that, there long run relationship amongst the variables. We estimated an Error-Correction Model (ECM) in order to determine short run behaviors of the variables. Normally variables adjusted to the long run equilibrium. The error correction term provides the speed of adjustment of the variables in short run dynamics behavior to the long run equilibrium (Table 6).

Dependent Variable (DL _{it} X _{it})				
Variable	Coefficient	Std. Err	t-Statistic	Prob.
DL _{it} REER _{it}	-0.4121	0.1463	-2.82	0.012
DL _{it} RGDP _{it-1}	0.0597	0.3918	0.15	0.881
DL _{it} TLI _{it}	0.0303	0.055	0.55	0.589
DL _{it} FMA _{it}	1.0282	0.1875	5.48	0.000
DL _{it} INFD _{it}	0.0629	0.1416	0.44	0.662
DL _{it} FDIS _{it-1}	0.0554	0.0160	3.46	0.003
ECT _{it-1}	-0.6793	0.2459	-2.76	0.013
Cons	0.0795	2.9105	1.95	0.026
R-squared 0.8207		F-statistic 11.11		DW Stat 1.5
Adjusted R-squared 0.7468		Prob (F-stat) 0.0000		Observation 25

Table6: Results of error correction model.

The empirical result obtained in the error-correcting model is significant. We obtain an expected sign of error term coefficient (-0.6793) and it is statistically significant at 5% level. The speed of adjustment 68 percent per annum which is high implying that it takes short for export to move back to its equilibrium once its drifts away from its long run equilibrium value.

The results of error correction model show some similarity with those of the cointegration equation model. However, the coefficient of the Real GDP is positive but statistically insignificant which is in contrast to the results of the long run model. In the short run model, the effect of FDI stock expressed only through FDI-specific effects since potential output is the long run phenomena. As it can be seen from the results FDI stock has a significant positive impact on export growth and its elasticity is 0.0554 which indicates a 1% increase FDI stock increase export by 0.0554% in the short run.

To sum up, both the long run and short run model it's possibly the foreign investment into the country created a higher level of competitive advantage which spread to the domestic producers.

Diagnostic test

To check the verifiability of the estimated long run model, some diagnostic test is undertaken. In this study we carried a diagnostic checking, which includes Serial correlation test, Functional form (Ramsey's RESET) test, Normality, and Heteroscedasticity test. Such tests are recommended.

In order to reject or accept the null hypothesis, we can decide by looking the p-values associated with the test statistics. That is the null hypothesis is rejected when the p-value are smaller than the standard significance level (i.e. 5%) [5].

The above table indicates that the cointegration model estimated in this study passes all the diagnostic tests. This is because the p-value associated with the test statistics was unable to reject the null hypothesis specified for each test. Therefore based on the result of the test:

- The null hypothesis of no serial correlation (Bartlett LM test) is failed to reject for the reason that the p-values associated with test statistic is greater than the standard significant level (i.e. 0.4289>0.05).
- We could not reject the null hypothesis test for Ramsey's RESET test, which tests whether the model suffers from omitted variable bias or not. As the test result indicates that we can't reject the Ramsey's test, which means that the model is correctly specified.
- The third diagnostic test is for heteroscedasticity test. As we have seen from the above table, we can reject at 5% significant level due to its p-value associated with the test statistics are greater than the standard significance level (i.e. 0.3871> 0.05)
- (D)The last diagnostic test is about the residual test. As the result indicates that we could not reject the null hypothesis which says that the residuals are normally distributed, for the reason, that the p-value associated with the Jaque-Berra normality test is larger than the standard significance level (i.e. 0.7105>0.05)

Conclusion

In this study, an attempt has been made to examine the impact of FDI inflows on export growth in Ethiopia by using Engle Granger two step procedures of cointegration and error correction model over the period 1991-2016. To achieve this objective, our empirical study tried estimating by separate into supply-increasing and FDI-specific effects (which, to some extent, should coincide with indirect effects) of FDI inflows on exports. In this regard, foreign direct investment can contribute to higher exports by increasing supply capacity and/or through FDI-specific effects as multinational enterprises may have better knowledge about foreign markets, superior technology, lower production costs, and better ties to the supply chain of the parent firm than do local firms. It is important to distinguish between these types of effects, since the supply-increasing effects may arise as a consequence of domestic investment as well, making an FDI promoting policy reluctant in the absence of FDI-specific impact.

We find evidence that, during 1991-2016, FDI inflow has both supply-increasing and FDI-specific effects on exports growth of the Ethiopian economy. On the one hand, FDI inflows increase potential

output, then in turn to more exports and this occurred in the long run only. On the other hand, positive FDI-specific effects support the notion that the MNE has important advantage over local firms that it brings to the host economy and leading to more exports. As compare with other studies; our results show that, as in Cameroon, Nigeria, Zimbabwe, or in many African countries, FDI contributed to increasing exports of host developing economies. Our results of the positive FDI-specific effect, coincides to the empirical result of which suggest that indirect impact of FDI on host countries (which, to some extent, should coincide with FDI-specific effects) depends on the initial situation in the host economies, i.e., initial productivity of acquired firms, and on the accumulated amount of FDI inflows.

Policy Recommendations

Based on the finding of this study, the following policy recommendations are forwarded.

- Policy makers therefore need to encourage inward FDI by providing special incentives to foreign firms and designing appropriate policies and reforms that would attract further foreign investment. Since, a positive FDI-specific effects of foreign capital inflows on exports, is justified a specific efforts in attracting FDI inflow.
- The result indicates that real effective exchange rate appreciation or revaluation has a negative influence on country's export. To improve export therefore, the government of Ethiopia should devaluated birr (on a real trade-weighted basis) against foreign currency. The improvement is caused by the devaluating birr increasing competitiveness of the Ethiopian export goods in foreign markets.
- In this study it has been found that potential output has significantly contributed country's exports. Hence, the government of Ethiopia has to set policies to boost potential output. This includes increase saving mobilization like selling of

government bonds, expanding financial institutions, and promoting investment in R&D, human capital and technology and innovation by providing subsidy, tax incentives and others.

- Finally, in order to enhance the contribution of the foreign market access, the country should capturing new export markets through expanding its export destinations. The recent expansion of exports to some African and the Middle East countries gives a clue that the country may benefit significantly if it manages to exploit these increasingly growing markets.

An important issue that we did not study in this paper is the impact of FDI inflows on import behavior. If the FDI is a substitute for imports of goods or services, it should further improve the balance of trade of the host country by reducing imports. We believe that this is an important research agenda that we plan to tackle in the near future.

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