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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

The foreign direct investment-Export performance nexus: An ARDL based empirical evidence from Ethiopia

Teamrat Kahssay Gebremariam^{1*} and Sun Ying¹

Abstract: Ethiopia is one of the top FDI destinations in Africa and the leading FDI receiver in east Africa. However, little is known about the direct impact of the FDI on the Ethiopian export performance. This study was conducted to fill this gap. As a result, the main objective of this study was to examine the empirical relationship between foreign direct investment and export performance in Ethiopia by using an annual time series data for the period 1992-2018. The analysis was based on the autoregressive distributed lag (ARDL) model. The long-run model result, which was estimated after a proper application of pre-estimation tests, displayed that the relationship between FDI and export performance was insignificant. The estimated long-run equation also revealed that an increase in the real GDP resulted in an improved export performance in Ethiopia. The coefficient of the real effective exchange rate index in the long-run equation implies that depreciation of the exchange rate improves the export performance. According to the short-run and long-run estimation results, the study provides recommendations to improve Ethiopian export performance. First, national economic policies have to be directed toward keeping the overall health of the economy safe and achieving fast and



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Foreign direct investment has long been recognized as a crucial economic activity by academicians, research experts, multinational corporations, and various government and nongovernmental organizations. Historically, foreign direct investment was concentrated in and dominated by handful rich countries. However, the favorable investment environment created and the encouraging policies adopted by certain developing countries in the last four decades confirmed a dramatic shift in FDI destination in favor of the newly emerged economies. There is a general consensus that, despite some undesirable impacts, FDI plays a decisive positive and promoting role in a nation's economy, both directly and indirectly. Empirical evidences in the topic also conform to this widely held belief. Our study was meant to investigate the possible contribution of FDI to Ethiopia's export performance. Consequently, this study provides variety of suggestions in order to create a suitable situation in which FDI helps improve the export performance of Ethiopia.





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sustainable growth. Second, with regarding to exchange rate management, longterm effects need to be considered. Finally, attracting more foreign firms to engage in value addition activities for the primary agricultural products would also play a role in enhancing the export performance.

Subjects: Economics; Finance; Industry & Industrial Studies

Keywords: Export Performance; FDI Inflows; Autoregressive Distributed Lag; Bounds Test; Ethiopia

1. Introduction

Investment has proven to be a major economic activity that allows an economy to step forward to a higher position than it was. Obviously, it is very important catalyst for economic growth. Despite the key role it plays in bringing a fast economic growth, investment believed to contribute a lot in reducing unemployment and expanding urbanization. Broadly speaking, this investment streams from international and national (domestic) sources. Foreign direct investment (FDI), being a component of an international investment, becomes an intriguing macroeconomic variable as it impacts various aspects of a country. According to OECD (2008), foreign direct investment is a category of cross-border investment made by a resident in one economy with the objective of establishing a lasting interest in an enterprise that is resident in an economy other than that of the direct investor.

According to the UNCTAD annual report (2018), the global FDI flows has fallen by 13 percent to \$1.3 trillion in 2018. FDI flows to developed economies reached the lowest point since 2004, declining by 27 percent. Conversely, flows to developing countries remained stable, rising by 2 percent. As a result of the increase and the anomalous fall in FDI in developed countries, the share of developing countries in global FDI increased to 54 percent, a record. Furthermore, FDI flows to Africa rose by 11 percent to \$46 billion, despite declines in many of the larger recipient countries. The increase was supported by continued resource seeking inflows, some diversified investments and a recovery in South Africa after several years of low-level inflows.

Ethiopia continued to be one of the top five foreign direct investment destinations in Africa and the biggest recipient in East Africa. In 2018, FDI inflows to Ethiopia, declined by 18 percent from the preceding year, was estimated to be \$3.3 billion (UNCTAD, 2018).

Basically, the issue of FDI and its multilevel influences have long been recognized by the academicians and practitioners in the field of international trade. When it comes to the developing countries, where the domestic savings appeared to be insufficient to support the level of domestic economic growth, FDI is significant in the sense that it is one of the major channels for acquiring a foreign exchange as inadequate foreign exchange remained to be a critical challenge for growth. The reason why a bunch of scholars has been attracted to scrutinize about FDI is due to the fact that FDI has a multidimensional influences, inter alia, it enables the host country to build up physical capital, create employment opportunities, develop productive capacity, enhance skills of local labor through transfer of technology and managerial know-how, and help integrate the domestic economy with the global economy (Zhang, 1999).

As far as the effects of FDI on export performance of the host country is concerned, the mainstream theory proposed the occurrence of direct effect that runs from FDI to export growth. This happens when the giant actors in the global FDI flows, the multinational corporations, engage themselves in the production of goods and services, be it in the form of green or brown field investments in the host country, and able to export those products to the rest of the world. However, it is important to keep in mind that the effect of FDI on the export growth does not only confined to the direct effect where the direct investor involved in the export-oriented

industries of the host country. This justifies the fact that FDI has an indirect effects. FDI leads to create technological spillovers, which less developed countries could benefit from, enhance labor skills, instigate management practices and organizational structures, and also stimulate further investments and economic growth in a host country. In scrutinizing the spillover effects of FDI in Uruguay, Kokko et al. (2001) evidenced that the labor productivity of local firms is positively related to the presence of foreign affiliates in their industry in which the local firms gained some knowledge and skills associated with export from the already existed foreign direct investors.

It is unanimous that many developing countries have been experiencing a trade deficit. This trade deficit reflects the situation where the monetary value of goods and services that those countries export to the rest of the world is by far less than the monetary value of goods and services that they import from the rest of the world. Ethiopia, being one of the developing countries in the world, has been undergoing through a substantial trade deficit from the inception even in the last decade when the export sector has shown a tremendous progress. A fiscal year has never passed away without the country reported a considerable trade deficit. Based on the data obtained from the World Bank, Ethiopian total imports and exports for the year 2013 were \$13.81 billion and \$5.95 billion, respectively. After 5 years, i.e. in 2018, while the value of the country's total exports surged to \$7.06 billion, the total imports was estimated to be \$19.23 billion. The trade deficit, witnessed a 54% increase, was escalated from \$7.86 billion in 2013 to \$12.17 billion in 2018.

The consistent trade deficit demonstrates how much import reliant the country is and it also tells a lot about how very weak the country's export performance is in relation to its imports. The World Bank Group (2014) once postulated the Ethiopian export as promising sector despite the fact that it is dominated by agricultural outputs, which are sensitive to volatile international prices. This is why the country has been shifting slowly its emphasis towards agro-processing and light manufacturing. In this process of transforming the export sector, FDI is believed to play an imperative role. This study aims to investigate the relation between FDI inflows and export performance in Ethiopia.

2. Overview of FDI and export in Ethiopia

2.1. General information about export

Ethiopian export is especially dominated by primary products which are price volatile and not as much competitive within the international market. This can be why while the country's economy has witnessed a noteworthy growth, especially within the last 20 years, the contribution of export to the whole GDP has remained low. Limited degree of diversification of exportable goods, low volume of exportable products, which are made up mainly of unprocessed primary products, occasional economic recession which substantially reduce the demand for and prices of primary products, artificial trade barriers by trading partners and other factors may be raised because the underlined causes for the unfledged export capacity of the country.

Few numbers of agricultural commodities like coffee, chat, oil seeds, pulses, live animals, and leather and leather products are the main export items the country sells to the rest of the globe. Be that because it may these things were traded without adding any value; so Ethiopia can't get what can from this sector for the very long time. Nowadays, Ethiopia try to start value added trade through numerous motivating forces for those firms who work on the realm and assisting pre condition for local and foreign firms who going to contribute on value added export. Improvements are observed as a results of the emphasis given to the export sector and diverse government policy reforms to maneuver towards middle income country level in 2025 (Fitawek & Kalaba, 2016).

According to a report released by the Ethiopia Investment Commission (2020), in 2018/19, total merchandise export earnings declined by 6.0 percent over last year due to lower export earnings

from coffee (8.9 percent), oilseeds (8.4 percent), leather & leather products (11.4 percent), meat & meat products (12.8 percent), fruits & vegetables (0.9 percent), gold (72.1 percent), live-animals (25.0 percent), and electricity (30.8 percent). Hence, the ratio of merchandise export to GDP dropped to 2.8 percent from 3.4 percent a year ago. Specifically, export earnings from coffee went down by 8.9 percent owing to 5.9 percent decline in price and 3.2 percent drop in volume. As a result, the share of coffee in total merchandise export was 28.7 percent which was slightly lower than 29.6 percent last year same period.

2.2. General information about FDI

FDI into Ethiopia begun extending with the liberalized arrangement changes that started in 1992 taking after the destruction of the Derg military regime and a long time of social distress. The relatively democratic government, Ethiopian Peoples' Revolutionary Democratic Front, EPRDF, looked for to apportion with impediments on outside venture and to set up a more conducive commerce environment. After then, Ethiopia has steadily moved from a command economy towards a market affiliated one. New investment policies, proclamations and declarations have been released and modified (Ethiopian Investment Commission, 2020).

At present, Ethiopia is one of the top FDI destinations in Africa. It accounts for 18.5 percent of all FDI jobs in the continent. The top 6 FDI origins are China, Turkey, India, Saudi Arabia, Netherlands, and UK. China has significantly increased its investment in the country over the past decade, notably in the construction, textile, power generation and telecommunications sectors.

FDI inflows to the Ethiopia have quickened in later a long time. In any case, in 2018, FDI inflows diminished to USD 3.3 billion in 2018 compared to USD 4.2 billion in 2017 (UNCTAD, 2018). Nearly half of the streams from the East African locale were ingested by Ethiopia. Totally, FDI stocks were evaluated at USD 22.2 billion, constitutes 27.7percent of GDP in 2018. Agreeing to the most recent information from UNCTAD, in spite of a 24% drop in speculations to USD 3.1 billion in 2018, Ethiopia kept up its beat rank in East Africa, with investments in petroleum refining, mineral extraction, real estate, manufacturing, and renewable energy resources.

FDI has brought both opportunities and challenges to Ethiopia. Among the distinctive positive contributions, one is profiting capital which is essential to carryout medium and large-scale agricultural and mechanical investments and in this manner broadening country's trade things. Horticulture is one striking case; Ethiopia has gotten to be the one of the beat six flower exporters of the world and this contains extraordinary share within the country's GDP. Recognizing the significance of FDI in the development of its economy, Ethiopia has, since the early 1990s, taken critical steps towards liberalization of the economy and of private investment. Countries' strong approaches toward FDI base themselves on the presumption that FDI increments the country's output, productivity, produces positive spillover effects, and innovation exchange. Another advantage of FDI is that creation of work opportunity for the locals (Tafese, 2018).

As of late, FDI in Ethiopia is concentrating within the manufacturing sector, which is remarkable for a developing country that mostly depends on agricultural economic activity. In most lowincome countries, FDI is overwhelming within the service and agriculture sectors. As of now, Ethiopian manufacturing sector receives around 60 percent of the total FDI inflow to the country.

3. Review of related literature

Thus far, enormous studies about the nature of FDI and its impact have been conducted. So long as the impact of FDI is concerned, the literature can systematically be classified under two major categories. The first group, based on panel data analysis, emphasized on the effect of FDI on economic growth and or development in a certain group of countries or the possible effects FDI could have on other economic variables other than economic growth in general in those countries. This kind of study is important for comparison and helpful to understand the distribution of FDI and its contribution among countries. However, using such studies for policy purposes might be

misleading as they do not take the inherent macroeconomic and structural differences among the countries under study into account. The second category, however, is concerned about the studies carried out at country level. Accordingly, the research studies that give weight to the influence of FDI on individual country's economic growth as a whole or on the other aspects of the economy in particular belongs to the second category also termed as country case study.

The empirical literature review in this study gives a great deal of attention to the previous studies within the topic. Hereafter, the authors tried to discuss the preceding works that have been devoted to explore the possible impacts of FDI on export performance specifically.

Nwanna (1986) conducted a cross country study to investigate the contribution of FDI to exports by considering 23 less developed countries by then. The empirical result suggested that FDI into those countries had a direct positive effect on exports even though the magnitude of the effect of FDI on exports differs from one country to other. Zhang (2005) examined how the FDI affects the export performance of the host country. The empirical estimation result suggested that FDI has positive impact on China's export performance. Hailu (2010) studied the impact of FDI on African countries Trade performance and found a positive and significant FDI elasticity of export, which indicates the existence of direct correlation between FDI and the export sector of the continent despite the fact that the overall effect of FDI on balance of trade has found to be negative as imports outweighs exports in the continent. Kinoshita (2011) has asserted that FDI in the tradable sectors leads to an improvement of the external balance in Eastern Europe. The study also confirmed high FDI inflows in the tradable sectors are highly related with large market size, good infrastructure, greater trade integration, and educated labor force.

Goswami and Saikia (2012) found a bidirectional causality between FDI and export in India. That is, the inflow of FDI causes manufactured export growth and then export-led growth further encourages the flows of FDI. Furthermore, Selimi et al. (2016) analyzed the impact of the foreign direct investments on exports performance in Western Balkan countries for the period of 1996-2013 by employing the panel regression techniques and Least Square Dummy Variable (LSDV) regression method. The empirical result showed a positive relationship between FDI and export performance. Mijiyawa (2017), by employing generalized method of moments (GMM), studied the possible effect of foreign direct investment inflows on exports in 53 African countries. The empirical estimation result of the study indicated that FDI inflows are positively and significantly linked with exports of goods and services. The author also implied that a large part of the FDI effect in the continent is driven by its spillover effects on exports.

Recently, Popovici (2018), who studied the effect of the FDI on EU export performance in both manufacturing and service sectors, has found FDI is one factor contributing for the increased export at the time thought the magnitude of the impact of FDI on exports is higher in the new EU MS than in the old ones. Samantha (2018) examined the effect of FDI on trade in Sri Lanka by applying the ARDL cointegration for time series data covering the period from 1980 to 2016. The short-run and the long-run estimation results revealed a significant positive relationship between the two variables. Mukhtarov et al. (2019) also found similar results for Jordan. Gamariel and Hove (2019) analyzed the impact of FDI on export competitiveness in SSA and confirmed that FDI stimulates export competitiveness.

To identify whether export-oriented and FDI-friendly policies have a significant impact on a balance of Payments in a Developing Economy, Razmi (2005) conducted a study using a general equilibrium framework. The result of the paper revealed a negative short-run effects of FDI-friendly policies on the balance of payments. This is in contrast to common opinion and may attributed to the nature of both the investments and the policy measures. Goswami (2013) has also examined the determinants of trade development for South Asian countries over the period 1980–2010. The estimation result indicated an inverse correlation between FDI and trade performance. Some empirical evidences suggested that there is no significant relationship between the two variables of interest. Sharma (2000), aiming to figure out whether FDI played an imperative role in Indian export growth, found a statistically insignificant relationship between FDI and growth in export. Temiz and Gökmen (2009) found no significant effect that runs from FDI to export for the Turkish economy. Rather, their study confirmed a long-run and short-run unidirectional causality running from export to FDI.

Still, some other studies in the topic highlighted the existence of causality between the dependent and independent variables without mentioning the nature of the relationship. Danish et al. (2013) investigated relationship between FDI and current account in Pakistan using the Johansen-Juselius cointegration technique and the Granger causality test. The result of their study suggested that a long-run relationship had existed between FDI and CA with in the study period. The Granger causality test findings indicate that the causality between FDI and CA is unidirectional. Acaravci and Ozturk (2012) empirically studied the existence of long-run relationship between FDI, export and economic growth for the ten transition European countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia) by using quarterly data from 1994 to 2008. The study employed the ARDL bounds testing approach and found a causal relationship between FDI, export and economic growth in four out of ten countries considered. Mitic and Ivić (2016) found a significant level of correlation between FDI and export for European transition economies, with the stronger correlation in the case of high-tech exports.

The difference in the results of the empirical evidences simply shows how debatable the topic is. Although the conventional theories which founded upon simplified assumptions tell us that the FDI contributes to growth in a nations export thereby economic growth, not all studies turned out to support those hypothetical implications. This calls for conducting additional studies using recent data with sound methodology and partially motivates the authors to investigate the relationship between FDI and export performance at country level.

4. Data and estimation technique

4.1. Data

As explained earlier, the intention of this study is to explore the association between FDI and export performance in Ethiopia. In this study, a time series data spanning the period from 1992 up to 2018 was analyzed. The data for exports, foreign direct investment inflows, real gross domestic product (GDP), and real effective exchange rate index (REERI) were obtained from the national bank of Ethiopia. Furthermore, the data, for all the variables except for the real effective exchange rate index, were transformed into natural logarithm to reduce possible occurrence of heterosce-dasticity problem. It must also be noted that according to National Bank of Ethiopia's compilation, a decrease in the REERI implies a real depreciation and an increase in the REERI is a real appreciation.

4.2. Estimation technique

As explained earlier, the intention of this study is to explore the association between FDI and export performance in Ethiopia. In this study, a time series data spanning the period from 1992 up to 2018 was analyzed. The data were obtained from the national bank of Ethiopia. Further, the data for all the variables except for real effective exchange rate index were transformed into natural logarithm to reduce possible occurrence of heteroscedasticity problem.

The autoregressive distributed lag (ARDL) model estimation technique was adopted for this study in which the dependent variable is expressed by the lag and current values of independent variables and its own lag value. The ARDL methodology follows general to specific approach, that's why it could be possible to tackle many econometric problems like, misspecification and auto-correlation, and come up with a most appropriate interpretable model (Ghouse et al., 2018). According to Pesaran et al. (1996), the ARDL cointegration approach provides explicit tests for

the presence of a single cointegrating vector, instead of assuming uniqueness. Further, by using ordinary least square estimations of ARDL model, we can make appropriate inference on short-run and long-run parameters.

So, the ARDL model order is properly augmented to grant for contemporary correlation among the stochastic elements of the data generating processes involved in estimation.

Export performance tells about a firm's/nation's accomplishment in terms of selling once locally produced products to the rest of the world. There exist plethora of ways to measure export performance. Usually, measures of export performance can be categorized in two broad groups: financial/ economic and non-financial/non-economic measures. Within the financial/economic classification, McGuinness and Little (1981) and Axinn (1988) suggested Export sales volume as a measure of export performance.

From the theoretical and empirical perspective, there are several variables that have a significant impact on export performance of a country. In order to investigate the impact of FDI on Ethiopian export performance, this study considered real GDP and real effective exchange rate as independent variables in addition to the foreign direct investment inflows after taking a look at previous research works such as Nwanna (1986), and Alguacil et al. (2002). As a result, the study estimated the following functional relationship.

EX = FDI, RGDP, REER(1)

where EX = export of goods and services, FDI = foreign direct investment inflows, RGDP = real gross domestic product, and REERI = Real Effective Exchange Rate Index.

The econometric model for investigating the impact of FDI on Export performance can be represented as:

$$EX = \alpha + \beta_1 FDI + \beta_2 RGDP + \beta_3 REER + \mu_t$$
⁽²⁾

where α represents for the constant term, θ_1 , θ_2 , and θ_3 Regression coefficients of the parameters, i.e. FDI, RGDP, and REER, respectively, and μ_t denotes stochastic error term.

As we have already specified, the study employed the ARDL model for analysis. Thus, the ARDL form of the econometric model looks like

$$\Delta EX_{t} = \alpha + \sum_{i=1}^{n1} \alpha_{1} \Delta EX_{t-1} + \sum_{i=0}^{n2} \alpha_{2} \Delta FDI_{t-1} + \sum_{i=0}^{n3} \alpha_{3} \Delta RGDP_{t-1} + \sum_{i=0}^{n4} \alpha_{4} \Delta REER_{t-1} + \beta_{1}EX_{t-1} + \beta_{2}FDI_{t-1} + \beta_{3}RGDP_{t-1} + \beta_{4}REER_{t-1}$$
(3)
5. Results and discussion
(3)

5.1. Unit root test

Practically, many economic and financial time-series shows trending character or non-stationarity, which finally resulted in a spurious or non-sense regression results. In our study, a unit root test is conducted by employing the standard augmented version of the Dickey–Fuller (Dickey & Fuller, 1979) also termed as Augmented Dickey Fuller (ADF) test to lessen the impact of such a systematic problems by assuring whether the variables under consideration are stationary or not.

Note: D shows the variable is differenced once. Note: MacKinnon (1996) one-sided critical values for rejection of a unit root are used here. * shows significance at 1%.

Although the test statistic results under the two assumptions i.e. intercept and trend & intercept have presented in both tables 1 and 2,3 to show a thorough discussion of the stationarity test, only the test statistic results under the intercept assumption has been considered to check the stationarity of the variables. This was partly supported by the ADF result that recommended for the consideration of the test statistic results under the intercept assumption as testing for stationarity. Accordingly, out of the four variables, only one variable, LREER, is found to be stationary at level I(0). The remaining three variables, however, become stationary after differencing once implying that they are integrated of order one I(1).

The fact that the variables under consideration are stationary at level and first difference creates a favorable environment for our estimation technique, ARDL. Because, the ARDL model is recommended to be implemented when some of the variables are integrated of order zero while the other are integrated of order one, similar to the results in the above presented tables in which the LREER series is stationary at level while the LEX, LFDI, and LRGDP turned out to be stationary at first difference.

5.2. Model stability

Before estimating the long-run and short-run models using the ARDL estimation technique, checking for stability in the equation is an important step to undertake. In this case, CUSUM (cumulative sum) and CUSUM-SQ (cumulative sum of squares) were used to examine whether the coefficients in a model remain constant or not. The CUSUM Test and the CUSUMSQ Test results are presented below.

As can be observed from Figures 1 and 2, the blue line remains inside the two straight red lines, which shows the stability of the model at the 5% level of significance. Hence, both the CUSUM and the CUSUMSQ statistical model stability test results confirmed that the model is stable for further analysis.

5.3. Bound test

An ARDL bound test was conducted to check for the existence of long-run association among the variables. The result appeared to be against the null hypothesis. The null hypothesis claims that a long-run relationship does not exist among the variables. However, the ARDL Bounds Test result indicates the prevalence of long-run relationship among the variables. The Wald test F-statistic value, which is 12.26 is higher than the upper bound critical values at 10%, 5%, 2.5%, and 1% levels of significance. Thus, we fail to accept the null hypothesis in favor of the alternative hypothesis, i.e. there is a long-run relationship. The ARDL Bounds Test result is displayed in Table 4.

5.4. Long-Run model

LEX = -48.174391 - 0.101010 LFDI + 2.826982 LRGDP - 0.008083 LREERI

This equation is the long-run equation for export performance that associates export performance to foreign direct investment inflows, real gross domestic product, and real effective exchange rate index. Therefore, our long-run analysis is based upon this equation. The long-run equation displays that export performance in Ethiopia can be explained by real gross domestic product and real effective exchange rate index in the long-run.

Table 5 depicts the long-run result with a complete information that helps to identify whether the explanatory variables are significant or insignificant in explaining the dependent variable. Based on the probability and t-statistic information, while foreign direct investment inflow turned out to be insignificant, both real gross domestic product and real effective exchange rate index have appeared as a significant variables to explain export performance in Ethiopia. The signs of the coefficients of both real gross domestic product and real effective exchange rate index are in line with the theoretical expectation.

Table 1. Variable definition and expected signs (Hypothesis)					
Variable	Definition	Expected sign of the corresponding coefficient			
Exports	Total value of goods and service a country sells to the rest of the world.				
Foreign Direct Investment	An investment involving a long- term relationship and reflecting a lasting interest and control by a resident entity in one economy in an enterprise resident in an economy other than that of the foreign direct investor (UNCTAD, 2007).	+			
Real Gross Domestic Product	A nominal GDP adjusted for price changes. It can also be viewed as the growth in nominal GDP less inflation (Dynan & Sheiner, 2018).	+			
Real Effective Exchange Rate Index	A nominal effective exchange rate index adjusted for relative movements in national price or cost indicators of the home country and selected other countries (Mano et al., 2019).	-			

Table 2. Augmented Dickey–Fuller Unit Root Test result at Level, I(0)						
Series	Intercept		Trend and intercept			
	ADF test Statistic	Test Critical values	MacKinnon probability	ADF Statistic	Test Critical values	MacKinnon probability
LEX	-0.703487	-3.724070	0.8282	-1.918670	-4.374307	0.6150
LFDI	-3.751215	-3.711457	0.0091	-4.990775	-4.356068	0.0024
LRGDP	1.805292	-3.711457	0.9995	-0.579158	-4.356068	0.9718
LREERI	-9.043430*	-3.711457	0.0000	-11.16987	-4.356068	0.0000

Source: Authors' Computation, 2020

The long-run impact of real GDP on export performance is found to be positive and is highly significant. The estimated result shows that, other things remains constant; a 10% increase in real GDP will raise the export performance by 28.2 percentage points in the long run. The real GDP in this case can be assumed as a major determinant of export performance. The positive response of the export to a change in real GDP (improvement in exports as a result of a rise in real national income) is a widely accepted opinion among both academicians and practitioners.

Real effective exchange rate index is the other variable found to be statistically significant in explaining the export performance in Ethiopia in the long run. The coefficient of real effective exchange rate, 0.008, indicates that other things remains constant, a depreciation of real effective exchange rate by 10% would result in about 0.08% increase in the value of exports per year.

Coming to our major variable of interest, in contrast to the theoretical prediction and the expectation of this study, the probability and t-statistic of the coefficient of the foreign direct investment inflow displays that foreign direct investment inflow has no effect on the value of exports within the study period. This result is not aligned with several previous studies such as Zhang (2005), Hailu (2010), Kinoshita (2011), Selimi et al. (2016), and Mijiyawa (2017).

Table 3. Augmented Dickey–Fuller Unit Root Test result at First-Difference, I(1)						
Series	Intercept		Trend and intercept			
	ADF test Statistic	Test Critical values	MacKinnon probability	ADF Statistic	Test Critical values	MacKinnon probability
LEX	-5.196987*	-3.724070	0.0003	-4.881533	-4.374307	0.0033
LFDI	-5.764146*	-3.724070	0.0001	-5.634288	-4.374307	0.0006
LRGDP	-4.518467*	-3.724070	0.0015	-5.489990	-4.374307	0.0008
LREERI	-16.73453	-3.724070	0.0001	-16.65036	-4.374307	0.0000

Source: Authors' Computation, 2020

Table 4. ARDL Bounds Test						
Test Statistic	Value	Significance	Во	Bound		
			I(0)	I(1)		
F-statistic	12.26921	10%	2.72	3.77		
		5%	3.23	4.35		
		2.5%	3.69	4.89		
		1%	4.29	5.61		

Source: Authors' Computation, 2020

Despite a general consensus that FDI inflow has a positive effect on the host country's export performance, the result of the long-run estimation shows that FDI inflow is not significant in explaining the export performance in Ethiopia. This could partly be resulted from the nature of the export commodities in Ethiopia and the concentration of FDI inflows in the manufacturing sector. The export sector overwhelmingly depends upon primary agricultural products. In light of this situation, it is understandable that the foreign direct investment inflow has no direct significant influence in the country's export performance. However, this does not necessarily mean that the foreign direct investment inflow is totally irrelevant as it has indirect effects which can be observed though are difficult to measure.

5.5. The short-run analysis

In the short run, the lagged values of the export at three different periods discovered to have a positive significant impact on the export at less than 5% significance level. This implies that the lagged values of the export itself contribute a lion's share to its current value in the short run. Similar to the long-run estimation result, the foreign direct investment inflow has insignificant effect on the export in the short run as well. The coefficients of the second lagged of real gross domestic product and the third lagged of real effective exchange rate index have also found to be statistically significant.

The most vital part of the short-run analysis is the error correction coefficient. The error correction coefficient shows the speed of adjustment of variables toward equilibrium. A highly significant error correction coefficient can also be considered as a proof for the existence of long-run relationship in support of our bound test result presented in Table 4. In most instances, the coefficient is expected to be statistically significant with a negative sign. As can be observed in Table 6, the error correction coefficient exists with a negative sign, and it is statistically significant at less than 5% level. This is an assurance for the export performance to get back to its long-run equilibrium value after a temporary deviation. Hence, the value of the error correction coefficient which is -0.9162 indicates that 91.62% of the departure of the actual export performance from its



long-run equilibrium value is eliminated every year. Accordingly, for the temporary deviation to be entirely eliminated and to reach at the long-run equilibrium, less than 2 years are required.

5.6. Model specification and diagnostic tests

In addition to the CUSUM tests discussed under the model stability topic, several post estimation tests have been conducted to examine the adequacy of the model. Model specification, residual normality, and heteroscedasticity tests have been undertaken using Ramsey Regression Equation Specification Error Test (RESET), Jarque-Bera test and Breusch-Pagan-Godfrey test, respectively. In the Ramsey RESET test result presented in Table 7, the corresponding probability values of the t-

Table 5. ARDL Estimated Long-Run result						
Variable	Coefficient	Standard Error	t-Statistic	Probability		
FDI	-0.101010	0.074308	-1.359339	0.2229		
RGDP	2.826982	0.280087	10.093220	0.0001		
REERI	-0.008083	0.003868	-2.089585	0.0816		
С	-48.174391	5.438730	-8.857654	0.0001		

Source: Authors' Computation, 2020

Table 6. ARDL Estimated Short-Run result					
Dependent Variable		DLEXP			
Selected Model		ARDL(4, 2, 3, 4)			
Variable	Coefficient	Standard Error	t-Statistic	Probability	
D(LEXP(-1))	0.766224	0.147667	5.188865	0.0020	
D(LEXP(-2))	0.655354	0.131775	4.973281	0.0025	
D(LEXP(-3))	0.575377	0.153216	3.755322	0.0095	
D(LFDI)	-0.038654	0.040727	-0.949110	0.3792	
D(LFDI(-1))	0.042761	0.036157	1.182654	0.2817	
D(LRGDP)	0.243408	0.168616	1.443561	0.1990	
D(LRGDP(-1))	0.117493	0.215968	0.544029	0.6060	
D(LRGDP(-2))	-2.720283	0.545275	-4.988824	0.0025	
D(REERI)	-0.001918	0.002841	-0.675202	0.5247	
D(REERI(-1))	-0.003986	0.003194	-1.248222	0.2584	
D(REERI(-2))	-0.003243	0.002598	-1.248084	0.2585	
D(REERI(-3))	0.006430	0.000983	6.542921	0.0006	
CointEq(-1)	-0.916253	0.155298	-5.899975	0.0011	

Source: Authors' Computation, 2020

and F-statistics which is 0.2136 suggests that there is no model specification problem or the model is well specified. Furthermore, the Jarque-Bera result assures that the residuals are normally distributed. Finally, the Breusch-Pagan-Godfrey test result tells us to accept the null hypothesis of homoscedasticity against the alternative hypothesis of heteroscedasticity. It clearly confirms an absence of heteroscedasticity.

6. Conclusion and recommendations

Fundamentally, this study was aimed to investigate the empirical effect of foreign direct investment on export performance in Ethiopia using a time series data spanning from 1992 up to 2018. Specifically, this paper briefly looked at the trend of foreign direct investment and export performance in Ethiopia while examined short-run and long-run relationship between the foreign direct investment and export performance. Additionally, this study explored short-run and long-run effects of other variables (real gross domestic product and real effective exchange rate index) on the country's export performance.

The estimated long-run equation revealed that an increase in the real gross domestic product resulted in an improved export performance in Ethiopia. To be specific, a 10% increase in real GDP will raise the export performance by 28.2 percentage points in the long run. Real effective exchange rate index also found to be another significant determinant of the export performance in the country. The coefficient of the real effective exchange rate index in the long-run equation, 0.008, implies that depreciation of the exchange rate by 10% improves the export performance by

Table 7. Model Specification and Diagnostic Tests					
	Ramsey R	ESET Test			
Omitted Variable	es: Squares of fitted values				
	Value		Df	Probability	
t-statistic	1.424457		5	0.2136	
F-statistic	2.029077		(1, 5)	0.2136	
Residual Normality test					
	Jarque-Bera		1.048757		
	Probability		0.591923		
Heteroscedasticity Test: Breusch-Pagan-Godfrey					
F-statistic		0.716767	Prob. F(16,6)	0.7241	
Obs*R-squared		15.09996	Prob. Chi- Square(16)	0.5173	
Scaled explained SS		1.217636	Prob. Chi- Square(16)	1.0000	

0.08%. Finally, the FDI inflows found to be statistically insignificant to explain the Ethiopian export performance. This result was in contrast to the commonly held opinion about the relationship between the two macroeconomic variables and it refutes the hypothesis stated in the earlier parts of the study.

Following the estimation results, providing suggesting policy advices have found to be necessary in order to increase Ethiopia's export performance. Accordingly, the below listed recommendations are forwarded.

- (1) The national economic policy (particularly fiscal and monetary policies) has to be directed towards keeping the overall health of the economy safe and achieving fast and sustainable growth. Higher economic growth enables a country to build a greater export performance and vice versa. This is what has been confirmed in this study too. Therefore, every action that aims at improving the overall economic growth of the country need to be undertaken carefully as the economic growth in turn directly influences the export capability and many other important sectors of the economy.
- (2) Exchange rate is at the forefront of policy making so long as trade is concerned. When considering to bring about an enormous improvement in export performance, one must not forget to deal with the exchange rate dynamics and policy. Previous studies in Ethiopian context asserted that, other things remain constant, a depreciation Ethiopian birr against the US dollar, would have a desirable effect on the country's export sector in particular and its trade performance in general. To mention a few, Gebremariam et al. (2018), Temesgen (2016), and Nega (2015) had proposed, among other things, for depreciation of the exchange rate as a remedial measure to enrich Ethiopian trade performance. The estimation results of this study confirmed that the exchange rate is another instrument to impact the export performance in Ethiopia. Hence, exchange rate management must be seen from the long-run perspective rather than short-run effect because the result of this study revealed that depreciation improves export performance of the country in the long run.
- (3) Finally, attracting more foreign firms to engage in value addition activities for the primary agricultural products would also play a role in enhancing the export performance. To do so, the government is expected to perform a tremendous works such as raising the local

peoples' awareness towards foreign direct investment, constructing more industrial parks, improving the infrastructural facilities, keeping the political and social orders stable, and providing investors with many more encouragement packages.

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