Effects of Industrial Parks developed by OBOR "One Belt and One Road" Initiative on FDI inflows in Ethiopia

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ABSTRACT

The study was carried out to establish the possible effects of Industrial parks developed by OBOR Initiative on inflow of Foreign Direct Investment in Ethiopia.

In this study, the researcher used secondary time series data from 2013 to 2020. Vector Error Correction Model (VECM) estimations were used. By doing so, the time series properties of the selected variables were examined. It first tests for unit root using the Augmented Dickey Fuller (ADF) test. The co-integration technique was employed to derive the long-run relationship. The result of long run dynamic model shows that industrial parks development by OBOR significantly and positively affects the inflow of FDI to the Country.

Further the study findings indicated that expansion of OBOR investments on industrial parks development significantly affects export, through increasing the volume of products to be produced for the export market.

From a policy point of view, the results suggest that, to promote FDI, Ethiopia should promote expansion of the OBOR Initiatives and also focus on policies that support increased level of industrial developments in the Country.

KEY WORDS: Foreign Direct Investment, OBOR Initiative, and Exports.

I. INTRODUCTION

OBOR "One Belt and One Road" Initiative is a transformational development strategy promoted by Chinese authorities to build a sustained Chinese economic growth and strategic partnership along the Belt and Road. The positive benefits of OBOR promise to advantage a huge population. The development initiative would intend to benefit about 4.4 billion people in 65 nations with a global population of 63%, with a GDP of 2.1 trillion US dollars representing 29% of the global GDP(Raphael, 2016).

The investment development strategies in the country highly focuses on the attraction of foreign direct investment and encouraging domestic private investment by using OBOR initiative and other development strategies.

The OBOR initiative in Ethiopia involves directly on development of industrial parks and infrastructure development. For instance, the Addis Ababa Adama expressways and Ethio-Djibouti railway are major transport infrastructures in Ethiopia, developed by the OBOR initiatives. As such, it is expected that the initiative affect investment in the country.

Although Ethiopia has significant potential in the light manufacturing sector, it faces binding constraints related to infrastructure, access to market, and trade logistics (World Bank, 2012). With an important role to be played by industrial parks development, FDI has long been seen as a way of lifting all these constraints. In addition, expansion of industrial parks is necessary to elicit increased private investment through circumvent business climate impediments.

The strategies of OBOR exploited by Ethiopian government to attract FDI inflow and development of domestic private investment in the country are primary sources of this research idea. Therefore, the study will be important to Ethiopian government and OBOR as it examineseffectiveness of implementation and utilization of the initiative.

II. LITERATURE REVIEW

Initiated by president Xi jingping in 2013 to boost the world economy especially in finance, international trade, and the tourism, OBOR is a development strategy suggested by China to focus on connectivity and economic cooperation amongst east Africa, Central Asia and Eurasia to fuel sustained economic development(Haggai, 2016).

Many scholar articles defined the OBOR initiative as the largest infrastructure plan of all the time. According (Boffa, 2018),the principal objective

of the "one belt one road" is to promote international trade and cooperation between participating economies. This initiative includes five major goals: facilities connectivity, policy coordination, financial integration, unimpeded trade, and people to people bonds (Winter, 2016).

The OBOR development Initiative comprises two important elements in terms of policy agenda, the Silk Road Economic Belt and the 21st century Maritime Silk Road (Chen, 2020).

(i) "New Silk Road Economic Belt" which is expected to connect western and central parts of China to Central Asia, the Middle East up to Western Europe via the Mediterranean Sea by railway, road, ICT and energy infrastructures and strengthening bilateral relations and economic interdependence with partners along the Road.

(ii) The New Maritime Silk Road which basically will connect South China with the South Asia-pacific region, Middle East, African countries (East and South-Eastern and North) via the Indian Ocean and the Red Sea up to Western Europe through the Mediterranean Sea to meet the New silk Economic Road.

China Times estimated that the total value of the Silk Road Economic Belt amounts to $21.1 trillion with new versions of the projects revealing many new connecting points including Russia; Moscow, Dushanbe, Jakarta, Tajikistan; Indonesia, Sri Lanka and Colombo (Tiezzi, 2016).

Realizing the logic of economic interdependence, China appears to have developed OBOR Initiative to connect the demand side with the supply side of production. This initiative, therefore, is seemingly connected to the need to distribute wealth and stimulate global economic development.

Even though OBORI has been awarded amplified praise as very crucial in the contribution towards global social-economic development and poverty alleviation through overseas-investment, trade, connectivity and other infrastructure projects, there have been different suggestions against its real intentions(Yii, 2018).

With respect to SINO-Africa trade relations, the media, some scholars and western countries think that OBOR is an initiative to neo-colonize Africa with the one objective of penetrating its markets, secure and access raw materials for running its economic growth engine.

2.1.OBOR Initiative in Africa

Three African nations are already full-fledged BRI partners: Kenya, Djibouti and Egypt. In East Africa, BRI progress is reflected in infrastructure building, especially roads, highways, and railway connectivity, which are being undertaken by Chinese companies.

Kenya is expected to receive substantial funding from China for crucial infrastructure projects. The main BRI developments in Kenya are the improvement of Mombasa port, construction of a modern port at Lamu and the standard gauge railway construction. In the future, there may be the construction of the Kenyan pipeline, which would join Kenyan ports to Uganda and Southern Sudan oil fields.

In Djibouti, infrastructure projects financed by China include, among others, the Ethiopia-Djibouti railway and the $300 million water pipeline system to transport drinking water from Ethiopia to Djibouti. The modernization of the 752.7km Ethiopia-Djibouti Railway costs $4 billion, with the Ethiopian section costing $3.4 billion. About 70 percent of the total cost would be financed by the China's Exim Bank. Although Djibouti is not rich in natural resources, its strategic location "on the western shore of the Indian Ocean and the eastern edge of the African continent" makes it attractive to investors.

Neighboring Djibouti is Egypt, a country significant to the BRI for various reasons. China's Exim Bank signed a deal to fund $10 billion worth of infrastructure projects in Egypt, including the energy sector, the expansion of the port of Alexandria, and urban railways. Reports indicate that the China-Egypt Suez Economic Zone, which is a trade, industrial, and logistical center, is expected to create 10,000 jobs for Egyptians, and most importantly, to increase the capital base for development projects in the country.

Other projects under OBOR includes the 1780 Km railway line from Tanzania to Zambia, railways have been construction of the railway in Nigeria (1315Km) Kano-Lagos and the 1,302km Bengue railway line in Angola (which brings to a total 4,000km railway in Angola constructed by China), 560km Belinga-Santa Clara railway in Gabon, 172km railway in Libya and 430km rail in Mauritania to name but a few.

2.2. OBOR Initiative in Ethiopia

Within the BRI, Ethiopia, China's close ally, stands as a host of Chinese diplomatic and economic activity in Sub-Saharan Africa. Being a diplomatic hub, Addis Ababa attracts more foreign representation than other African capitals hosting also the United Nations Economic Commission for Africa (UNECA). After the financing of the construction of the Africa Union building in Addis Ababa in 2012, China officially expressed its willingness to develop multidimensional relations at all levels with Ethiopia and the rest African continent Ziso (2018).

Ethio-Djibouti railway and Addis Ababa Adama expressways are transport infrastructures developed in line with OBOR initiatives. In addition, through development of industrial parks in different parts of the country, OBOR initiative is playing a vital role in the Country.

III.   OBJECTIVE OF THE STUDY

The overall objective of the study is to determine empirically the effects of industrial parks developed by the OBOR Initiative on the nation's economy.

Specifically, the study intends to accomplish the following:
*   To examine how the industrial parks developed by the OBOR Initiative affect FDI inflows to Ethiopia, and
*   To estimate the nature of relationship between investments by the OBOR Initiative on industrial parks development and other macroeconomic factors in the Country, under the objectives of OBOR.

IV.   SIGNIFICANCE OF THE STUDY

Findings of the study will be beneficial for the government of Ethiopia and management of OBOR initiative. In addition, this study will be used by other countries with similar economic conditions to Ethiopia that have objective to improve investments.

The result of study about the effect of development initiatives, specifically OBOR, on investment will present new finding in the field of strategic management and investment. In addition, the study will come-up with evaluation of the effect of the initiative in line with pre-stated objectives and goals. Therefore, the study evaluates effectiveness of industrial parks developed by the OBOR initiative in attracting FDI inflows to Ethiopia.

V.   SCOPE OF THE STUDY

Development of industrial parks and transport infrastructure are primary targets of the OBOR initiative in Ethiopia. This study is however limited in that it specifically focuses on assessing the effects of industrial parks development initiative of OBOR on FDI inflows.

Therefore, further studies are recommended to include other roles of the initiative and overall effects in Ethiopia. In addition, it is important to conduct comparative analysis with countries that follow similar strategies to attract FDI and encourage domestic private investment.

VI.   METHODOLOGY& DATA COLLECTION

Almost all studies conducted to examine the effect of OBOR initiative have followed descriptive methods. But these could not identify cause effect relationships, thus, they have not implemented appropriate strategy with research objective.

Therefore, this study argues that the effect of OBOR initiative on investment must be measured by using econometric strategies. Therefore, the first creative point of this study is to use detailed and scientific measures instead of using simple descriptions while examining the effect of OBOR on investment.

The study was persistent on secondary data sources, which were collected from published annual reports of the Industrial Parks Development Corporation (IPDC) Ministry of Finance and Economic Cooperation (MoFEC), Ethiopia Investment Commission (EIC), Central Statistics Authority (CSA), National Bank of Ethiopia (NBE) and country reports published by the United Nations Conference on Trade and Development (UNCTAD) and The World Bank development Indicator. As such, it mainly relied on quarterly based time series data which covers from 2013 to 2020 for 8 years of 32 quarters.

6.1. DEFINITION OF VARIABLE IN THE MODEL

FDI Inflow is the dependent variable in our model. It refers to the value of inward direct investment made by non-resident investors in the country.
Explanatory variables were chosen based on rigorous survey of both theoretical and empirical literature. While examining the effect of OBOR initiative on investment and other objectives of OBOR, factors that affect level of the effect are controlled. These factors include macroeconomic stability, associated infrastructure, size of the economy, openness to international trade, and international cooperation. The point is to examine appropriate macroeconomic variables while estimating effect of OBOR on investment. Accordingly, the variables specified in the model are briefly discussed below:-
OBOR: refers to the value of investments made by the OBOR Initiative in relation to development of Industrial Parks in Ethiopia. The study argues that development of industrial projects must be indicated by using investment made on development of industrial parks and industrial infrastructures to exploit opportunities of the OBOR initiative. Therefore, the number of industrial projects and total investments on industrial projects are not right indicators of OBOR.

Instead, costs on industrial projects that intend to use OBOR are used while examining effects of OBOR.

RGDP: This refers to Real Gross Domestic product at constant birr/price. In other words, it is a nation's total output of goods and services, adjusted for price changes. It enables to measure the performance of a given economy in the production of goods and services by keeping price constant or using base year price.

DPI: This refers to Domestic Private Investment. It is measured by monetary value of the total direct investment made by domestic firms operating in industrial parks developed by OBOR Initiative in Ethiopia.

Export: Refers the value of industrial products and services sold in foreign countries but made in the home country.by industries operating in Ethiopia.

Import: Refers to the value ofindustrial goods and services brought from foreign sources to serve industries operating in Ethiopia.

Tax revenue: Refers to the value of tax collected from industries operating in Ethiopia.

6.2. METHOD OF DATA ANALYSIS

Co-integration and error-correction techniques are applied in this study. These techniques are believed to overcome the problem of spurious regressions and to give consistent and distinct estimates of long-run and short-run variables that satisfy the properties of the classical regression procedure. This is because all variables in an ECM are integrated of order zero, I (0). Spurious regression and inconsistent and indistinct short-run and long-run elasticity estimates are major problems exhibited by traditional Adaptive Expectation and Partial Adjustment models (Hallam and Zanoli, 1993; McKay et al., 1998).

One major use of the co-integration technique is to establish long-run equilibrium relationships between variables. However, two conditions must be met for co-integration to hold. First, individual variables should be integrated of the same order. Second, the linear combination of these variables must be integrated of an order one less than the original variables (Engle and Granger, 1987). In other words, if the variables under consideration are integrated of order one, or I (1), the error term from the co-integrating relationship should be integrated of order zero, I (0), implying that any drift between variables in the short run is temporary and that equilibrium holds in the long run.

If deviation from the long-run equilibrium path is bounded or co-integration is confirmed, Engle and Granger (1987) show that the variables can be represented in a dynamic errorcorrection framework. Therefore, in this paper, like similar studies elsewhere, supply response is modelled in two stages. First, a static co-integrating regression equation is estimated and tests for co-integration are conducted. Second, if the null for no co-integration is rejected, the lagged residuals from the co-integrating regression are imposed as the error correction term in an error correction model.

More succinctly, the foreign direct investment function can be specified as:

FDI= F (OBOR, RGD, DPI, Export, Import, Tax revenue)

VII.   RESULTS AND DISCUSSION
7.1. Unit Root Test

In order to justify the theories behind the models, it is important to test for the stationery properties of the variables. This helps to make conclusions in case where the test statistics (the calculated F-value) lies between the upper and lower critical values of the tabulated F statistics (Pesaran et al., 2001).

In fact, many time series analysts confirm that most time series variables are stationary after the first difference. This is what has happened in this study, as well. As indicated in table 1, three of the independent variables are stationery at the level but the dependent and the remaining independent variables are stationary at the first difference. The fulfilment of being stationary at the first difference should directly lead into implementation of co-integration test (long run equation).

Table 1: Augmented Dickey Fuller test

No.	Variables	At levels	At 1st difference	Orders of integration
1	OBOR	0.2568	0.0001	I(1)
2	FDI inflow	0.2635	0.0006	I(1)
3	Export	0.3569	0.0000	I(1)
4	Import	0.6584	0.0000	I(1)
5	DPI	0.1594	0.0006	I(1)

| 6 | GDP | 0.3568 | 0.0004 | I(1) |
| 7 | Tax revenue | 0.7894 | 0.0000 | I(1) |

Source: Own Computation, 2021

7.2. Lag Length Determination

Since the dependent variable is time series type the previous year observation either the dependent or the independent variable may be considered an explanatory variable. This implied that the previous year value of the dependent variable may also be taken in to account as an independent variable. This process could force the research to determine the lag length that would be considered into the operation.

To determine this, one can use one of the well-knownmethods of the lag length. It is common to find instances of this type where alternative strategies for model choice lead to different outcomes, making some subjective judgement necessary (Hill et al., 2011). In some occasion, three of them may show different level of lag; this did not happen in this research. As of this, the maximum lag that the research considered in this work is four.

Table 2: Estimation result of test of determination of number of lags

lag	LR	FPE	AIC	HQIC	SBIC
0		17.4236	17.487		
1	.12691	2.7e+06	17.6441	17.5777	17.7046
2	3.5555	2.3e+06	17.4885	17.389	17.5793
3	6.6865	1.5e+06	17.0199	16.8871	17.1409
4	8.0048*	873395*	16.4194*	16.2534*	16.5707*

Source: Own Computation, 2021
Note: *= at 1%, ** =at 5% and *** = at 10% significance level
Given this, the research considers only the forth lag of the dependent as well as independent variables (Table 2).

7.3. Long Run Co-integration Test

This test tries to show the co-integration of the dependent variable and the independent ones, which asserts the existence of long run co-movement in the two types of variables. These imply that the research is trying to see long run first order of integration. In having this, the research firstly tries to have the first difference of them both dependent variable and the independent variable to facilitate the
.

application of vector error correction (VEC) model of analysis and it confirmed that each of the variables considered here should be at its first difference (see Table 3).
Based on the regression result out of the six variables considered allare found to be statistically significant. The OBOR variable indicates that industrial parks developed by the OBOR Initiative have a direct effect of enlarging inflow of foreign direct investment

Table 3: Co-integration equation of Johannes normalization restriction

Variables (DFDI inflow)	Coef.	Std. Err.	z
DOBOR	3357.809***	603.996	5.56
DExport	18.920***	3.546	5.34
DImport	0.003***	0.001	4.77
DDPI	0.0003***	0.00005	5.77
DGDP	4.955***	0.950	5.21
DTax revenue	1.278***	0.162	7.89
_cons	646710		
chi2	222.8703		
P>chi2	0.0000		

Source: Own Computation, 2021

7.4. Estimation of the Vector Error Correction Model

This econometric analysis tries to show the short run interaction of the two variables. This model is direct extension of the above long run results after consideration the significance variable in the Johansen normalization. Based on the results of the long run regression there was formulation of the speed of adjustment for each deviation from the equilibrium level. The change in one or more independent variables would result into short run deviation from the long run trend of FDI inflow. Based on this formulation the research tried to regress the dependent variable on variables that were just transferred from the long run model. Table 4 depicts that variable like OBOR, export and imports affect the dependent variable positively and significantly.

Table 4: The parsimonious vector error correction model

DFDI Inflow	Coef.	Std. Err.	t
DOBOR	0.109	0.045	2.439**
DExport	1.15e-05	5.44e-06	2.114*
DImport	0.005	0.001	3.661**
DDIP	-0.018	0.015	-1.219
DGDP	-2.44E-07	2.76E-07	-0.884
DTax revenue	1.20e-08	2.45e-08	0.49
LECM	-0.204	0.011	-17.950
_cons	469.42	391.76	1.20
Number of obs	32		
F(7, 25)	169.53		
Prob > F	0.0000		
Adj R-squared	0.9891		

Source: Own computation, 2021. Source: Own computation, 2021. Note: 'D' before each variable represents "first Difference". Note: *= at 1%, ** =at 5% and *** = at 10% significance level

The model result shows that the coefficient of determination i.e. the adjusted R^2 values are 0.9891. This implies that about 98.91% of the variation in the dependent variable is explained by the variation of the independent variables, indicating relatively high explanatory power of the model.

The value of F is statistically significant indicating that the explanatory variables included in the model jointly influenced the dependent variable. As a result, out of the hypothesized variables which were included in the model, three variables were found to be significant in affecting FDI inflow. These are OBOR, export and import.

For OBOR, the coefficient estimated was positive and statistically significant. Significance of the coefficient for this variable signified 'FDI inflow.' This suggested that an expansion of OBOR Investments on industrial parks of the country increase the FDI inflow thereby increase the quantity of commodities to be produced for export.

Export of the country is found to have a positive and significant effect on the FDI inflow. The concept behind demonstrates that Ethiopia's trade relationship is stronger with FDI inflow. In absolute terms, when export of the country increases by one dollar, other things remains unchanged, the FDI inflow grows by 1.15e-05 dollar. Import of the country is also an important factor that determines the FDI inflow. Other factors being equal, a one dollar increase in Import of the country leads FDI inflow to increase by 0.005 dollar.

VIII. CONCLUSION

This study empirically examines the effects of industrial parks developed by OBOR Initiative on inflow of Foreign Direct Investment in Ethiopia during 2013-2020 by using Vector Error Correction Model (VECM).

In estimating the results, it is found that industrial parks development initiative by OBOR has a positive and significant effect on FDI inflow to the Country. Further, the finding of positive and significant relationship between FDI and value of exports is also another indicator that effects of industrial parks developed by OBOR increases export through increasing the volume of exportable commodities manufactured in the economy.

Finally, it can be concluded that the results of this study can provide insight to policymakers regarding the role of OBOR Initiative in Ethiopia and its effects on FDI and other macro-economic factors.

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