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Assessing Inclusive Regional Economic Relations toward Sustainable Development in the ECO Region

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1. Introduction

In recent decades, the world has seen a steady increase in the importance of international trade and investment including foreign direct investment (FDI). It is noted that during the period since 1980, the global economy has tripled – yet, world trade has grown at a higher rate than that of economic growth. Renewed efforts to spur growth in trade and FDI offer major opportunities. Foreign direct investment (FDI) is a source of economic and sustainable development, income growth, and employment. FDI can bring huge spillovers arising from capital inflows, technology transfer, market access, and export promotion to the host country. In particular, it appears that the globalization and regionalization of the international economy have made FDI incentives more interesting and important for national governments. According to the literature, FDI has been an important advocate of economic growth in its own right. In effect, FDI is argued to increase the level of domestic capital formation. This also implies producing on a large scale which in turn results in benefits of economies of scale and specialization and also increasing export and employment opportunities.[1]

On the other hand, efforts to promote growth in trade and FDI also brings forward many challenges for countries, especially in achieving sustainable development, meeting the Sustainable

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1 Manuel R. Agosin and Ricardo Mayer. "Foreign Investment in Developing Countries: Does it Crowd in Domestic Investment?" UNCTAD Paper, No.146 (2000).

Development Goals (SDGs), and contributing to a shift to greener economies. Important amongst others is the economics that is emerging from the relationship between trade opening and the environment. Though there is now no debate on opening trade for higher growth, its environmental impact has often remained controversial in all nations.[2]

There is no doubt that patterns of trade and investment are important keys to achieve SDGs. In today's world economy, the resulting complex linkages between trade, environment, and development are all set to redefine future economic leadership. Indeed, sustainable trade, sustainable FDI, and green global value chains offer crucial means for countries to prosper and to grow sustainably as a whole. If accompanied by appropriate environmental and social policies and incentives, trade can generate economic opportunities and decent employment while reducing environmental risks and ecological scarcities. Countries should focus on enhanced production capacity, use and exchange of environmentally sound technologies, goods, and services, increased resource efficiency, and reduced environmental and resource impacts to make trade and investment more sustainable.

Therefore to achieve sustainable development, countries should focus on green and sustainable trade and FDI to protect the environment. The Economic Cooperation Organization (ECO) has been working to improve the conditions towards Member States' sustainable development in line with its objectives defined by its founding document, Izmir Treaty (1998). This study explores the impact of expansion of mutual trade and investment relations on achieving sustainable development in the ECO region. The paper empirically examines the role of international trade and foreign direct investment on the proxied variable of sustainable development, using ECO Member Countries. We particularly focus on the economic relations between both oil-exporting and oil-importing countries in the ECO Region to assess whether deeper cooperation leads to more sustainability.

This paper is organized into six parts. The following part presents a conceptual discussion on sustainable development. The

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2 Jasmeet Kaur, "FDI and Sustainable Development: Lessons to Draw for India." *Annual Research Journal of Symbiosis Centre for Management Studies* no.1 (2013-2014): 56–68.

methodology of measurement of sustainable development variable is shown in part three. The fourth section specifies a framework for the sustainable development model for the ECO countries and section five analyzes the empirical results which are obtained through model estimation. The final section concludes and presents the relevant policy implications.

2. Conceptual Discussion on Sustainable Development

Sustainable development is defined as "The development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs."[3] It is a multidimensional concept incorporating an environmental component which includes sustainable consumption of natural resources, protection of environmental factors and health care for the population as well as a social component which encompasses equality, increased quality of life, eradication of poverty and improvement of trade and investment relations among nations. All these targets are equal parts of the new development, whose objectives were set out in documents on the topic of sustainable development. The overall goal of sustainable development is the long-term stability of the economy and environment, which is only achievable through the integration of economic, environmental, and social concerns.

The economic experts and investment environment analysts have been arguing in recent years that the economies around the world are entering into a new generation investment environment for achieving sustainable development. Particularly many developing economies have put their efforts to mobilize investment to ensure that it contributes to sustainable development as a priority. The emerging new generation investment policies place economic growth and sustainable development at the core of efforts to attract and benefit from investment.[4]

Developing countries which try to attract FDI to achieve economic growth and development, also consider it as a tool for

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3 The Brundtland. "Our Common Future". World Commission on Environment and Development (WCED), 1987.

4 UNCTAD. *World Investment Report 2012: Overview,* (New York: UN, 2012); Boyanagari Nagaraja. "Can Sustainable Development Be Achieved by The Employment of Foreign Direct Investment? …… Yes." *International Journal of Humanities and Social Science Invention* 2, no.5 (2013): 41-47.

earning technology spillovers and transferring resources across national borders.[5] However, economic theories of sustainability imply that economic growth and the proliferation of FDI may exacerbate existing unsustainable patterns of development unless matched by more efficient use of natural resources. FDI should be managed properly taking into account the constraints to preserve environmental functions.[6]

In the contemporary globalized economy, environmental functions are challenged by the main factors of globalization, primarily by foreign direct investment and trade, which act as tools for the realization of the multinational corporation investment activities. Given that multinational corporations are primarily driven by the need to satisfy shareholders' expectations in their investment activities, i.e. to maximize returns on concrete investments, the concern about ensuring that foreign direct investment and export generates economic growth in host countries is amplified.[7] Depending on the investment process, FDI is assumed to stimulate the productivity of domestic investment which results in sustainable economic growth and development.[8]

Trade has also been specifically identified as an important factor for sustainable economic growth and productive employment. It is essential for connecting countries to global value chains, finance, and foreign investment. Trade policies also play a major role in protecting ecosystems and halt biodiversity loss. Besides; safe, accessible, and environmentally friendly transportation plays a key role in making human settlements safe and in making trade more sustainable.[9]

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5 Elizabeth Asiedu. "Foreign Direct Investment in Africa: The Role of Government Policy, Institutions and Political Instability". *Working Paper.* (Lawrence: University of Kansas. 2003).

6 UNCTAD. *World Investment Report: Transnational Corporations and Export Competitiveness.* (Geneva: UNCTAD, 2002).

7 Marija Petrović-Randjelović. "Foreign Direct Investment and Sustainable Development: an Analysis of the Impact of Environmental Regulations on Investment Location Decisions." *Economics and Organization* 4, no.2 (2007): 183 - 190.

8 Magnus Blomstron et al. "FDI in the Restructuring of Japanese Economy. The European Institute of Japanese studies (EIJS)", Working paper No. 91 (Stockholm, 2000). Cletus Usman Idoko et al. "The Effects of Foreign Direct Investment on Sustainable Development in Nigeria." *European Journal of Business and Management* 7, no.6 (2015): 82 -86.

9 UNEP "Sustainable Trade and Investment: Achieving the Sustainable Development Goals". September 2015.

From both economic theory and experience, it is clear that opening up to trade generates both winners and losers. It is therefore essential that policies are put in place to facilitate the adjustment of different groups to trade liberalization. Such policies include strengthening social safety nets such as unemployment benefits schemes, enhancing skills and human capital development through education and training, and the promotion of labor mobility. Consequently, sustainable trade means participating in the international trading system in a way that supports the long-term domestic and global goals of economic growth, environmental protection, and strengthening social and human capital. Accordingly, the main purpose of investigating the link between investment, trade and sustainable development emerges as to assist governments, multilateral institutions, and private sector investors in their decision-making, helping them identify and promote sustainable trade practices that contribute to economic growth across the region.[10]

3. Indicator Measurement of Sustainable Development

Several efforts have been made to develop indicators of sustainable development, based on the premise that sustainable development requires non-declining trends in physical, natural, human, and social capital per person.[11] One proxy introduced by Bolt et al. and reported by World Bank for sustainable development is Adjusted Net Savings (ANS).[12] ANS is an indicator of sustainability and provides national-level decision-makers with a simple indicator of how sustainable their country's investment policies are. The ANS framework takes the broader view that natural and human capital are assets upon which productivity and the well-being of a nation rest.[13]

The ANS is identified as the investment in produced and human capital, from which the value of depletion of natural resources and

10 Alice Tipping and Robert Wolfe. "Trade and Sustainable Development: Options for Follow-Up and Review of the Trade-Related Elements of the Post-2015 Agenda and Financing for Development", *International Centre for Trade and Sustainable Development (ICTSD).* (Working Paper, June 2015).

11 Kenneth J. Arrow et al. "Evaluating Projects and Assessing Sustainable Development in Imperfect Economies." *Environmental & Resource Economics* 26, (2003): 647-685.

12 Katharine Bolt et al. "Manual for Calculating Adjusted Net Savings, Environment Department," *World Bank*, 1-23. 2002.

13 Bolt et al. "Manual for Calculating Adjusted Net Savings, Environment Department", 2002.

accumulated pollutants is deducted, and that sustains intertemporal welfare maximization. This concept of sustainability is thus in line with Pezzey (1989) who defines sustainability as a non-declining value of utility. A negative ANS at a point in time means that future utility is unavoidably less than the current utility over some period and indicates that the economy is on an unsustainable path.[14]

The ANS aims to give an account of the net creation or destruction of the national wealth, based on a yearly basis. In the ANS, wealth is enlarged to include, besides produced assets, natural resources, environmental quality, and human capital. Hence, ANS has been considered as a proxy for sustainable development outcomes, based on the principles of environmental accounting or green national accounts that have been found to be significantly correlated with aggregate welfare.[15]

The ANS is derived from standard national accounting measures of gross national savings by following four types of adjustment. First, estimates of the consumption of fixed capital are deducted to obtain net national savings. Second, current non-fixed capital expenditures on education are added to reflect the investment in human capital. Third, estimates of the depletion of different natural resources are subtracted to indicate the decline in asset values associated with their extraction and harvest. Eventually, global pollution damages from carbon dioxide emissions are deducted.[16] The World Bank has defined and calculated the ANS for 209 countries. The adjusted net savings rate is calculated as:

$$ANS_{it} = \underbrace{(GS_{it} - DEPC_{it})}_{Net\ Saving} + EE_{it} - RRD_{it} - CD_{it}/GNI_{it}$$

where ANS_{it} denotes Adjusted Net Savings Rate, a proxy for sustainable development, GS_{it} is Gross National Saving, $DEPC_{it}$ denotes Depreciation of produced capital, EE_{it} is expenditure on

14 Kirk Hamilton and Michael Clemens, "Genuine Savings Rates in Developing Countries." *World Bank Economic Review* 13, no.2 (1999): 333-356.

15 Yacouba Gnegne. "Adjusted Net Saving and Welfare Change." *Ecological Economics,* no.68 (2009): 1127-1139.

16 Bolt et al. "Manual for Calculating Adjusted Net Savings, Environment Department", 2002; Joseph E. Stiglitz et al. "Report of the Commission on the Measurement of Economic performance and Social Progress", (2009), https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf.

education, RRD_{it} is a Rent from the depletion of natural capital, CD_{it} shows Damages from carbon dioxide emissions and GNI_{it} denotes Gross National Income at market prices. To have a dependent variable that is free of the income metric we consider per capita ANS.[17] To use ANS_{it} for analysis, we collect data from the World Bank website.[18]

4. The Model

According to the theoretical literature, sustainable development is a function of foreign direct investment, inflation, the balance of payment, and exchange rate.[19]

$$SusDev = F(FDI, INF, BOP, EXR) \quad (1)$$

where $SusDev$ indicates the proxy of ANS sustainable development, INF shows inflation and BOP and EXR are the balance of payment and exchange rate, respectively. Following Idoko et al., we study the effects of FDI and trade on sustainable development, FDI comes from abroad with various spillovers to the host country and goes to countries that pay a higher return on capital. FDI may benefit the host country's economy by boosting economic growth but there is doubt about its effect on the environment and sustainable development. The inflation rate (INF) defines the movement of prices of goods and services in any given economy. This is defined as the rate of change in the domestic price level in which it should be equal to the constant term. Balance of Payment (BOP) is a record of a transaction between a resident of a country and the rest of the world. If a country's balance of payment is good, it would reflect in a nation's sustainable development. Exchange rate (EXR) is the charge for exchanging the currency of one country for the currency of another. A higher exchange rate would attract lower FDI, while a lower exchange rate indicates that an economy is doing well and

17 Gilles Carbonnier. "The Global and Local Governance of Extractive Resources," *Global Governance,* no.17. (2011): 135-14. Gilles Carbonnier and Natascha Wagner. "Oil, Gas and Minerals: The Impact of Resource-Dependence and Governance on Sustainable Development", *CCDP Working Paper,* No. 8 (Geneva: The Graduate Institute, 2011) Géraldine Thiry and Isabelle Cassiers. "Alternative Indicators to GDP: Values behind Numbers. Adjusted Net Savings in Question". *LIDAM Discussion Papers IRES 2010018,* Université catholique de Louvain, Institut de Recherches Economiques et Sociales (2010).

18 See http://wdi.worldbank.org

19 Theoretical literature is discussed by Idoko et al. "The Effects of Foreign Direct Investment on Sustainable Development in Nigeria", 2015.

may lead to attracting FDI which in turn makes it more likely that a country has a more sustainable development due to more attraction of FDI inflows and decrease in FDI outflows. The functional form of Equation (1) is written in as;

$$SusDev_{i,t} = \alpha_0 + \alpha_1 FDI_{i,t-1} + \alpha_2 INF_{i,t} + \alpha_3 BOP_{i,t} + \alpha_4 EXR_{i,t} + U_{i,t} \quad (2)$$

The error term ($U_{i,t}$) shows residuals in time *t* in the country *i* and it is a random variable that has well-defined probabilistic properties. To investigate the role of population, oil price volatility, and oil richness in sustainable development we develop the model as below:

$$ANS_{i,t} = \beta_0 + \beta_1 FDI_{i,t-1} + \beta_2 INF_{i,t} + \beta_3 BOP_{i,t} + \beta_4 EXR_{i,t} + \beta_5 OilV_{i,t} + \beta_6 RR_{i,t} + \beta_7 GDP_{i,t} + \beta_8 POP_{i,t} + \lambda_t + v_i + \varepsilon_{i,t} \quad (3)$$

where $POP_{i,t}$ is the log per capita genuine savings of country *i* at time *t* as a proxy for sustainable development. $GDP_{i,t}$ shows the log per capita GDP to prevent the simultaneity problem of GDP in the model. $POP_{i,t}$ indicates population growth and $RR_{i,t}$ shows oil richness and it is export-based, a key indicator for both oil-importing/exporting countries. It is a binary variable taking the value of one for oil-exporting countries.

To develop the model to focus on the effect of oil price volatility on sustainable development in both oil-exporting and oil-importing countries we consider oil price volatility ($OilV_{i,t}$). Oil price volatility has been given different definitions by different literature across disciplines. Concerning the crude oil price, volatility is the variation in the worth of a variable, especially a price as cited by Busayo.[20] Volatility is the measure of the tendency of oil price to rise or fall sharply within a period of time, such as a day, a month, or a year. [21] Empirically, we have calculated the standard deviation of the world oil price ($OilV_{i,t}$), being added to the sustainable development of both groups of countries.

An innovative issue of regional cooperation should be considered as an appropriate factor of the ECO sustainable development through

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[20] Oyetunji Busayo. "Oil price and Exchange Rate Volatility in Nigeria." B.Sc Research Project, Covenant University, 2013.

[21] Itotenaan Henry Ogiri et al. "Oil Price and Stock Market Performance in Nigeria: An Empirical Analysis." *American Journal of Social and Management Sciences* 4, no.1 (2013): 20-41.

which the members may reach a level of income convergence. In order to consider the role of regional income convergence, the Linder variable ($LIND$) has been added to Equation 2. Linder variable has been calculated by the square value of subtracting each country's GDP per capita from average ECO region GDP per capita.

$$LIND_{i,t} = (GDP_{i,t} - AGDP_{j,t})^2$$

where $GDP_{i,t}$ and $AGDP_{j,t}$ show the country i's GDP and average ECO region GDP in time *t*, respectively. Therefore, the new equation would be as below:

$$ANS_{i,t} = \beta_0 + \beta_1 FDI_{i,t-1} + \beta_2 INF_{i,t} + \beta_3 BOP_{i,t} + \beta_4 EXR_{i,t} + \beta_5 OilV_{i,t} + \beta_6 RR_{i,t} + \beta_7 LIND_{i,t} + \lambda_t + v_i + \varepsilon_{i,t} \quad (4)$$

where $LIND$ indicates the Linder variable in time *t*.

5. Empirical Results

Before the model estimation (Equation3), it is possible to assess the causality relationship between the sustainable development variable ($ANS_{i,t}$) and its major determinants ($OilV_{i,t}$, $FDI_{i,t}$ and $BOP_{i,t}$). This implies the importance of interacted effects of economic sustainability and major determinants in practice.

The Granger causality test is a statistical hypothesis test for determining whether one-time series is useful in forecasting another, first proposed in 1969. Dumitrescu and Hurlin[22] proposed a process for testing Granger causality in panel data sets. The order *xtgcause* is performed in computing the test statistic by Stata (14). By default, 1 lag is included.[23] The results of the causality test are reported in Table (1) indicating that there is a causality relationship: oil prices volatility, exchange rate, Linder, and FDI cause sustainable development in the region. The results imply that such an interacted relationship between sustainable development and these determinants necessitates an econometric framework.

22 Elena-Ivona Dumitrescu and Christophe Hurlin, "Testing for Granger Non-causality in Heterogeneous Panels." *Economic Modelling* 29, no.4 (2012): 1450-1460.

23 Luciano Lopez and Sylvain Weber, "Testing for Granger Causality in Panel Data, University of Neuchatel, Institute of Economic Research", *IRENE Working Paper*, 2017, 17-03.

Table 10.1. Granger Causality Tests between Sustainable Development and its Determinants

. xtgcause ANS EXR	*. xtgcause EXR ANS*
W-bar = 0.9916	W-bar = 12.5967
Z-bar = -0.0146 (p-value = 0.9884)	Z-bar = 20.0860 (p-value = 0.0000)
Z-bar tilde = -0.2415 (p-value = 0.8092)	Z-bar tilde = 14.4881 (p-value = 0.0000)
. xtgcause ANS OILV	*. xtgcause OILV ANS*
W-bar = 0.0114	W-bar = 2 .7896
Z-bar = -1.7124 (p-value = 0.0868)	Z-bar = 3.0997 (p-value = 0.00197)
Z-bar tilde = -1.4856 (p-value = 0.1374)	Z-bar tilde = 2.0407 (p-value = 0.0413)
. xtgcause ANS FDI	*. xtgcause FDI ANS*
W-bar = 2.08353	W-bar = 4.0615
Z-bar = 1.8798 (p-value = 0.0601)	Z-bar = 5.3027 (p-value = 0.0000)
Z-bar tilde = 1.1467 (p-value = 0.2515)	Z-bar tilde = 3.6550 (p-value = 0.0003)
xtgcause ANS BOP	*. xtgcause BOP ANS*
W-bar = 3.8087	W-bar = 0.8808
Z-bar = 4.8647 (p-value = 0.0000)	Z-bar = -0.2065 (p-value = 0.8364)
Z-bar tilde = 3.3341 (p-value = 0.0009)	Z-bar tilde = -0.3821 (p-value = 0.7024)
xtgcause ANS LIND	*. xtgcause LIND ANS*
W-bar = 0.000	W-bar = 2.5579
Z-bar = -2.2361 (p-value = 0.0253)	Z-bar = 3.4836 (p-value = 0.0000)
Z-bar tilde = -1.9365 (p-value = 0.00528)	Z-bar tilde = 2.3387 (p-value = 0.0194)

Source: Authors

To explore the effects of major effective determinants on sustainable development in our sample economies, we estimate Equations (2), (3), and (4) using cross-section data of the ECO countries[24] during 1995-2018. Equations (3) and (4) are the augmented versions of Equation (2) by using more new determinants that explain sustainable development in the region. That is, estimation results for all these equations (2,3 and 4) are presented in three augmenting cases, respectively. According to Case I, Table (10.2.) reports the

24 Afghanistan, Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Turkey, Turkmenistan, Uzbekistan and Tajikistan.

empirical results in which $FDI_{i,t-1}$ and $BOP_{i,t}$ have significant and positive effects on the sustainable development of the region. This implies that FDI enables countries to have a boosting economy and to promote their sustainable development plans if they share investment plans with foreign partners. A higher degree of sustainable development implies a brighter prospect for FDI. Also, an improvement in a country's balance of payment results in promoting sustainable development not only leading a reflection on economic development but also causing a positive effect on environmental issues. However, the exchange rate has a negative significant impact on sustainable development, indicating that increasing uncertainty and instability in economic structure arising from exchange rate changes have a negative effect on sustainable development. In addition, the inflation rate does not have any significant effect on the sustainability plans of the members.

Table 10.2. Empirical results of SD model (Eq. 2) for ECO countries, Case I (1998-2018)

Variables	Coef.	Std. Err.	Z	P>|z|
Cons	-0.10	0.101	-1.08	0.280
$FDI_{i,t-1}$	0.041	0.008	4.98	0.000
$INF_{i,t}$	-0.001	0.0017	-0.59	0.552
$BOP_{i,t}$	0.0016	.0005	3.23	0.001
$EXR_{i,t}$	-0.0006	0.00021	-3.08	0.002

F_{Leamer} = 37.05, *Prob > F = 0.0000*
Wald chi2(7) = 55.78, Prob > chi2 = 0.0000
LR chi2 = 97.18, Prob > chi2 = 0.0000

Source: Authors

Table (10.2.) reports an initial estimate of the sustainable development (SD) model for ECO countries, by which we find out the significant effects of FDI, BOP, and exchange rate on the SD process of these countries. The results show that lagged FDI has a positive and dynamic effect on the sustainable development process. These results confirm the significant and positive effect of FDI and explain that increasing FDI provides a signal of confidence in investment

opportunities.[25] In other words, if countries attract high quality and sustainable FDI, it would support sustainable development. In this case, it will improve the sustainability performance of the domestic industry as well as promote investment in key areas such as clean energy generation and recycling industries.

Renewable energy development is one of the most important fields. The reduction of costs and increasing efficiency of renewable sources generate an important flow of FDI and supports sustainable development. If countries have to attain long term sustainable development patterns, they need to follow sustainable and green FDI.

The implication of the above results is that FDI plays a very vital role in achieving sustainable development, which justifies the need for the government to improve and develop strategies towards encouraging an increase in FDI attraction. If this increase can be achieved, it will further lead to sustainable development for the ECO member countries.

According to Case 2, Table (10.3.) reports the estimates of the augmented SD model (Eq. 3) for the ECO member countries by adding variables of oil indicators and population growth. The model indicates further important explanatory variables in which the balance of payment (BOP) has a significantly positive effect on sustainable development. This indicates that improvement in the balance of payment plays a dominant role in achieving sustainable development since it makes positive contributions to growth in providing further flows of capital, goods, and services.

International trade has become fundamental to economic development and has helped to lift poverty in ECO member countries. Yet, the flow of goods and services across borders can also disrupt labor markets, accelerate environmental degradation, and contribute to worsening inequality. With the right trade policies, these costs can be reduced, if not eliminated, and trade can become more sustainable. Accordingly, all ECO member countries should participate in the international trading system in a manner

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25 Agosin et al. "Foreign Investment in Developing Countries: Does it Crowd in Domestic Investment?" *UNCTAD Paper* no.146 (2000).

that supports the long-term domestic and global goals of economic growth, environmental protection, and strengthening social capital to achieve sustainable development.

Resource richness $RR_{i,t}$ has a significant negative impact on the sustainable development process in ECO region countries. This result indicates that resource extraction affects sustainable development.[26] The coefficient indicates the high economic relevance of the resource-curse, which deteriorates the sustainable development plans of the ECO members. Therefore, the results highlight a clear negative relationship between resource richness and sustainable development in which natural resource extraction reduces genuine savings in both ECO oil-exporting and oil-importing countries.

$OilV_{i,t}$ has also a negative impact on sustainable development. Oil price changes determine government expenditure level, rate of inflation, level of unemployment in the ECO region, especially in oil-exporting countries. In oil-exporting countries, the government relies heavily on oil revenue as the bulk of government revenue in the annual budget estimates. The continuous decline in oil prices and total oil revenue calls for structural adjustment, leading to a structural break of the economy. The dependency of the oil-exporting countries on oil makes price changes to have a significant impact on sustainable development. Hence the public sector in this country is very fragile to oil prices volatility; it negatively affects consumption, employment, investment, and sustainable growth. Also in oil-importing countries oil price volatility is an important factor that affects economic growth and sustainable development as well. It affects production, employment, and GDP which are important for sustainable development. However, the effect is not as strong as oil-exporting countries. The GDP also has a positive effect on sustainable development.

According to the results, $INF_{i,t}$ and $POP_{i,t}$ do not have significant effects on sustainable development of the ECO members, revealing the fact that there would exist biased estimates of these variables.

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[26] Kirk Hamilton, "Accounting for Sustainability," in *OECD Measuring Sustainable Development*, (Paris: OECD, 2004), 29-37.

Table 10.3. Empirical results of augmented SD model (Eq. 3) for ECO member countries, Case 2 (1995-2018)

Variables	Coef.	Std. Err.	Z	P>|z|
Cons	-0.53	3.36	-0.16	0.873
$FDI_{i,t-1}$	0.023	0.006	3.72	0.000
$INF_{i,t}$	-0.078	0.274	-0.29	0.775
$BOP_{i,t}$	0.001	.0003	4.59	0.000
$EXR_{i,t}$	-0.45	1.12	-0.41	0.684
$OilV_{i,t}$	-0.66	0.22	-3.00	0.003
$RR_{i,t}$	-0.17	0.02	-7.10	0.000
$GDP_{i,t}$	0.0088	.005	1.77	0.077
$POP_{i,t}$	-.0037	.0033	-1.00	0.319

F_{Leamer} = 28.01, *Prob > F = 0.0000*
Wald chi2(7) = 406.29, Prob > chi2 = 0.0000
LR chi2 = 109.81, Prob > chi2 = 0.0000

Source: Authors

To investigate the effect of regional economic relations to achieve sustainable development in ECO member countries, the Linder variable is applied which represents the square value of the logarithm difference between each country's GDP per capita and average ECO region GDP per capita. According to Linder, a country will trade with countries of a similar level of economic development and similar demand structures. The Linder variable catches the difference between countries' gross domestic products -the smaller the difference between them the higher the expected trade between them should occur.

As discussed in the third section, the sustainable development model is again re-specified by adding the Linder variable ($LIND_{i,t}$) to show the possible income convergence, which can be a result of the broader economic cooperation among the ECO members (Case 3). Table (10.3.) reports the estimated results of Equation (4) in which the variable $LIND_{i,t}$ has a negative and significant effect on sustainable development. The result confirms that income convergence leads to sustainable development in the region, that is, the greater the similarity between countries' economic structures, the greater the

possibility of promoting sustainable development. Indeed, regional integration encourages capital and labor mobility within the region, which may lead to an increase in output and labor productivity in the region. In addition, trade agreements in the forms of FTA, PTA, and other trade agreements raise benefits to all countries in the region in terms of more trade relations, diffusion of technology, and related spillovers.[27]

Table 10.4. Empirical results of augmented SD model (Eq. 4) for ECO member countries, Case 3 (1995-2018)

Variables	Coef.	Std. Err.	Z	P>|z|
Cons	4.76	4.33	1.10	0.272
$FDI_{i,t-1}$	0.023	0.006	3.72	0.000
$INF_{i,t}$	-0.18	0.482	-0.39	0.695
$BOP_{i,t}$	0.001	.0005	2.08	0.038
$EXR_{i,t}$	-0.80	1.35	-0.60	0.551
$OilV_{i,t}$	-0.13	0.32	-4.09	0.000
$RR_{i,t}$	-0.02	0.006	-3.65	0.000
$LIND_{i,t}$	-0.02	.004	-4.25	0.000

F_{Leamer} = 125.14, *Prob > F = 0.0000*
Wald chi2 = 74.10, Prob > chi2 = 0.0000
LR chi2 = 162.27, Prob > chi2 = 0.0000

Source: Authors

6. Conclusion

International trade and FDI are considered as the key components of sustainable development. Trade helps countries to achieve a more efficient allocation of scarce resources in accessing environmental goods, services, and technologies. FDI is also used as a major element to achieve sustainable development, by providing stronger stimulus to economic growth than other types of capital inflows.

However, FDI flows to developed countries have partly led to more pollutant production especially in oil-exporting countries, with no

[27] Luis A. Rivera-Batiz and Paul M. Romer, "Economic Integration and Endogenous Growth." *Quarterly Journal of Economics,* 106, no.2 (May 1991): 531-555.

technology transfer. Meanwhile, the optimal relations would apply sustainability in economic relations through a higher rate of intra-industry and a higher rate of FDI technology-based inflows. For instance, in oil-exporting countries, if host-country demands for environmental quality increases as incomes rise, then eventually environmental damage will begin to fall based on the environmental Kuznets curve argument.

This study explores foreign trade and FDI, as the key determinants, of economic growth and sustainable development among ECO members for both blocks of oil-exporting and oil-importing countries available in the region. According to this paper's findings, the process of sustainable development in the ECO region is affected significantly by the major economic indicators, such as GDP, FDI, income convergence, exchange rate, natural resources, whether positively or negatively.

There are several policy implications arising from the estimate results relating to these indicators. Firstly, the significant and positive effect of GDP on sustainable development implies stable economic growth and productivity in the region. The expected negative sign of the estimated Linder variable coefficient implies achieving income convergence among the members should be a key factor of the sustainable development process. Economic cooperation among the members through various trade patterns enables the members to reduce possibly their income gaps, leading to sustainable development. Empirical results thus emphasize regional integration which is a process where neighboring states agree in order to upgrade economic, political, and environmental cooperation. Therefore, ECO member countries can promote economic and environmental cooperation which results in paving the path for achieving sustainable development.

According to the paper findings, foreign direct investment (FDI) is a key and significant factor of the sustainable development process, because it brings adequate capital, technology spillovers to the ECO host countries. In this respect, modern technologies are much cleaner and environment-friendly and thus help the ECO countries to facilitate the process of sustainable development. In addition, economic integration arising from an increase in FDI leads to identical production technologies in the countries of the integration

area,[28] and leads to diffusion of new and clean technology to all countries in the integration area, especially to the countries which are less developed and pursue a plan of sustainable development utilization.

Hence, the major implication of our findings is that to have a prolonged process of sustainable development in the ECO region in terms of higher quality in the environment, both groups of ECO countries (oil-exporting and oil-importing countries) need to implement sustainable trade and sustainable FDI policies with more cooperation and integration.

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