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Environmental Degradation: Issues and Determinants in Middle-Income Countries ASEAN

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Abstract

This study is aimed at analyzing the impact of foreign direct investment, foreign debts, consumption of fossil fuel, corruption, political stability and net-export on environmental degradation, poverty and economic growth in middle-income countries in ASEAN. The method applied is simultaneous equation analysis by taking into account classical assumption tests such as granger causality and heteroskedasticity. The Data started during the years 2010-2023 in middle-income countries in ASEAN. Poverty, economic growth, foreign direct investment, fossil fuel consumption have a significant effect on environmental degradation. Environmental degradation, economic growth, foreign debt, have a significant effect on poverty. Environmental degradation, poverty and net export on economic growth of ASEAN middle-income countries. The government and related parties need to focus on controlling environmental impacts, reducing poverty, and managing inclusive economic growth through a sustainable approach.

Keywords: *Environmental Degradation, Poverty, Economic Growth.*

Introduction

Environmental degradation has become one of the most pressing global issues nowadays. Climate change, loss of biodiversity and pollution have led to various environmental problems at the global levels. Uncontrollable human activities, such as deforestation, urbanization, and industrialization have (Ben Jebli et al., 2019; Prempeh, 2023). Environmental degradation become the leading cause of significant environmental damage. Does not only adversly affect the ecosystem, but also brings with it serious social and economic consequences. An instance of this is natural disasters exacerbated by environment degradation, for instance flood and landslide, which leave millions of people at loss and lead to a major economic loss. Water and air pollution threaten the life of the people. Unsustainanle development is one of the leading causes of environment degradation. Many of developing countries face a dilemma between pursuing economic growth and preserving the environment. This imbalance leads to excessive exploitation of natural resources.(Hussain et al., 2022; Istiak & Alam, 2018; Kinda, 2021).

[5]The loss of biodiversity due to environmental degradation has reached alarming levels. Many species face the danger of extinction because their habitats are damaged or destroyed. This situation is not only damaging, but also deprives man of the benefits of the ecosystem, for example a decrease in the supply of foods and medicine. Climate change exacerbates environment degradation. The rise in global temperature leads to liquefaction of the ice in the poles, rise in sea level and an extreme change in weather patterns (Kurniawan et al., 2021; Sadiq et al., 2021). This condition accelerates the damage on the natural ecosystems, such as the tropical rain forest and coral reef. Pollution of water, air and soil is the leading cause of environment degradation. Industrial waste, excessive use of pesticides and plastic waste littering have polluted the ecosystems in the entire world. This pollution endangers not only flora and fauna, but also humans (Amarasekara et al., 2022; U. Khan & Khan, 2024; Mandeya & Ho, 2021).

Handicaps in economic development have been seen more from the aspect of environment conservation, which is becomming an important issue every day, in the achievement of green economy centered arount

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the conservation of natural resources and the environment. Men are not instinctively able to settle the environmental and natural resources problems during economic development process, in a sustainable manner, in an economic development model which does not factor in environmental conservation right from the outset (Aydoğan & Vardar, 2020; Saqib et al., 2023).

No one can deny that environmental degradation in the geographical space of the earth is heading toward a more worrying point, which leave the stake holders of environmental conservation at unease. The situation calls for disasters the like of extreme weather, a rise in sea level, flood and landslides. Ecosystems like they are now, are resulted from human's deeds, industrilization, population growth, urbanization and excessive use of energy (Hassan et al., 2020; Khatun & Bist, 2019). An access to clean energi source is the main goal of many countries. Therefore, the energi infrastructure is very necessary as both a prerequisite and center pillar in good governance in order that policies should be made responsive to economic development (Kinda, 2021; Matar, 2020). The impacts include the loss in biodiversity, higher carbon emissions, and climate change. The global termperature swiftly rises triggering extreme weather phenomena such as flood, drought and storms. World Economic Forum in the Global Risk Report 2024 highlights the environment issue as the most impactful risk factor be it in the short or long range. The environmental risk was dominant in the risk landscape in all periods, suggestig the urgency of mitigation (Oteng-Abayie et al., 2022; Venkatraja, 2020).

The latest IPCC report shows that we are approaching the limit of global temperature rise of 1,5°C above the pre-industry level. The coastal areas experience sea level rise faster than previously expected. Sea and rivers are contaminated by industrial waste, plastic and pesticide. It is estimated that the plastic waste contaminating the sea amounts to millions of tons annually. Air pollution in major cities deteriorates, especially that of the developing nations, leading to health problems, especially respiratory deseases. Microplastic is traced not only in the sea, but also in the air, soil, even in the foods we consume. The newest analysis suggests that despite a significant decrease in the loss of primary forest in a number of nations, deforestation remains a major challenge. The loss of tropical major forests directly impact biodiversity and contribute to global carbon emission (Olubusoye & Musa, 2020; Sethi et al., 2020; Tahir & Azid, 2015).

Environmental degradation phenomenon has become a serious problem in ASEAN countries. Seen in the above picture environmental degradation was at its peaks between 2018 and 2023, especially in Laos, Thailand and Vietnam touching the figure 4:00. Whereas Cambodia reaches the figure 7:00. This proves that excessive use of energy must be handled meticulously and effectively so that environmental conservation becomes a must which has to be reached (Figure 1).

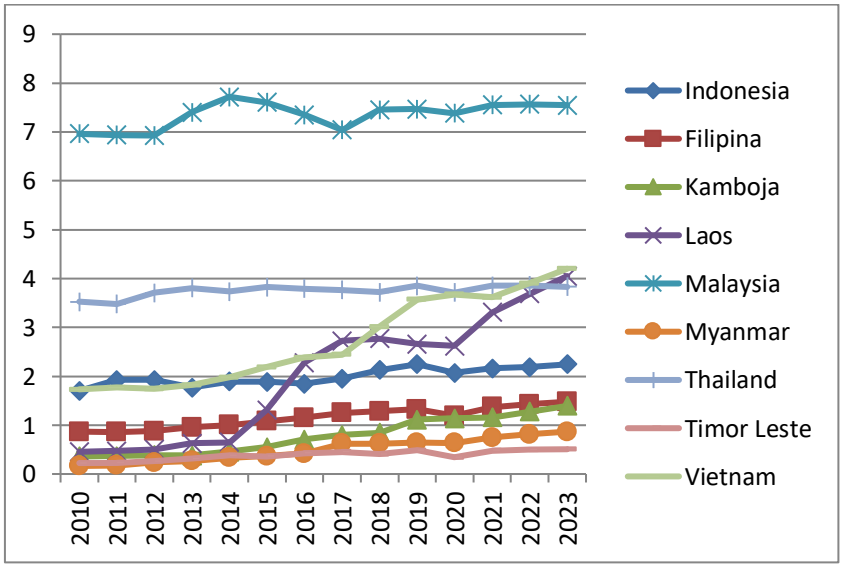

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Figure 1. Environment Degradation Middle-Income Countries

ASEAN 2010-2023

Poverty still remains a problem in ASEAN countries. As can be seen here, Timor Leste has the highest poverty level, at 45.90% in 2022. Myanmar, in 2013, sits at 32.40% of poverty level. Special attention must be given to address this poverty problem in order that a better welfare state is achieved (Figure 2).

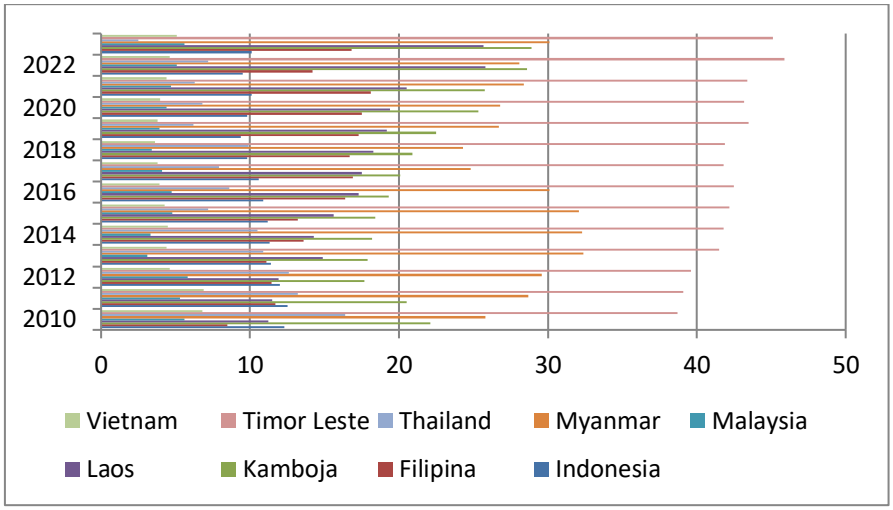

Figure 2. Poverty in Middle-Income Countries

in ASEAN 2010-2023

From the aspect of economic growth in ASEAN countries, Cambodia enjoys stable economic growth, at 6%, followed by Malaysia at 5%, Vietnam at 6% during the years of this study. Besides, Myanmar's economic growth of -3.42% and Thailand's of -0.18% in 2023 mark a turn of economic situations faced as the previous economic condition was positive (Figure 3).

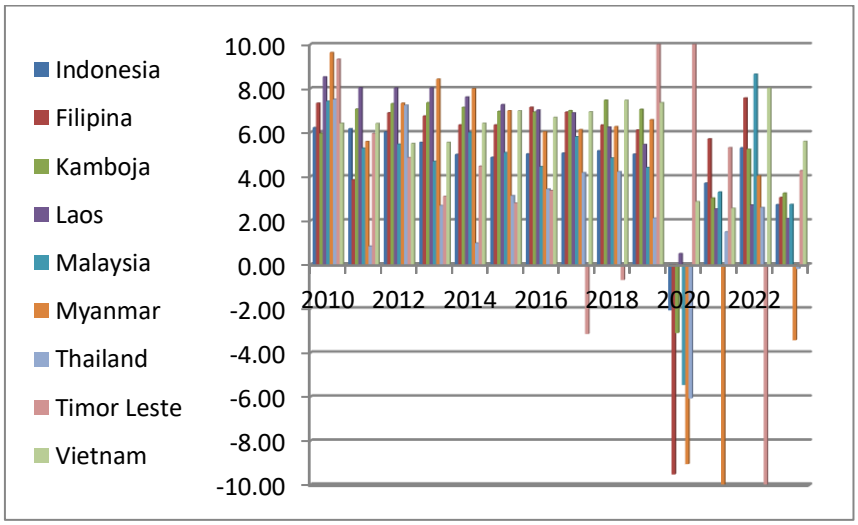

Figure 3. Economic Growth in Middle-Income Countries

ASEAN 2010-2023

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Considering the above situations, the problems analyzed in this study include the impacts of FDI, foreign debt, consumption of fossil fuel, corruption, political stability and net-export on environment degradation, poverty and economic growth. The analyses in this research are focused on environmental problems, which has, for some time, stood in the way of economic development, thus the environmental aspect needs to receive broader attention. Every problem in a country must receive special attention by formulating a policy which serves to expedite measures taken in solving it. Toward this end, it is intended that this study serves as a reference in finding out the extents to which economic development has been carried out and attention to environmental conservation has been given. In social aspect, poverty profile is also analyzed to gauge the success or lack of it of development in the sector of reducing social gaps.

Theoritical Review

In the past decade, there have been massive studies conducted on the environment. Since the Paris climate change conference in 2015, countries have been racing in achieving the net zero emission target of the year 2050. In line with this the issue of environment degradation is an important aspect to be researched, along with its poverty and economic growth variables in order that the scope of this study becomes broad.

Environment Degradation and Poverty

Studies by Prempeh (2023) and Sikder et al (2022) finds that there is a direct correlation between environment degradation and poverty. This results in the belief that the quality of environment is imperative to achieve during an economic development process. Alini & Meisyalla (2021) and Salman & Hosny (2021a) focuses on environment degradation and poverty contexts. The findings of this reseach prove adverse impacts on health which result from environmental damage, air pollution, industrial waste and greenhouse effects.

Foreign Direct Investment and Environment Degradation

Studies by Atsu et al (2021) and Balogun et al (2024) show that FDI can contribute in lowering emission of CO2 in China by utilizing environment-friendly technologies. However, in several cases, the fact that investments in the sectors which neglect policies on the environment will result in an increase in the emission supports the hypothesis. Banday & Aneja (2020) and Dube & Horvey (2023) find that FDI in several developing countries increases pollution due to a lack of strict regulations. This research supports the Pollution Haven hypothesis while also notes the potensi for environmental benefits is FDI is directed toward environment-friendly technologies. Cozza et al (2020) and Taşkın et al (2020) test *Environmental Kuznets Curve* (EKC) hypothesis in OECD countries and find out that FDI impacts vary with the economic sectors. In the energy-intensive sector, the EKC hypothesis is not proven while in a more technology-efficient sectors, FDI shows positive impacts.

Study by Amankwaah et al (2022) and Salman & Hosny (2021a) identifies that energy consumption, including fossil fuel, is the leading cause for the increase in carbon emission in India. This study shows that a high economic growth, which relies on the use of fossil fuels significantly contributes to environmental degradation through carbon emission. The study by Deka et al (2023) utilizes the data from ASEAN countries. This study shows that energy consumption, including that from fossil fuel, significantly contributes to the increase in carbon dioxide (CO2) emission. Doğan et al (2022) shows that energy consumption, a large amout of which involving fossil fuels, significantly increases carbon emission, which impacts the quality of the environment. Kelly et al (2016) suggests that corruption frequently increases carbon emission because regulatory and resources management practices are not carried out in transparant manner. Countries with lower corruption indeks tend to have better quality of the environment. Sarpong et al (2020) conducted a study in the ASEAN region and found out that corruption deteriorates environmental degradation with weak regulations, despite the regional initiative to lower the CO2 emission levels.

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Net Export and Environment Degardation

Studies by Osano & Koine (2015) shows that countries with high export dependency frequently experience a rise in carbon emission because of the high intensity of production processes, especially those in heavy industries. Mahat et al (2019) identifies that the energy export patterns affect the carbon emission levels. Countries with a focus on energy export tend to have greater environmental impacts campared to those focusing on internal consumptions. Imran et al (2024) relates energy consumption and energy export to environmental pollution. It was found out that energy export in ASEAN countries significantly affect carbon emission, especially with high production intensity.

Political Stability and Economic Growth

Studies by Jiang & Chen (2020) and Li et al (2020) studied the effect of foregn debt on the stability of macro economy . The result shows that dependency on foreign debt significantly affects state budget structure and lead into a lingering deficit. Kuo et al (2022) finds out that foreign debt negatively impacts on long term economic growth due to the payment of the high interest rate, which causes a decrease in public investment in productive sector which may reduce poverty. Meressa (2022) identifies a relationship between foreign debt and economic productivity and finds out that at a high level of debt there is a negative impact because allocation of fund to paying off debt reduces payment for sectors relevant to poverty eradication. Khan et al (2020) shows that corruption negatively affects economic growth by lowering investment, which in turn will affect human development and worsens poverty (Imran et al., 2024). Finds that corruption causes inefficiency in public funds allocation, in which more funds are allocated in major projects, which open a wider doors for committing corruption as compared to that in projects which directly help the poor Sikder et al (2022) links bad governance, including corruption practice, to a higher rate of poverty because corruption blocks the access of the people to public services (Prempeh, 2023).

Suggest that political stability holds an important role in pushing economic development forward and reduce social gaps. They stress that countries with political stability are more able to craft effective economic policies, which will contribute to reducing poverty. Kolawole et al (2024) highlights the importance of political stability in safeguarding investor's confidence and avoiding economic turmoil. In the context of developing countries, political instability is often connected to economic crises, which deterirates the condition of the poor. Li et al (2020) shows positive correlations between political stability and the quality of governance to reducing poverty. Countries with high political stability tend to maintain a low level of corruption, which leads to fairer distributions of resources.

Foreign Direct Investment and Economic Growth

A study by Hussain et al (2022) suggests that FDI brings with it positive impacts on economic growth in developing countries, especially with the availability of human resource who are sufficiently able to embrace technology transfer. Next, (Salman & Hosny, 2021b) finds out that FDI brings with it more significant impacts if coupled with a strong financial sector, as it can facilitate channeling investment to productive sectors. Identify that foreign debt may bring a benefit for economic growth to the optimal; however, if breaking a certain limit debt will become a burden and will reduce growth.

(Amankwaah et al., 2022; Frutos-Bencze et al., 2017; Juhro et al., 2021).

Environment Degradation and Economic Growth

Studies by Ayesu & Asaana (2023), Erdiwansyah et al (2021) and Taşkın et al (2020) suggest that energy consumption, including that of fossil fuel, has a cause-effect relation to economic growth. Deka et al (2023) finds out that an increase in fossil fuel consumption positively contributes on growth through an increase in economic activity. However, Sarker (2024) asserts that dependency on fossil fuel has to be reduce because of the volatility in oil price may threat the stability of growth. Sarpong et al (2023) shows that political

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stability plays an important role in creating a conducive environment for investment and economic growth. Sarpong et al (2020) finds out that political stability and good governance reduce economic uncertainty, which leads to credibility by the investors. Wiryawan & Otchia (2022) proposes that high exports may increase economic growth through market diversification and strengthening domestic production sector. Studies by Banday & Aneja (2020) suggests that export sector possesses higher productivity compared to the non-export sector, thus increasing net export can expedite economic growth.

Observation of environment degradation and economic growth formulated with *Environment Kuznets Curve* (EKC) hypothesis has transformed into a method of thinking and serving as a basis to create a policy. The EKC hypothesis is analyzed with a result that carbon emission level resulting from industrialization may disrupt the economy as a whole with a determining factor of excessive energy consumption, which change carbon emission and increased pollution output. Natto (2024) and Wang et al 92020) confidence in the truth of EKC in in a number of literature has become a subject of lengthy discussion for quite some time. *First,* EKC is indeed trusted as a preference in a study of environmental aspect. *Second,* the relationship of it with economic growth is exponential so that it looks like an inverted U. *Third,* it is very relevant in making cross country analyses, which necessitates for this hypothesis to serve as foundation for making policies (Atsu et al., 2021; A. S. Hassan & Mhlanga, 2023).

If we refer to EKG hypothesis, the massive economic development activities will increase pollution at the early stages, a phenomenon often clarified in order to find out an equilibrium between development and pollution. EKC refers to 3 effects: scale effect, composition and technical effects. The scale effect explains that during the early stage of economic growth there should be plenty of natural resources as input for production and this leads to increased energy consumption, pollution and carbon emission. Composition effect stresses on transformation of production structure, which includes a shift from the energy use model to modernization, and lastly, the technical effect serves as a basis to support the use of renewable energy to achieve production efficiency.

From the theoretical study explained above, we conclude tha there is simultaneous interplay of environment degradation, poverty and economic growth. To this end, the researcher attempts to analyze more deeply and more comprehensively in finding out aspects which can support environment conservation.

Research Method

The data used in this study is in the form of panel data sourced from World Development Indicators, World Bank and International Energy Agency staring from 2010-2023 in middle-income countries in ASEAN. The amount of data in this study is 9 x 9 = 81.

To clarify each variables used, the following serves as operational definition:

- Environment Degradation (Y_1) is measured from carbon emission (CO2) in per capita metric ton.
- Poverty (Y_2) measured through poverty level in the percentage of population, in percentage unit.
- Economic growth (Y_3) measured using Gross Domestic Product in percentage.
- Foreign Direct Investment (X_1) measured from investment using the unit of billion /Current US$.
- Foreign debt (X_2) measured from the total of government debt in billion.
- Fossil fuel consumption (X_3) measured from the consumption of fuel using the unit of million kilo liter.

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- Corruption (X_4) measured from corruption control index in the percentage.
- Political stability (X_5) measured using the political stability index in percentage.
- Net export (X_6) measured from the percentage of trade against Gross Domestic Product in percentage.

Equations used in this research are as follows:

$$Y_{1t} = \alpha_0 + \alpha_1 Y_{2t} + \alpha_2 Y_{3t} + \alpha_3 X_{1t} + \alpha_4 X_{3t} + \alpha_4 X_{6t} + \mu_1 \quad (1)$$

$$Y_{2t} = \beta_0 + \beta_1 Y_{1t} + \beta_2 Y_{3t} + \beta_3 X_{2t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \mu_{2t} \quad (2)$$

$$Y_{3t} = \theta_0 + \theta_1 Y_{1t} + \theta_2 Y_{2t} + \theta_3 X_{1t} + \theta_4 X_{2t} + \theta_5 X_{6t} + \mu_3 \quad (3)$$

Identification test with *order condition* used in this study is as follows:

Equation 1 : $K - k = 6 - 5 > m - 1 = 2 - 1 \rightarrow 2 > 1$

(*exactly identified*)

Equation 2 : $K - k = 6 - 5 > m - 1 = 2 - 1 \rightarrow 1 = 1$

(*exactly identified*)

Equation 3 : $K - k = 6 - 5 > m - 1 = 2 - 1 \rightarrow 1 = 1$

(*exactly identified*)

Results and Discussion

Based on the data processing, the results obtained are data processed for various tests and models of analyses as follows:

Normality Test

Normality test is a test intended to evaluate the spread of data within a group of data or variables, in view of whether the distribution of data is normal or not. Normality test is useful to determine whether the data gathered have been normally distributed, or have been drawn from a normal population. The classic method in normality test of data is not complicated.

Based on the normality test using the Jarque-Bera method on the environment equation and economic growth, it is seen that the probability value of Jarque-Bera for each equation is > 0,05. Seen in the environment degradation equation it is as big as 0,000006, poverty, at 0,053401 and economic growth at 0,000000. Therefore, it can be concluded that the residual in the poverty equation is distributed normal, while that of environment degradation and economic growth they are not distributed normal.

Granger Causality Test

Granger causality test is a method to find out in which endogenous variable (dependent variable) can be affected by other variable (exogeneous variable) and on the other hand, the exogenous may take the endogenous variable's position. If the probability value is smaller than $\alpha = 0,05$, then both variables (endogenous variable) possess bi-directional relations or mutually affecting. Conversely, if the probability value is bigger than $\alpha = 0,05$, then both variables (endogenous variables) one-directional relations or they do not affect one another.

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Table 1. Granger Causality Test Result

Null Hypothesis	F-Statistic	Probability
Y2 does not Granger cause Y1	1.38876	0.2540
Y1 does not Granger cause Y2	1.17873	0.3118
Y3 does not Granger cause Y1	1.30082	0.2767
Y1 does not Granger cause Y3	2.02051	0.1378
Y3 does not Granger cause Y2	0.22078	0.8023
Y2 does not Granger cause Y3	0.13239	0.8762

Source: results of data processing with EViews 12, n = 204 α = 0.05

From the Granger Causality test result in Table-10 we obtain probability values among environment degradation, poverty, economic growth which indicate > 0.05, so that the variable being studied do not possess causality relationship between one and another (Table 1).

Heteroskedasticity

Heteroskedasticity test is conducted on the regression model to find out the presence of a variants dis-equation of residuals between one and another observations. Usually cross-section data contain heteroskedasticity because these data are collection of data representing small, medium and large scales. Residual is the the difference between observed value and predicted value; and absolute is the absolute value. When the residual between one and another observation is constant then this is called homoskedasticity. Whereas, when the residuals vary, then it is called heteroskedasticity.

Heteroskedasticity test in this study is conducted using the Glejser Test method with the criteria if the probability value of every variable > α = 0,05 then the equation does not have heteroskedasticity problem. On the contrary, if the probability value of each variable l < α = 0,05 then the equation contains heteroskedasticity problem.

Table 2. Heteroskedasticity Test of Environment Degradation

Variable	Probability	Remarks
Y2	0.6194	No Heteroskedasticity
Y3	0.6047	No Heteroskedasticity
X1	0.9261	No Heteroskedasticity
X3	0.8372	No Heteroskedasticity
X6	0.6529	No Heteroskedasticity

Source: data processing results with Eviews 12, n = 204 α = 0,05

According to table 2 a probability value of each variable obtained is > α = 0,05 Like, poverty economic growth, FDI and net export suggest the absence of heteroskedasticity, thus, in each equation there is similarity in the variants of the residuals for all observations in each equation.

Table 3. Heteroskedasticity test of Poverty

Variable	Probability	Remarks
Y1	0.1713	No Heteroskedasticity

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Y3	0.3612	No Heteroskedasticity
X2	0.3826	No Heteroskedasticity
X4	0.1134	No Heteroskedasticity
X5	0.1269	No Heteroskedasticity

Source: data processing using Eviews 12, n = 204 α = 0,05

Accoding to Table 3, the probability value of each variables in each eaquation > α = 0,05 In environment degradation, economic growth, environment degradation, economic growth, foreign debt, corruption and political stability there is no problem of heteroskedasticity.

Table 4. Heteroskedasticity Test for Economic Growth

Variable	Probability	Remarks
Y1	0.1196	No Heteroskedasticity
Y2	0.7148	No Heteroskedasticity
X1	0.6383	No Heteroskedasticity
X2	0.4513	No Heteroskedasticity
X6	0.1113	No Heteroskedasticity

Source: data processing using Eviews 12, n = 204 α = 0,05

According to Table 4 the probability value obtained for each variable in each equation is > α = 0,05 as in environment degradation, poverty, FDI, foreign debt, fossil oil consumption, political stability and net export there is no problem of heteroskedasticity.

Estimation result of Simultaneous Equation

Estimate of Environment Degradation

Tabel 4 indicates estimation result of environment degradation. From the estimate made an equation model of environment degradation is obtained, as shown by equation 4.

$$Y_1 = 0.026876 + 0.690624\ Y_2 + 0.879792\ Y_3$$
$$+ 0.188763\ X_1 + 0.284272\ X_3 + 0.173656\ X_6 \quad (4)$$

Tabel 4. The Effect of Poverty, Economic Growth, FDI, Fossil Fuel Consumption and Net Export on Environment Degradation in Middle-Income Countries ASEAN

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.026876	0.019438	1.382623	0.1682
Y2	0.690624	0.159063	4.341827	0.0008
Y3	0.879792	0.098088	8.969388	0.0000
X1	0.188763	0.045829	4.118869	0.0001
X3	0.284272	0.092139	3.085240	0.0021
X6	0.173656	0.199907	0.868683	0.3869
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.886216			
F-statistic	72.69328			
Prob (F-statistic)	0.000000			

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Source: data processing using Eviews 12, n = 204 α = 0,05

Based on the above estimate result of the equation of environment degradation, can be known that if poverty, economic growth, FDI, fossil fuel consumption and net export are not present, then the value of environment quality is 0.026876 per unit. The R-squared value of the environment equation is 0.886216. This indicates that the contribution of the variables of poverty, economic growth, FDI, fossil fuel consumption and net export on environment degradation is at 88.6216 percent, while the remaining 11.3884 percent is affected by other variables not included in the environment degradation equation.

The effect of poverty on environmental degradation is positive with an estimated coefficient of -0.690624. This means that if poverty increases by 1 unit, environmental degradation will increase by 0.690624 units assuming other variables are constant (ceteris paribus). The effect of economic growth on environmental degradation is positive with an estimated coefficient of 0.879792. This means that if economic growth increases by 1 unit, environmental degradation will increase by 0.879792 units. FDI affects environment degradation positively with estimate coefficient at 0.188763. This means that when FDI increases by 1 per unit than the environment degradation will increase by 0.188763 per unit. The effect of fossil fuel consumption on the environment degradation is positive with the coefficient estimate at 0.284272. This means that when fossil fuel consumption increases by 1 unit then the environment degradation will rise by 0.284272 units. The effect of net export on environment degradation is positive with estimate coefficient at 0.173656. This means that if net export increases by 1 unit then environment degradation will rise by 0.173656 units.

Estimate of Poverty

Table 5 shows the result of equation estimate of poverty. From the estimate made equation model of poverty obtained is shown at equation 5.

$$Y_2 = 0.012213 + 0.107783\ Y_1 - 0.239270\ Y_3$$

$$- 2.32E\text{-}08\ X_2 + 0.023200\ X_4 - 0.010937\ X_5 \quad (5)$$

When environment degradation, economic growth, foreign debt, corruption and political stability are not present then the poverty value is at 0.012213 per unit. The R-squared value of the environment degradation equation is 0.735943. This suggests that the contribution of the variables of environment degradation, economic growth, foreign debt, corruption and political stability on poverty is as much as 73.59 percent, while the remaining 26.41 percent is affected by other variables not included in the poverty equation.

The effect of environment degradation on poverty is positive, with the estimate coefficient of 0.107783. This means that when environment degradation increases by 1 per unit then poverty will increase as much as 0.107783 per unit.

The effect of economic growth on poverty is negative, with the estimate coefficient of 0.239270. This means that when economic growth increases by 1 per unit then poverty will reduce as much as 0.239270 per unit. The effect of foreign debt on poverty is negative, with the estimate coefficient of -2.32E-08. This means that when foreign debt increases by 1 per unit then poverty will reduce as much as-2.32E-08 per unit. The effect of corruption against poverty is positive with an estimate coefficient at 0.023200. This means that if corruption rises at 1 unit then poverty rises by 0.023200 unit. The effect of political stability on poverty is negative with estimate coefficient of -0.010937. This means if political stability increases by 1 unit then poverty will decrease by-0.010937 unit.

Table 5. The Effect of Environment Degradation, Economic Growth, Foreign Debt, Corruption and Political Stability on Poverty in Middle-Income Countries ASEAN

Variable	Coefficient	Std. Error	t-Statistic		Prob.
C	0.012213	0.010878	1.122732		0.2628

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Y1	0.107783	0.009137	11.79566		0.0000
Y3	-0.239270	0.030402	-7.870263		0.0000
X2	-2.32E-08	1.10E-08	-2.115767		0.0364
X4	0.023200	0.055360	0.419075		0.6759
X5	-0.010937	0.033249	-0.328935		0.7428
	Effects Specification				
	Cross-section fixed (dummy variables)				
R-squared	0.735943				
F-statistic	1.516164				
Prob (F-statistic)	0.213728				

Source: data processing result with Eviews 12 n = 126 $\alpha = 0{,}05$

Estimate of Economic Growth

Table 6 shows the result of the estimate of economic growth. From the estimation made a model of economic growth as seen in equation 6:

$$Y_3 = 0.139757 - 0.967775\ Y_1 - 0.856338\ Y_2 + 0.145205\ X_1 + 5.29E\text{-}08\ X_2 + 0.399773\ X_6 \quad (6)$$

Based on the above estimation result of Environment Degradation it is found out that if environment degradation, poverty, FDI, foreign debt and net export are not present then the value of economic growth is 0.139757 unit. The R-squared value of the poverty equation is 0.770863. This indicates that the contribution of the variables of environment degradation, poverty, FDI, foreign debt and net export on economic growth is at 77.09 percent while the remaining 22.91 percent is affected by other variables not included in the economic growth equation.

Table 6. The Effects of Environment Degradation, Poverty, FDI, Foreign Debt and Net Export on Economic Growth Middle-Income Countries ASEAN

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.139757	0.031818	4.392363	0.0000
Y1	-0.967775	0.153459	-6.306409	0.0000
Y2	-0.856338	0.113166	-7.567089	0.0000
X1	0.145205	0.104191	1.393643	0.1660
X2	5.29E-08	3.00E-07	0.176496	0.8602
X6	0.399773	0.120192	3.326124	0.0032
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.770863	Mean dependent var		4.857337
F-statistic	1.815162			
Prob (F-statistic)	0.114972			

Source: Data processing results with Eviews 12 n = 126 $\alpha = 0{,}05$

The effect of environment degradation on economic growth is negative with an estimate coefficient at -0.967775. This means that when environment degradation increases at 1 unit then the economic growth will decrease by 0.967775 unit. The effect of poverty on economic growth is negative with an estimate coefficient at 0.856338. This means that when poverty increases at 1 unit then the economic growth will

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rise by 0.856338 unit. The effect of FDI on economic growth is positive with an estimate coefficient at 1.145205. This means that when FDI increases at 1 unit then the economic growth will rise by 1.145205 unit. The effect of foreign debt on economic growth is positive with an estimate coefficient of 5.29E-08. This means that foreign debt when foreign debt increases by 1 unit then growth will rise by 5.29E-08 unit. The effect of net export on economic growth is positive with an estimate coefficient of 0.399773. This means that if net export increases by 1 unit then the Growth will rise by 0.399773 unit.

Testing the Hypothesis

Partial Test

Partial test is conducted to find the effect of exogenous variable on the endogenous variable in a partial regression equation with the assumption that other variables are constant. This partial test is also called probability test.

When the probability value of the small exogenous variable is smaller than $\alpha = 0.05$ (t count ≥ t table or – t count< - t table) on endogenous variable, then H0 is rejected and Ha is accepted, meaning that there is a significant effect between exogenous to endogenous. Conversely, when the probability value of exogenous variable is bigger than $\alpha = 0.05$ (t count < t table or – t count ≥ - t table) on the endogenous then H0 is accepted and Ha rejected, meaning there is no significant effect between exogenous variable to endogenous variable.

Partial Test of Environment Degradation Equation

Based on an estimate in Table 4, poverty, economic growth, FDI, fossil fuel consumption has a significant effect on environmental degradation middle-income ASEAN countries because the probability value of these variables on environmental degradation smaller than a = 0.05. While net exports do not have a significant effect on environmental degradation because the probability value of this variable on environmental degradation is 0.3869 > a = 0.05

Partial Test on Poverty Equation

Based on the estimate result in Table 5, environment degradation, economic growth, and foreign debt have a significant effect on poverty middle-income ASEAN countries because the probability value of these variables on poverty is smaller than a = 0.05. while corruption and political stability do not have a significant effect on poverty because the probability value of this variable on poverty is greater than a = 0.05

Partial Test of Economic Growth Equation

Based on estimation result in Table 6, environment degradation, poverty and net export have a significant effect on economic growth of Middle-Income Countries ASEAN because the probability value of these variables on economic growth is less than a = 0.05. While FDI and foreign debt export do not have a significant effect on economic growth because the probability value of these variables on economic growth is greater than a = 0.05

F Test

F Test is used to find out whether the exogenous variables (X_1, X_2,….X_n) collectively affect the endogenous (Y) variable or used to find out whether this model can predict endogenous variable or not.

Hypothesis 1

The first hypothesis proves that poverty, economic growth, FDI, fossil fuel consumption and net export collectively have a significant effect on environmental degradation in middle-income ASEAN countries because the probability value (F-count) 0.0000 is smaller than $\alpha = 0.05$.

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Hypothesis 2

The second hypothesis shows that environment degradation, economic growth, foreign debt, corruption and political stability together have a significant effect on poverty middle-income countries in ASEAN because the probability value (F-count) 0.0000 is smaller than $\alpha = 0.05$.

Hypothesis 3

The third hypothesis shows that environment degradation, poverty, FDI, foreign debt and net export together have a significant effect on economic growth middle-income countries in ASEAN because the probability value (F-count) 0.0000 is smaller than $\alpha = 0.05$.

Discussion

In this discussion section analyses obtained will be explained and interpreted to find out whether or not the analyses have been in line with the theories put forward. Should they do not conform with the theories put forward then the reasons why it happen that way will also be found out.

The Effect of Poverty, Economic Growth, FDI, Fossil Fuel Consumption and Net Export on Environment Degradation in Middle-Income Countries ASEAN

More comprehensive analyses directed by referring to hypothesis formulations in this study prove that more concrete results in measuring the levels of environment degradation. Poverty has a significant impact on environmental degradation. This is because poor people often rely on cheap fossil fuels such as coal, kerosene, or firewood for their daily energy needs (cooking, lighting, and heating). The combustion of these fuels produces high carbon emissions. Poverty often forces people to clear forests for subsistence farming. Shifting cultivation and land burning are common practices in ASEAN countries. These activities not only release carbon from biomass but also reduce the carbon storage capacity of forests. In Myanmar and Cambodia, more than 70% of rural residents rely on firewood for cooking, which contributes significantly to CO_2 emissions and deforestation, thus increasing environmental degradation.

The results of this study are supported by the theory that middle-income countries in ASEAN are mostly in the early stages of EKC, where poverty forces people to exploit natural resources in ways that produce high emissions. Environmentally friendly technologies are not yet affordable, and the priority is more on economic growth than environmental sustainability.

Economic growth drives high environmental degradation in middle-income countries in ASEAN. Economic growth in ASEAN developing countries is often driven by energy-intensive industries, such as manufacturing, construction, and mining. The production process in these sectors produces significant carbon emissions. For example, Vietnam and Thailand have become regional manufacturing hubs, but the technologies used are often inefficient in energy consumption. Environmentally friendly technologies are often expensive and difficult for developing countries to access. As a result, they tend to use conventional technologies that produce more CO_2 emissions. ASEAN developing countries often use the exploitation of natural resources, such as palm oil, coal, gas, and minerals, as their main economic drivers. These activities produce both direct and indirect carbon emissions. For example, Indonesia is the world's leading exporter of coal and palm oil, which involves massive deforestation and high carbon emissions.

This result is in line with the conclusion of the EKC theory describing an inverted U-shaped relationship between economic growth and environmental degradation, including carbon emissions. In the early stages of economic growth (developing countries), the focus on industrialization and infrastructure development often leads to increased CO_2 emissions due to the use of fossil fuels and inefficient technologies. In the

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higher income stage, countries start investing in clean technologies and environmental policies, which ultimately reduce CO_2 emissions.

FDI significantly affects environmental degradation. The inflow of foreign investment by the private sector which is intended for economic development causes the ever decreasing environmental quality coupled with a high level of energy utilization. Currently, many advanced nations carry out a transition to renewable energies to avert damage in the environment. On the other hand, developing countries are still struggling to make economic growth despite the fact this will result in carbon emissions. Actually this condition puts a lot of pressure on developing nations that do not even reach the industrialization stage; they fall into a group of countries susceptible to environmental damage. This necessitates a focus to reach and realize climate change targets. The financing of public and private sectors in the form of equity grants and investment takes the initiative to reduce damage to the environment. A comprehensive mitigation effort must reach far into the economic sector, which has been known to cause environmental damage. A need for FDI should be balanced with pro-environment policies; and this includes filling up the gap in developing green economy.

The result of this study is in conformity with the theory which believes that FDI leaves an impact on environment degradation through the expansion of productive economy with no regards for environmental conservation. This result is also supported by studies Cao et al (2021), Lin et al (2019) and Zhao (2020) which obtain similar results in analyzing the impacts of FDI on environment degradation.

Fossil fuel consumption has a negative and significant impact on environmental degradation in ASEAN developing countries because it causes greenhouse gas emissions, air pollution, ecosystem damage, deforestation, and soil and water pollution. ASEAN countries that rely on fossil fuels to meet their energy needs face major challenges in maintaining environmental sustainability. The combustion of fossil fuels such as coal, oil, and natural gas produces large amounts of greenhouse gas emissions (CO_2, CH_4, and NO_x). ASEAN developing countries that still rely on fossil fuels as their main source of energy also contribute to the increase in these emissions. Global warming due to CO_2 emissions causes climate change, such as rising temperatures, extreme weather patterns, and more frequent natural disasters. Ecosystem damage due to temperature changes has an impact on biodiversity, food production, and water availability. Indonesia, which is one of the largest carbon emitters in ASEAN due to the use of coal for electricity, is experiencing massive deforestation and peatland degradation. The theory about the impact of fossil fuel consumption on Environment Degradation has been a subject of many researches in which there is significant impacts (Aboul-Atta & Rashed, 2021; Lee, 2021; Xing et al., 2023).

Net export does not impact environment degradation significantly. The expansion of international trade is imperative in order to adopt innovation and competitiveness for a country toward the end of being able to produce quality goods and services. Besides that, in increasing international trade we cannot neglect the principles of environmental conservation in the economic activity so that the environment can be maintained and continue to give social benefits for a developing nation. The believe that through international trade every nation can achieve an increase in the economic status along with maximizing the comparative advantage to update marketing mix with policies and strategy which are able to minimize environmental damage by focusing on export-oriented green economy. This is expected to become solution for improving the quality of the environment in a developing country. When a country focuses on increasing export, especially of products of natural resources, over exploitation often occurs. Export oriented industry may prioritize mass production in disregards of its environmental impacts. For instance countries which export logs or agricultural products through logging or the excessive use of pesticides and other chemicals. This may lead to a loss of biodiversity, a decrease in soil quality, and water and air pollution. The pressure to fulfill the demand from the international market can also lead to unsustainable practices and destruction of local ecosystem.

The findings of this research does not conform with the theory which says that net export gives significant impact on Environment Degradation as a guarantee to increase production capacity while disregarding natural ecosystem. However, this finding is supported by Adrian & Shin (2008), Hassan & Mhlanga (2023),

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Hassan et al (2020), Salim & Alsyouf (2020) and Usman et al (2024) in believing that nett export does not give significant impact on Environment Degradation.

The Effect of Environment Degradation, Economic Growth, Foreign Debt, Corruption and Political Stability on Poverty Middle-Income Countries in ASEAN

There is a significant positive effect between environmental degradation and poverty. High CO2 emissions accelerate climate change and environmental degradation, such as floods, droughts, and sea level rise. This directly damages the natural resources that poor people depend on, especially in middle-income countries in ASEAN that have many agrarian and coastal communities. Communities that depend on agriculture, fisheries, and forestry lose their livelihoods due to reduced harvests, damaged fish habitats, or loss of land due to environmental disasters. In addition, environmental degradation from CO2 emissions is often accompanied by air pollution and climate change that increase health risks, such as respiratory diseases, malaria, and diarrhea due to flooding or water pollution. Poor people in middle-income countries in ASEAN tend to live in areas with low environmental quality and have limited access to health services. The impact of increasing health costs worsens the financial conditions of poor families and reduces productivity due to prolonged illness. For example, air pollution in Jakarta increases the prevalence of asthma among poor people living in densely populated areas. These results are supported by the EKC theory, middle-income countries in ASEAN are in the early stages of development, where industrialization causes increased CO2 emissions and environmental degradation, which have negative impacts on the poor.

Economic growth has a significant impact on poverty in middle-income countries in ASEAN. Economic growth in developing ASEAN countries is often driven by labor-intensive sectors, such as manufacturing, agriculture, and services. This growth creates new jobs and increases people's incomes, especially for the poor who have basic skills. With jobs, people's incomes increase, so they can meet basic needs such as food, health, and education. This directly reduces poverty. For example, economic growth in Vietnam, which is driven by the manufacturing and export sectors, has succeeded in creating millions of jobs, thereby reducing poverty rates significantly. On the other hand, economic growth provides revenue for the government in the form of taxes and other fiscal resources. The government can allocate this revenue to invest in education and health, which play an important role in long-term poverty reduction. Access to quality education and health services helps the poor improve their skills and productivity, so they have a better chance of escaping poverty. For example, the free education program in the Philippines is funded through economic growth, helping to reduce school dropout rates and increase upward economic mobility.

This finding is supported by Ahmad et al (2024), Natto (2024), Opoku & Boachie (2020), Slimane (2024) and Ullah & Chishti (2023) the classical economic growth theory that economic growth increases national production and income, which will ultimately improve the welfare of the entire community, including the poor.

Foreign debt significantly impacts poverty. Foreign debt is created from a discrepancy between savings and investment, meaning that savings is far smaller when compared with investments, a condition which forces the state to make foreign debt to fill the gap. If the foreign debt is managed carefully by the government this can serve as an alternative to deal with an economic problem, such as poverty. This is because foreign debt is attempted to finance physical or non-physical development which is intended to reduce social discrepancy. Foreign debt has not been able to alleviate poverty. Intended for development, foreign debt does not automatically solve an economic problem and is not effective for developing country in the long run. Foreign debt will become a burden for a country in the form of difficulty paying the interest, exchange rate depreciation, even increased inflation rate, which will deteriorate poverty condition.

While on the one hand foreign debt may be utilized to finance vital development projects, super infrastructure, education and health, which in turn will upgrade quality of life of the people and to alleviate poverty condition; on the other hand, over dependence on foreign debt may result in a problem if the loan is not managed properly. A large debt settlement burden may drain state budget, and reduce available fund for social and development activities. If the government prioritizes paying the debt, then the budget for poverty eradication, health and education will be curtailed, which will deteriorate poverty condition. The

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findings of this study are in conformation to the theory that foreign debt which is withdrawn by the government, if directed toward funding for the appropriate development will positively impact on poverty reduction. These results are similar to Liu (2021), Taşkın et al (2020) and Yahyaoui & Ghandri (2024) which maintain that foreign debt can serve as an alternative at the government's disposal to raise the fund for eradicating poverty.

Corruption does not significantly affect poverty. A massive corruption rate will bring about injustice and discrepancies in the development because it is only enjoyed by an irresponsible elite few. This situation calls for integrity on the part of the power holder to exercise justice so that development may proceed as planned. Corruption causes shortage of budget for special programs for the under privileged, which are actually the rightful beneficiaries of those programs. In this light, the awareness of the seriousness of corruption's adverse impact is directed into the many societal aspects and dimensions of the bureaucracy in order to prevent abuse of the budget in order that it will be effective in reducing social discrepancy. Corruption also hampers the development of infrastructure and essential services for the public aimed at poverty eradication. This deprives the poor of basic facilities necessary to improve their quality of life. Deprived of adequate access to education, health, and transportation the underprivileged find it difficult to improve their economic conditions, so that poverty lingers. Beside all this, corruption lowers public trust in the government, and harms the interest in investment which in turn will adversely affect economic growth and employment opportunities. The low investment rate leads to limited new job opportunities, worsening unemployment and poverty rates. The low public trust in the government may also trigger social and political instability, which in the end will worsen economic conditions and welfare. These findings provide a different perspective: principle-wise corruption is immoral conduct which directly affects public services and government policies hampered.

However, these study findings are supported by Osuntuyi & Lean (2022), Parmova et al (2024), Urhie et al (2020) and Wang et al (2023) which assert that corruption does not significantly affect poverty necessitating further studies into this matter.

Political stability does not significantly affect poverty. The fact that political stability turns into a turmoil does not necessarily mean it will increase poverty. However, these conditions reflect the presence of a political decision which is appropriate by the government as the highest power holder, which exerts strong influence on every dimension of the life of a nation. Thus, political stability is something of a higher importance to be achieved. Besides being a guarantee of conduciveness in making a decision, the policy formulated will positively affect the poverty condition and reduce injustice. Political stability does not significantly affect poverty, as this condition prevails within a short period only. This affects political decision making by the government; and this condition occurs when there is internal conflict between power holders. It is necessary to remember that when political stability takes place during a proposed period then the different aspects of the country development including poverty caused by unemployment, health and income discrepancy will be adversely affected.

However, let us not forget that if political instability prevails for a long period of time, it will adversely affect various aspects of a country's development. These aspects include poverty, arising from unemployment, health and income disparity. Political stability brings with it a conducive environment for economic growth, investment and jobs, On the contrary, political instability, such as conflicts, social turmoil, and government uncertainty, may disrupt economic activities, hampering development and diversion of resources from poverty eradication, crisis management and security. As a result, the poor become more alienated and it becomes more difficult to exit the cycle of poverty.

A nation should be able to provide a conducive political structure in the running of the government. Naturally, political stability becomes one of the parameters in achieving this ideal. These findings provide a different perspective about the importance of political stability in lowering poverty rate, which are supported by the studies of Allam et al (2023), Ayaviri-Nina et al (2024), Chica-Olmo et al (2020) and Olujobi, 2020) which draw a conclusion that political stability does not guarantee equality and harmony of development which lead to eradication of poverty.

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Environmental degradation has a real impact on the economic growth of middle-income countries in ASEAN. Excessive CO_2 emissions contribute to global climate change, such as global warming, deforestation, and air pollution. Developing ASEAN countries, whose economies still depend on natural resources, will be directly affected because these resources are damaged. Ecosystem damage reduces the output of the agriculture, forestry, and fisheries sectors which are the main sources of income in many ASEAN countries. The cost of exploiting natural resources increases due to environmental degradation. Global warming triggered by CO_2 emissions causes ocean acidification, which reduces fisheries productivity in Vietnam and the Philippines. Excessive CO_2 emissions trigger changes in climate patterns such as extreme droughts, irregular rainfall, and natural disasters that impact the agricultural sector. Developing ASEAN countries are highly vulnerable to climate change because many of their populations depend on agriculture. Agricultural productivity declines, hampering economic growth and reducing farmers' incomes. Food prices rise due to decreased production, reducing people's purchasing power. For example, in Thailand, the agricultural sector suffered major losses due to prolonged drought, triggered by global warming due to CO_2 emissions.

In the early stages of development, CO_2 emissions increase, but if there is no environmental mitigation policy, excessive emissions will damage the environment and hinder economic growth as explained by the EKC theory (Akbar et al., 2024; Y. Jiang et al., 2023; Prasetyani et al., 2024; Wahyudi et al., 2024).

Poverty is often associated with low education and skills of the workforce. Individuals from poor families tend to have limited access to quality education, health, and skills training. This leads to low labor productivity. Unproductive human resources lead to low economic output. Lack of skills limits the ability of the workforce to work in high-value-added sectors. In countries such as Laos and Cambodia, low levels of education among the poor limit their contribution to economic growth. Poverty also leads to low savings and investment in the economy. The poor are unable to set aside income for productive investment or starting businesses, resulting in economic stagnation. Domestic investment levels are low, which slows capital accumulation and economic growth. Lack of investment hinders innovation, infrastructure, and industrial development. In Myanmar, low national savings rates have resulted in limited capital for investment in infrastructure and productive sectors.

Foreign direct investment does not significantly affect economic growth. FDI has not yet become a driving factor for economic growth due to a number of handicaps such as overlapping wealth, political instability and low competitive advantage. This unfriendly atmosphere renders a country uncompetitive in convincing investors about the sustainability of economic activities, whereas foreign capital is needed to finance various economic sectors. FDI should be able to serve as a center for economic growth. However, in several research findings FDI has not yet reached its maximum contribution for economic growth. Beside this, there is still an economic problem of a depreciation of real exchange rates, which hampers the inflow of foreign capital into a country. FDI brings with it capital, technology, a new managerial skills into a recipient country, which can all increase productivity and efficiency in various economic sectors, which should be able to create more job opportunities, increase the income of the local society. However, in reality this does not drive competition and innovation, which leads to a slowing down in economic growth.

These study results, different from the previous one, prove that FDI does not significantly affect economic growth. This is supported by the studies from Atsu et al (2021), Hassan & Mhlanga (2023), Nwaeze et al (2023), Peng et al (2022) and Sohag et al (2023) which conclude that an increase in FDI does not automatically bring with it positive impact on economic growth.

Foreign debt does not have significant impact on economic growth. This means foreign debt made by a country has not succeeded to become a boosting factor for its economic growth. The utilization of foreign debt to support infrastructure development and trade does not positively affect economic growth, as foreign loan comes with a burden of interest, which must be paid in specific times, which makes it difficult

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for developing countries to look for additional income to pay back loans. Beside all that, state budget are used only for non-productive activities, which leads to a new problem, such as low national production capacity. External capital flow may serve as a speculation when production capacity decreases; however, in the long run, when a foreign debt has reached or exceeded the limit against GDP then the foreign loan becomes a potential wide spread threat for the economy resulting from fiscal imbalance. Foreign debt has assumed the role of an important tool for boosting economic growth and even frequently hampers the freedom on the borrowing country due to the burdens that need tight controls in order to avoid failure to pay off the debt later. Failure to carefully control this may suppress budget and hamper economic growth.

These research findings conform to the theory that an increase in foreign debt will create a burden for the government in the form of paying a high amount of due principal debt which absorb a large amount of state budget resulting in a slow down of economic growth. These are in line with the results of researches (Areli Bermudez Delgado et al., 2018; Kuhe & Bisu, 2020; Peng et al., 2022; Salman & Hosny, 2021a; S. Wang et al., 2023).

Net exports significantly affect economic growth. This adversely impacts economic growth because it is not supported by export or import trade. The presence of bars in international trade, such as export tax, and export license and the lack of investment reduces the goods and services production activities so the bars to warn comparative international trade are often not achieved. Therefore an effort to foster international cooperation has to be conducted to gain value added to the economic activities in the hope that there is a surplus in international trade which can positively impact economic growth. Liberation of trade tends not to run effectively in developing countries although the country has located itself in the trade integrity zone; and this is due to poor mastery of technology, poor competitiveness, and minimum communication and information, which results in a slowing down in economic growth.

Countries which are highly dependent on export commodities may face price volatility in the global market, which inhibits economic growth. Beside that, if the profits from exports are not invested back in the domestic economy, for example in infrastructure development, or education then the positive impact of net exports will be limited. Whereas high export activities can boost economic growth in the short term, excessive dependence on export makes the economy vulnerable to external shock. The findings of this study conform to the theory which asserts that when import levels are higher than that of export then the balance of payments experiences a deficit and at the same time deprives the country of export earnings. The research findings are supported by Ahmed et al (2023), Ayesu & Asaana (2023), Dube & Horvey (2023), Manasseh et al (2024) and Wang et al (2023) that expresses the need for a consideration that a minimum condition gives the attention to economic growth target.

Conclusion

Based on the research findings and the discussions then this study come to conclusions that:

Based on the findings of the study, Poverty, Economic Growth, FDI, and Fossil Fuel Consumption are proven to have a significant influence on Environmental Degradation in Middle-Income ASEAN countries. In contrast, Net Export does not show a significant influence on Environmental Degradation in the region. This confirms that internal factors such as poverty, economic growth, foreign investment, and fossil fuel consumption have an important role in driving environmental degradation, while international trade activities (net exports) do not directly affect environmental damage in middle-level developing countries in ASEAN.

Environmental degradation has a direct impact on increasing poverty because the destruction of natural resources and ecosystems disrupts livelihoods, especially in the agriculture, fisheries, and forestry sectors, which are the mainstay of low-income communities. Economic growth has a significant impact on poverty, where inclusive economic growth can help reduce poverty. However, if the growth is not evenly distributed, it can actually worsen inequality and poverty. External debt has a significant impact on poverty because the high burden of debt payments can reduce budget allocations for social and development programs aimed at reducing poverty. On the other hand, corruption and political stability factors do not have a significant

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impact on poverty in ASEAN middle-level developing countries. This indicates that although corruption and political stability are important issues, their effects on poverty levels may be more complex or less directly visible than economic and environmental factors.

Environmental degradation has a significant impact on economic growth because economic activities that exploit natural resources can drive economic growth in the short term, but are often accompanied by high environmental costs. Poverty has a significant impact on economic growth, where high levels of poverty can be a barrier to productivity and economic development, but in some cases, poor communities become part of the cheap labor that supports economic activity. Net Export has a significant impact on economic growth, because increasing net exports can strengthen the economy through the contribution of international trade that drives increased production, income, and employment. Meanwhile, FDI does not have a significant impact on economic growth, which may be caused by the lack of optimization of foreign investment in driving domestic economic productivity. Foreign Debt also does not have a significant impact on economic growth, which may be caused by ineffective debt allocation or more use for consumption than productive investment.

From the conclusion of this study, the policy recommendations that can be suggested are that the government in each country needs to pay attention to efforts to manage inclusive economic growth, reduce poverty, and control environmental impacts through a sustainable and innovative approach. Integration of environmental, social, and economic policies is the main key to achieving balanced development in middle-income countries ASEAN. In addition, the government in each country can explore how the adoption of renewable energy can reduce dependence on fossil fuel consumption while still supporting economic growth and reducing poverty. Relevant parties can examine the effectiveness of FDI in supporting economic growth while minimizing its negative impacts on the environment. This research can include an analysis of the sectors that contribute most to environmental degradation due to foreign investment. Then, the country needs to use foreign debt effectively for poverty alleviation programs and productive investments that encourage economic growth. Net export has a significant impact on economic growth, so it is important to understand how international trade can be optimized to improve economic conditions without damaging the environment.

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